

<http://malideveloper.arm.com/resources/sdks/mali-opencl-sdk/>[Browse files](#)

Software Development Kit OpenCL™ on ARM Linux

The Mali OpenCL SDK provides developers with a framework and series of samples for developing OpenCL 1.1 applications on ARM Mali based platforms such as the Mali-T600 and above family of GPUs. The samples cover a wide range of use cases that utilize the Mali GPU to achieve a significant improvement in performance when compared to running on the CPU alone.

[master](#)

thomas tsai committed on Jun 18, 2016 0 parents commit d6593995999a1819f8c1209c7dfe2b6851e8bb88

[+ Showing 418 changed files with 38,550 additions and 0 deletions.](#)[Split](#) [Unified](#)[188 .gitignore](#)

```
@@ -0,0 +1,188 @@
+ ## Ignore Visual Studio temporary files, build results, and
+ ## files generated by popular Visual Studio add-ons.
+
+ # User-specific files
+ *.suo
+ *.user
+ *.sln.docstates
+
+ # Build results
+ [Dd]ebug/
+ [Dd]ebugPublic/
+ [Rr]elease/
+ [Rr]eleases/
+ x64/
+ x86/
+ build/
+ bld/
+ [Bb]in/
+ [Oo]bj/
+ build_x86
+ build_and
+ # Roslyn cache directories
+ *.ide/
+
+ # MSTest test Results
+ [Tt]est[Rr]esult*/
+ [Bb]uild[Ll]og.*
+
+ #NUNIT
+ *.VisualState.xml
+ TestResult.xml
+
+ # Build Results of an ATL Project
+ [Dd]ebugPS/
+ [Rr]eleasePS/
+ dlldata.c
+
+ *_i.c
+ *_p.c
+ *_i.h
+ *.ilk
+ *.meta
+ *.obj
+ *.pch
+ *.pdb
```

```
+ *.pgc
47 + *.pgd
48 + *.rsp
49 + *.sbr
50 + *.tlb
51 + *.tli
52 + *.tlh
53 + *.tmp
54 + *.tmp_proj
55 + *.log
56 + *.vpscc
57 + *.vsscc
58 + .builds
59 + *.pidb
60 + *.svclog
61 + *.scc
62 +
63 + # Chutzpah Test files
64 + _Chutzpah*
65 +
66 + # Visual C++ cache files
67 + ipch/
68 + *.aps
69 + *.ncb
70 + *.opensdf
71 + *.sdf
72 + *.cachefile
73 +
74 + # Visual Studio profiler
75 + *.psess
76 + *.vsp
77 + *.vspx
78 +
79 + # TFS 2012 Local Workspace
80 + $tf/
81 +
82 + # Guidance Automation Toolkit
83 + *.gpState
84 +
85 + # ReSharper is a .NET coding add-in
86 + _ReSharper*/
87 + *.[Rr]e[Ss]harper
88 + *.DotSettings.user
89 +
90 + # JustCode is a .NET coding addin-in
91 + .JustCode
92 +
93 + # TeamCity is a build add-in
94 + _TeamCity*
95 +
96 + # DotCover is a Code Coverage Tool
97 + *.dotCover
98 +
99 + # NCrunch
100 + _NCrunch_*
101 + *.crunch*.local.xml
102 +
103 + # MightyMoose
104 + *.mm.*
105 + AutoTest.Net/
106 +
107 + # Web workbench (sass)
108 + .sass-cache/
109 +
110 + # Installshield output folder
111 + [Ee]xpress/
112 +
113 + # DocProject is a documentation generator add-in
114 + DocProject/buildhelp/
```

```
115 + DocProject/Help/*.HxT
116 + DocProject/Help/*.HxC
117 + DocProject/Help/*.hhc
118 + DocProject/Help/*.hhk
119 + DocProject/Help/*.hhp
120 + DocProject/Help/Html2
121 + DocProject/Help/html
122 +
123 + # Click-Once directory
124 + publish/
125 +
126 + # Publish Web Output
127 + *.[Pp]ublish.xml
128 + *.azurePubxml
129 + ## TODO: Comment the next line if you want to checkin your
130 + ## web deploy settings but do note that will include unencrypted
131 + ## passwords
132 + *.pubxml
133 +
134 + # NuGet Packages
135 + packages/*
136 + *.nupkg
137 + ## TODO: If the tool you use requires repositories.config
138 + ## uncomment the next line
139 + #!packages/repositories.config
140 +
141 + # Enable "build/" folder in the NuGet Packages folder since
142 + # NuGet packages use it for MSBuild targets.
143 + # This line needs to be after the ignore of the build folder
144 + # (and the packages folder if the line above has been uncommented)
145 + !packages/build/
146 +
147 + # Windows Azure Build Output
148 + csx/
149 + *.build.csdef
150 +
151 + # Windows Store app package directory
152 + AppPackages/
153 +
154 + # Others
155 + sql/
156 + *.Cache
157 + ClientBin/
158 + [Ss]tyle[Cc]op.*
159 + ~$*
160 + *~
161 + *.dbmdl
162 + *.dbproj.schemaview
163 + *.pfx
164 + *.publishsettings
165 + node_modules/
166 +
167 + # RIA/Silverlight projects
168 + Generated_Code/
169 +
170 + # Backup & report files from converting an old project file
171 + # to a newer Visual Studio version. Backup files are not needed,
172 + # because we have git ;)
173 + _UpgradeReport_Files/
174 + Backup*/
175 + UpgradeLog*.XML
176 + UpgradeLog*.htm
177 +
178 + # SQL Server files
179 + *.mdf
180 + *.ldf
181 +
182 + # Business Intelligence projects
183 + *.rdl.data
```

```
184 + *.bim.layout  
185 + *.bim_*.settings  
186 +  
187 + # Microsoft Fakes  
188 + FakesAssemblies/
```

▽ 1 Mali_OpenCL_SDK_v1.1.0_Documentation.html □

...	...	@@ -0,0 +1 @@
	1	+ docs/html/index.html

▽ 34 common/Makefile □

...	...	@@ -0,0 +1,34 @@
1		+ # This confidential and proprietary software may be used only as
2		+ # authorised by a licensing agreement from ARM Limited
3		+ # (C) COPYRIGHT 2013 ARM Limited
4		+ # ALL RIGHTS RESERVED
5		+ # The entire notice above must be reproduced on all authorised
6		+ # copies and copies may only be made to the extent permitted
7		+ # by a licensing agreement from ARM Limited.
8		+
9		+ include ../platform.mk
10		+
11		+ CFLAGS=-c -Wall -I../include -Iinclude
12		+
13		+ LDFLAGS=
14		+
15		+ SOURCES=common.cpp image.cpp
16		+ HEADERS=common.h image.h
17		+
18		+ OBJECTS=\$(SOURCES:.cpp=.o)
19		+
20		+ LIBRARY=libCommon.a
21		+
22		+ all: \$(LIBRARY)
23		+
24		+ \$(LIBRARY): \$(OBJECTS)
25		+ \$(AR) rcs \$(LDFLAGS) \$(LIBRARY) \$(OBJECTS)
26		+
27		+ \$(OBJECTS): \$(HEADERS)
28		+
29		+ .cpp.o:
30		+ \$(CC) \$(CFLAGS) \$< -o \$@
31		+
32		+ .PHONY: clean
33		+ clean:
34		+ \$(RM) \$(OBJECTS) \$(LIBRARY)

▽ 509 common/common.cpp □

Load diff

Large diffs are not rendered by default.

▽ 109 common/common.h □

...	...	@@ -0,0 +1,109 @@
1		+ /*
2		+ * This confidential and proprietary software may be used only as
3		+ * authorised by a licensing agreement from ARM Limited
4		+ * (C) COPYRIGHT 2013 ARM Limited
5		+ * ALL RIGHTS RESERVED
6		+ * The entire notice above must be reproduced on all authorised
7		+ * copies and copies may only be made to the extent permitted

```

8  + * by a licensing agreement from ARM Limited.
9  +
10 +
11 + #ifndef COMMON_H
12 + #define COMMON_H
13 +
14 + #include <CL/cl.h>
15 + #include <string>
16 +
17 + /**
18 + * \file common.h
19 + * \brief Functions to simplify the use of OpenCL API.
20 + */
21 +
22 + /**
23 + * \brief Print the profiling information associated with an OpenCL event.
24 + * \details Prints the time spent in the command queue, the time spent waiting before being submitted to a device, and the execution time.
25 + * \param[in] event The event to get profiling information for.
26 + * \return False if an error occurred, otherwise true.
27 + */
28 + bool printProfilingInfo(cl_event event);
29 +
30 + /**
31 + * \brief Print a list of the 2D OpenCL image formats supported.
32 + * \param[in] context The OpenCL context to use.
33 + * \return False if an error occurred, otherwise true.
34 + */
35 + bool printSupported2DImageFormats(cl_context context);
36 +
37 + /**
38 + * \brief Convert cl_channel_order values into their string form.
39 + * \details Uses the channel order definitions from cl.h.
40 + * \param[in] channelOrder The channel order value to convert.
41 + * \return The string form of the channel order.
42 + */
43 + std::string imageChannelOrderToString(cl_channel_order channelOrder);
44 +
45 + /**
46 + * \brief Convert cl_channel_type values into their string form.
47 + * \details Uses the channel data type definitions from cl.h.
48 + * \param[in] channelDataType The channel data type value to convert.
49 + * \return The string form of the channel data type.
50 + */
51 + std::string imageChannelDataTypeToString(cl_channel_type channelDataType);
52 +
53 + /**
54 + * \brief Release any OpenCL objects that have been created.
55 + * \details If any of the OpenCL objects passed in are not NULL, they will be freed using the appropriate OpenCL function.
56 + * \return False if an error occurred, otherwise true.
57 + */
58 + bool cleanUpOpenCL(cl_context context, cl_command_queue commandQueue, cl_program program, cl_kernel kernel, cl_mem* memoryObjects,
59 +
60 + /**
61 + * \brief Create an OpenCL context on a GPU on the first available platform.
62 + * \param[out] context Pointer to the created OpenCL context.
63 + * \return False if an error occurred, otherwise true.
64 + */
65 + bool createContext(cl_context* context);
66 +
67 + /**
68 + * \brief Create an OpenCL command queue for a given context.
69 + * \param[in] context The OpenCL context to use.
70 + * \param[out] commandQueue The created OpenCL command queue.
71 + * \param[out] device The device in which the command queue is created.
72 + * \return False if an error occurred, otherwise true.
73 + */
74 + bool createCommandQueue(cl_context context, cl_command_queue* commandQueue, cl_device_id* device);
75 +
76 + /**

```

```

77 + * \brief Create an OpenCL program from a given file and compile it.
78 + * \param[in] context The OpenCL context in use.
79 + * \param[in] device The OpenCL device to compile the kernel for.
80 + * \param[in] filename Name of the file containing the OpenCL kernel code to load.
81 + * \param[out] program The created OpenCL program object.
82 + * \return False if an error occurred, otherwise true.
83 + */
84 + bool createProgram(cl_context context, cl_device_id device, std::string filename, cl_program* program);
85 +
86 + /**
87 + * \brief Convert OpenCL error numbers to their string form.
88 + * \details Uses the error number definitions from cl.h.
89 + * \param[in] errorNumber The error number returned from an OpenCL command.
90 + * \return A name of the error.
91 + */
92 + std::string errorNumberToString(cl_int errorNumber);
93 +
94 + /**
95 + * \brief Check an OpenCL error number for errors.
96 + * \details If errorNumber is not CL_SUCCESS, the function will print the string form of the error number.
97 + * \param[in] errorNumber The error number returned from an OpenCL command.
98 + * \return False if errorNumber != CL_SUCCESS, true otherwise.
99 + */
100 + bool checkSuccess(cl_int errorNumber);
101 +
102 + /**
103 + * \brief Query an OpenCL device to see if it supports an extension.
104 + * \param[in] device The device to query.
105 + * \param[in] extension The string name of the extension to query for.
106 + * \return True if the extension is supported on the given device, false otherwise.
107 + */
108 + bool isExtensionSupported(cl_device_id device, std::string extension);
109 + #endif

```

▼ 340 common/image.cpp □

...	...	@@ -0,0 +1,340 @@
1		+ /*
2		+ * This confidential and proprietary software may be used only as
3		+ * authorised by a licensing agreement from ARM Limited
4		+ * (C) COPYRIGHT 2013 ARM Limited
5		+ * ALL RIGHTS RESERVED
6		+ * The entire notice above must be reproduced on all authorised
7		+ * copies and copies may only be made to the extent permitted
8		+ * by a licensing agreement from ARM Limited.
9		+ */
10		+
11		+ #include "image.h"
12		+ #include <fstream>
13		+ #include <iostream>
14		+
15		+ using namespace std;
16		+
17		+ bool saveToBitmap(string filename, int width, int height, const unsigned char* imageData)
18		+ {
19		+ /* Try and open the file for writing. */
20		+ fstream imageFile(filename.c_str(), ios::out);
21		+ if(!imageFile.is_open())
22		+ {
23		+ cerr << "Unable to open " << filename << ". " << __FILE__ << ":"<< __LINE__ << endl;
24		+ return false;
25		+ }
26		+
27		+ /* Magic header bits come from the bitmap specification. */
28		+ const struct bitmapMagic magic = { {0x42, 0x4d} };
29		+ struct bitmapHeader header;
30		+ struct bitmapInformationHeader informationHeader;
31		+

```

32 + /*
33 +  * Each row of the data must be padded to a multiple of 4 bytes according to the bitmap specification.
34 +  * This method uses three bytes per pixel (hence the width * 3).
35 +  * Then we increase the padding until it is divisible by 4.
36 + */
37 + int paddedWidth = width * 3;
38 + while((paddedWidth % 4) != 0)
39 + {
40 +     paddedWidth++;
41 + }
42 +
43 + /* Setup the bitmap header. */
44 + header.fileSize = sizeof(magic) + sizeof(header) + sizeof(informationHeader) + paddedWidth * height;
45 + header.creator1 = 0;
46 + header.creator2 = 0;
47 + header.offset = sizeof(magic) + sizeof(header) + sizeof(informationHeader);
48 +
49 + /* Setup the bitmap information header. */
50 + informationHeader.size = sizeof(informationHeader);
51 + informationHeader.width = width;
52 + informationHeader.height = height;
53 + informationHeader.numberOfColorPlanes = 1;
54 + informationHeader.bitsPerPixel = 24;
55 + informationHeader.compressionType = 0;
56 + informationHeader.rawBitmapSize = paddedWidth * height;
57 + informationHeader.horizontalResolution = 2835;
58 + informationHeader.verticalResolution = 2835;
59 + informationHeader.numberOfColors = 0;
60 + informationHeader.numberOfImportantColors = 0;
61 +
62 + /* Try to write the header data. */
63 + if(imageFile.write((char*)&magic, sizeof(magic)).bad() ||
64 +     imageFile.write((char*)&header, sizeof(header)).bad() ||
65 +     imageFile.write((char*)&informationHeader, sizeof(informationHeader)).bad())
66 + {
67 +     cerr << "Failed to write bitmap header. " << __FILE__ << ":" << __LINE__ << endl;
68 +     if (imageFile.is_open())
69 +     {
70 +         imageFile.close();
71 +     }
72 +     return false;
73 + }
74 +
75 + for (int y = height - 1; y >= 0; y--)
76 + {
77 +     for (int x = 0; x < width; x++)
78 +     {
79 +         /* The pixels lie in RGB order in memory, we need to store them in BGR order. */
80 +         unsigned char rgb[3];
81 +         rgb[2] = imageData[3 * (y * informationHeader.width + x) + 0];
82 +         rgb[1] = imageData[3 * (y * informationHeader.width + x) + 1];
83 +         rgb[0] = imageData[3 * (y * informationHeader.width + x) + 2];
84 +
85 +         if(imageFile.write((char*)&rgb, 3).bad())
86 +         {
87 +             if (imageFile.is_open())
88 +             {
89 +                 imageFile.close();
90 +             }
91 +             return false;
92 +         }
93 +     }
94 + }
95 + /*
96 +  * At the end of the row, write out blank bytes to ensure the row length is
97 +  * a multiple of 4 bytes (part of the bitmap specification).
98 + */
99 + for (int x = width * 3; x < paddedWidth; x++)
100 + {
101 +     char b = 0;

```

```

101 +         if(imageFile.write(&b, 1).bad())
102 +     {
103 +         if (imageFile.is_open())
104 +         {
105 +             imageFile.close();
106 +         }
107 +         return false;
108 +     }
109 + }
110 +
111 +
112 + return true;
113 + }
114 +
115 + bool loadFromBitmap(const string filename, int* const width, int* const height, unsigned char **imageData)
116 + {
117 +     /* Try and open the file for reading. */
118 +     ifstream imageFile(filename.c_str(), ios::in);
119 +     if (!imageFile.is_open())
120 +     {
121 +         cerr << "Unable to open " << filename << ". " << __FILE__ << ":"<< __LINE__ << endl;
122 +         return false;
123 +     }
124 +
125 + /*
126 + * Read and check the headers to make sure we support the type of bitmap passed in.
127 + */
128 + struct bitmapMagic magic;
129 + struct bitmapHeader header;
130 + struct bitmapInformationHeader informationHeader;
131 +
132 + if (imageFile.read((char*)&magic, sizeof(magic)).bad() || magic.magic[0] != 0x42 || magic.magic[1] != 0x4d)
133 + {
134 +     /* Not a valid BMP file header */
135 +     cerr << "Not a valid BMP file header. " << __FILE__ << ":"<< __LINE__ << endl;
136 +     if (imageFile.is_open())
137 +     {
138 +         imageFile.close();
139 +     }
140 +     return false;
141 + }
142 +
143 + /* 54 is the standard size of a bitmap header. */
144 + if (imageFile.read((char*)&header, sizeof(header)).bad() || header.offset != 54)
145 + {
146 +     /* Not a supported BMP format */
147 +     cerr << "Not a supported BMP format. " << __FILE__ << ":"<< __LINE__ << endl;
148 +     if (imageFile.is_open())
149 +     {
150 +         imageFile.close();
151 +     }
152 +     return false;
153 + }
154 +
155 + if (imageFile.read((char*)&informationHeader, sizeof(informationHeader)).bad() || informationHeader.compressionType != 0 || informationHeader.height == 0)
156 + {
157 +     /* We only support uncompressed 24-bits per pixel RGB */
158 +     cerr << "We only support uncompressed 24-bits per pixel RGB. " << __FILE__ << ":"<< __LINE__ << endl;
159 +     if (imageFile.is_open())
160 +     {
161 +         imageFile.close();
162 +     }
163 +     return false;
164 + }
165 +
166 + int row_delta;
167 + int first_row;
168 + int after_last_row;
169 + if (informationHeader.height > 0)

```

```

170 + {
171 +     /* The image is stored upside down in memory */
172 +     row_delta = -1;
173 +     first_row = informationHeader.height - 1;
174 +     after_last_row = -1;
175 + }
176 + else
177 + {
178 +     informationHeader.height = -informationHeader.height;
179 +     row_delta = 1;
180 +     first_row = 0;
181 +     after_last_row = informationHeader.height;
182 + }
183 +
184 + /* Calculate the paddle of the image to skip it when reading the buffer. */
185 + int paddedWidth = informationHeader.width * 3;
186 + while((paddedWidth % 4) != 0)
187 + {
188 +     paddedWidth++;
189 + }
190 +
191 + /* 24-bits per pixel means 3 bytes of data per pixel. */
192 + int size = 3 * paddedWidth * informationHeader.height;
193 + imageData = new unsigned char[size];
194 + unsigned char* readBuffer = new unsigned char[size];
195 +
196 + /* Try to read in the image data. */
197 + if (imageFile.read((char*)readBuffer, size).bad())
198 + {
199 +     cerr << "Error reading main image data. " << __FILE__ << ":" << __LINE__ << endl;
200 +     if (imageFile.is_open())
201 +     {
202 +         imageFile.close();
203 +     }
204 +     if (readBuffer != NULL)
205 +     {
206 +         delete [] readBuffer;
207 +     }
208 +     return false;
209 + }
210 +
211 + int readBufferIndex = 0;
212 + /* Loop through the image data and store it at the output data location. */
213 + for (int y = first_row; y != after_last_row; y += row_delta)
214 + {
215 +     for (int x = 0; x < informationHeader.width; x++)
216 +     {
217 +         /* The pixels lie in BGR order, we need to resort them into RGB */
218 +         (*imageData)[3 * (y * informationHeader.width + x) + 0] = readBuffer[readBufferIndex + 2];
219 +         (*imageData)[3 * (y * informationHeader.width + x) + 1] = readBuffer[readBufferIndex + 1];
220 +         (*imageData)[3 * (y * informationHeader.width + x) + 2] = readBuffer[readBufferIndex + 0];
221 +
222 +         readBufferIndex += 3;
223 +     }
224 +     /* Skip padding. */
225 +     readBufferIndex += paddedWidth - (informationHeader.width * 3);
226 + }
227 +
228 + *width = informationHeader.width;
229 + *height = informationHeader.height;
230 +
231 + if (imageFile.is_open())
232 + {
233 +     imageFile.close();
234 + }
235 + if (readBuffer != NULL)
236 + {
237 +     delete [] readBuffer;
238 + }

```

```

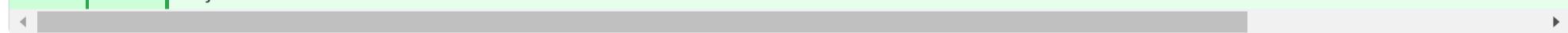
239 +
240 +     return true;
241 +
242 +
243 + bool luminanceToRGB(const unsigned char* luminanceData, unsigned char* rgbData, int width, int height)
244 +
245 + {
246 +     if (luminanceData == NULL)
247 +     {
248 +         cerr << "luminanceData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
249 +         return false;
250 +
251 +     if (rgbData == NULL)
252 +     {
253 +         cerr << "rgbData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
254 +         return false;
255 +     }
256 +
257 +     for (int n = width * height - 1; n >= 0; --n)
258 +     {
259 +         unsigned char d = luminanceData[n];
260 +         rgbData[3 * n + 0] = d;
261 +         rgbData[3 * n + 1] = d;
262 +         rgbData[3 * n + 2] = d;
263 +     }
264 +     return true;
265 + }
266 +
267 + bool RGBToLuminance(const unsigned char* const rgbData, unsigned char* const luminanceData, int width, int height)
268 +
269 + {
270 +     if (rgbData == NULL)
271 +     {
272 +         cerr << "rgbData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
273 +         return false;
274 +     }
275 +
276 +     if (luminanceData == NULL)
277 +     {
278 +         cerr << "luminanceData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
279 +         return false;
280 +
281 +     for (int n = width * height - 1; n >= 0; --n)
282 +     {
283 +         float r = rgbData[3 * n + 0];
284 +         float g = rgbData[3 * n + 1];
285 +         float b = rgbData[3 * n + 2];
286 +         luminanceData[n] = (unsigned char) (0.2126f * r + 0.7152f * g + 0.0722f * b);
287 +     }
288 +     return true;
289 + }
290 +
291 + bool RGBToRGBA(const unsigned char* const rgbData, unsigned char* const rgbaData, int width, int height)
292 +
293 + {
294 +     if (rgbData == NULL)
295 +     {
296 +         cerr << "rgbData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
297 +         return false;
298 +
299 +     if (rgbaData == NULL)
300 +     {
301 +         cerr << "rgbaData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
302 +         return false;
303 +     }
304 +
305 +     for (int n = 0; n < width * height; n++)
306 +     {
307 +         /* Copy the RGB components directly. */

```

```

308 +         rgbaData[4 * n + 0] = rgbData[3 * n + 0];
309 +         rgbaData[4 * n + 1] = rgbData[3 * n + 1];
310 +         rgbaData[4 * n + 2] = rgbData[3 * n + 2];
311 +
312 +         /* Set the alpha channel to 255 (fully opaque). */
313 +         rgbaData[4 * n + 3] = (unsigned char)255;
314 +     }
315 +     return true;
316 + }
317 +
318 + bool RGBAToRGB(const unsigned char* const rgbaData, unsigned char* const rgbData, int width, int height)
319 + {
320 +     if (rgbaData == NULL)
321 +     {
322 +         cerr << "rgbaData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
323 +         return false;
324 +     }
325 +
326 +     if (rgbData == NULL)
327 +     {
328 +         cerr << "rgbData cannot be NULL. " << __FILE__ << ":" << __LINE__ << endl;
329 +         return false;
330 +     }
331 +
332 +     for (int n = 0; n < width * height; n++)
333 +     {
334 +         /* Copy the RGB components but throw away the alpha channel. */
335 +         rgbData[3 * n + 0] = rgbaData[4 * n + 0];
336 +         rgbData[3 * n + 1] = rgbaData[4 * n + 1];
337 +         rgbData[3 * n + 2] = rgbaData[4 * n + 2];
338 +     }
339 +     return true;
340 + }

```



139 common/image.h	
...	@@ -0,0 +1,139 @@
1	+ /* + * This confidential and proprietary software may be used only as + * authorised by a licensing agreement from ARM Limited + * (C) COPYRIGHT 2013 ARM Limited + * ALL RIGHTS RESERVED + * The entire notice above must be reproduced on all authorised + * copies and copies may only be made to the extent permitted + * by a licensing agreement from ARM Limited. + */
10	+
11	+ #ifndef IMAGE_H
12	+ #define IMAGE_H
13	+
14	+ #include <CL/cl.h>
15	+ #include <string>
16	+
17	+ /** + * \file image.h + * \brief Functions for working with bitmap images. + */
21	+
22	+ /** + * \brief Bitmap magic file header numbers. + * \details See the BMP file format specification for more details. + */
26	+ struct bitmapMagic
27	+ {
28	+ unsigned char magic[2];
29	+ };
30	+
31	+ /**

```

32 + * \brief Bitmap header.
33 + * \details See the BMP file format specification for more details.
34 + */
35 + struct bitmapHeader
36 +
37 + uint32_t fileSize; /*< \brief Total size of the bitmap in bytes. */
38 + uint16_t creator1; /*< \brief Reserved field which can be application defined. */
39 + uint16_t creator2; /*< \brief Reserved field which can be application defined. */
40 + uint32_t offset; /*< \brief Offset in bytes to the beginning of the image data block. */
41 +
42 +
43 + /**
44 + * \brief Bitmap information header.
45 + * \details See the BMP file format specification for more details.
46 + */
47 + struct bitmapInformationHeader
48 +
49 + uint32_t size; /*< Size of the information headers in bytes. */
50 + int32_t width; /*< Width of the image. */
51 + int32_t height; /*< Height of the image. */
52 + uint16_t numberOfColorPlanes; /*< The number of colour planes. The only legal value is 1. */
53 + uint16_t bitsPerPixel; /*< Number of bits per pixel in the image. */
54 + uint32_t compressionType; /*< Compression type. Use 0 for uncompressed. */
55 + uint32_t rawBitmapSize; /*< Size of the image data including padding (does not include the size of the headers). */
56 + int32_t horizontalResolution; /*< Resolution is in pixels per meter. */
57 + int32_t verticalResolution; /*< Resolution is in pixels per meter. */
58 + uint32_t numberOfColors; /*< Number of colours in the image, can be left as 0. */
59 + uint32_t numberOfImportantColors; /*< Generally ignored by applications. */
60 +
61 +
62 + /**
63 + * \brief Save data as a bitmap image.
64 + * \details Save a block of 24-bits per pixel RGB image data out as a bitmap image.
65 + *          Output bitmap is uncompressed.
66 + * \param[in] filename The filename to use for the bitmap (should typically have the extension .bmp).
67 + * \param[in] width The width of the image to save (in pixels).
68 + * \param[in] height The height of the image to save (in pixels).
69 + * \param[in] imageData Pointer to the data block to save. Data must be 8-bits per component RGB and be in row-major format.
70 + *          The size of the data block must be 3 * width * height bytes.
71 + * \return False if an error occurred, true otherwise.
72 + */
73 + bool saveToBitmap(std::string filename, int width, int height, const unsigned char* imageData);
74 +
75 + /**
76 + * \brief Load data from a bitmap image.
77 + * \details Load a block of 24-bits per pixel RGB image data from a bitmap image.
78 + *          Only supports uncompressed bitmaps.
79 + * \param[in] filename The filename of the bitmap to load.
80 + * \param[out] width Pointer to where the width of the image (in pixels) will be stored.
81 + * \param[out] height Pointer to where the height of the image (in pixels) will be stored.
82 + * \param[out] imageData Pointer to the data block loaded. Data is loaded as 8-bits per component RGB and in row-major format.
83 + *          The size of the data block is 3 * width * height bytes. Data must be deleted by the calling application.
84 + * \return False if an error occurred, true otherwise.
85 + */
86 + bool loadFromBitmap(std::string filename, int* width, int* height, unsigned char ** imageData);
87 +
88 + /**
89 + * \brief Convert 8-bits per pixel luminance data to 24-bits per pixel RGB data.
90 + * \details Each RGB pixel is created using the luminance value for each component.
91 + *          For example, a pixel with luminance of 125 will convert into an RGB pixel with values R = 125, G = 125, and B = 125.
92 + * \param[in] luminanceData Pointer to a block of 8-bits per pixel luminance data. Must be width * height bytes in size.
93 + * \param[out] rgbData Pointer to a data block containing the 24-bits per pixel RGB data.
94 + *          The data block must be initialised with a size of 3 * width * height bytes.
95 + * \param[in] width The width of the image.
96 + * \param[in] height The height of the image.
97 + * \return False if an error occurred, true otherwise.
98 + */
99 + bool luminanceToRGB(const unsigned char* luminanceData, unsigned char* rgbData, int width, int height);
100 +

```

```

101 + /**
102 + * \brief Convert 24-bits per pixel RGB data to 8-bits per pixel luminance data.
103 + * \details Each luminance pixel is created using a weighted sum of the RGB values.
104 + *          The weightings are 0.2126R, 0.7152G, and 0.0722B.
105 + * \param[in] rgbData Pointer to a block of 24-bits per pixel RGB data. Must be 3 * width * height bytes in size.
106 + * \param[out] luminanceData Pointer to a data block containing the 8-bits per pixel luminanceData data.
107 + *          The data block must be initialised with a size of width * height bytes.
108 + * \param[in] width The width of the image.
109 + * \param[in] height The height of the image.
110 + * \return False if an error occurred, true otherwise.
111 + */
112 + bool RGBToLuminance(const unsigned char* rgbData, unsigned char* luminanceData, int width, int height);
113 +
114 +
115 + /**
116 + * \brief Convert 24-bits per pixel RGB data to 32-bits per pixel RGBA data.
117 + * \details The alpha values are all set to 255.
118 + * \param[in] rgbData Pointer to a block of 24-bits per pixel RGB data. Must be 3 * width * height bytes in size.
119 + * \param[out] rgbaData Pointer to a data block containing the 32-bits per pixel RGBA data.
120 + *          The data block must be initialised with a size of 4 * width * height bytes.
121 + * \param[in] width The width of the image.
122 + * \param[in] height The height of the image.
123 + * \return False if an error occurred, true otherwise.
124 + */
125 + bool RGBToRGBA(const unsigned char* rgbData, unsigned char* rgbaData, int width, int height);
126 +
127 + /**
128 + * \brief Convert 32-bits per pixel RGBA data to 24-bits per pixel RGB data.
129 + * \details The alpha values are discarded.
130 + * \param[in] rgbaData Pointer to a block of 32-bits per pixel RGBA data. Must be 4 * width * height bytes in size.
131 + * \param[out] rgbData Pointer to a data block containing the 24-bits per pixel RGB data.
132 + *          The data block must be initialised with a size of 3 * width * height bytes.
133 + * \param[in] width The width of the image.
134 + * \param[in] height The height of the image.
135 + * \return False if an error occurred, true otherwise.
136 + */
137 + bool RGBAToRGB(const unsigned char* rgbaData, unsigned char* rgbData, int width, int height);
138 +
139 + #endif

```

175 docs/html/64_bit_integer_8cl.html

...	...	@@ -0,0 +1,175 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/64_bit_integer/assets/64_
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);
		15 + </script>
		16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
		17 + <script type="text/javascript" src="search/search.js"></script>
		18 + <script type="text/javascript">
		19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });
		20 + </script>
		21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
		22 + </head>
		23 + <body>
		24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		25 + <div id="titlearea">

```

26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +               onfocus="searchBox.OnSearchFieldFocus(true)"
57 +               onblur="searchBox.OnSearchFieldFocus(false)"
58 +               onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('64_bit_integer_8cl.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 +     onmouseover="return searchBox.OnSearchSelectShow()"
91 +     onmouseout="return searchBox.OnSearchSelectHide()"
92 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
93 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
94 + </div><!-- iframe showing the search results (closed by default) -->

```

```

95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">64_bit_integer.cl File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +
109 +   <p><a href="64_bit_integer_8cl_source.html">Go to the source code of this file.</a></p>
110 + <table class="memberdecls">
111 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
112 +     Functions</h2></td></tr>
113 +   <tr class="memitem:a6bcf29a04ecbeff8aa2ed8fe75539098"><td class="memItemLeft" align="right" valign="top">__kernel void&#160;</td><td class="memItemRight" valign="top">
114 +     <b>Long</b> data type (64-bit integer) kernel. </td>
115 +   <tr class="separator:a6bcf29a04ecbeff8aa2ed8fe75539098"><td class="memSeparator" colspan="2">&#160;</td></tr>
116 + </table>
117 + <h2 class="groupheader">Function Documentation</h2>
118 + <a class="anchor" id="a6bcf29a04ecbeff8aa2ed8fe75539098"></a>
119 + <div class="memitem">
120 +   <div class="memproto">
121 +     <table class="memname">
122 +       <tr>
123 +         <td class="memname">__kernel void long_vectors </td>
124 +         <td>(</td>
125 +           <td class="paramtype">__global uchar *restrict&#160;</td>
126 +           <td class="paramname"><em>imagePixels</em>, </td>
127 +         </tr>
128 +         <tr>
129 +           <td class="paramkey"></td>
130 +           <td></td>
131 +           <td class="paramtype">__global ulong *restrict&#160;</td>
132 +           <td class="paramname"><em>squareOfPixels</em>, </td>
133 +         </tr>
134 +         <tr>
135 +           <td class="paramkey"></td>
136 +           <td></td>
137 +           <td class="paramtype">__global ulong *restrict&#160;</td>
138 +           <td class="paramname"><em>sumOfPixels</em>&#160;</td>
139 +         </tr>
140 +         <tr>
141 +           <td></td>
142 +           <td>)</td>
143 +           <td></td><td></td>
144 +         </tr>
145 +       </table>
146 +     </div><div class="memdoc">
147 +
148 +       <p>Long data type (64-bit integer) kernel. </p>
149 +       <p>This kernel loads 8 pixel values to calculate the square of each pixel value. Then it accumulates the square of pixels and the sum of squares of pixels. </p>
150 +       <dl class="params"><dt>Parameters</dt><dd>
151 +         <table class="params">
152 +           <tr><td class="paramdir">[in]</td><td class="paramname">imagePixels</td><td>Input array with image pixels. </td></tr>
153 +           <tr><td class="paramdir">[in]</td><td class="paramname">squareOfPixels</td><td>Sum of the square of pixel values. </td></tr>
154 +           <tr><td class="paramdir">[out]</td><td class="paramname">sumOfPixels</td><td>Sum of pixel values. </td></tr>
155 +         </table>
156 +       </dd>
157 +     </dl>
158 +
159 +     <p>Definition at line <a class="el" href="64_bit_integer_8cl_source.html#l00024">24</a> of file <a class="el" href="64_bit_integer.cl">64_bit_integer.cl</a>.
160 +
161 +   </div>
162 + </div>
163 + </div><!-- contents -->
```

```
164 + </div><!-- doc-content -->
165 + <!-- start footer part -->
166 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
167 +   <ul>
168 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
169 +   <li class="footer">
170 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
171 +   </li>
172 + </ul>
173 + </div>
174 + </body>
175 + </html>
```

▼ 4 docs/html/64_bit_integer_8cl.js □

```
... ... @@ -0,0 +1,4 @@
1 + var 64_bit_integer_8cl =
2 + [
3 +   [ "long_vectors", "64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8fe75539098", null ]
4 + ]; ⊖
```

▼ 183 docs/html/64_bit_integer_8cl_source.html □

```
... ... @@ -0,0 +1,183 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/64_bit_integer/assets/64_
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
```

```

45+     <li><a href="index.html"><span>Home</span></a></li>
46+     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47+     <li class="current"><a href="files.html"><span>Files</span></a></li>
48+
49+     <div id="MSearchBox" class="MSearchBoxInactive">
50+       <span class="left">
51+         
55+         <input type="text" id="MTextField" value="Search" accesskey="S"
56+           onfocus="searchBox.OnSearchFieldFocus(true)"
57+           onblur="searchBox.OnSearchFieldFocus(false)"
58+           onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+       </span><span class="right">
60+         <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61+       </span>
62+     </div>
63+
64+   </ul>
65+ </div>
66+ <div id="navrow2" class="tabs2">
67+   <ul class="tablist">
68+     <li><a href="files.html"><span>File&#160;List</span></a></li>
69+     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70+   </ul>
71+ </div>
72+ </div><!-- top -->
73+ <div id="side-nav" class="ui-resizable side-nav-resizable">
74+   <div id="nav-tree">
75+     <div id="nav-tree-contents">
76+       <div id="nav-sync" class="sync"></div>
77+     </div>
78+   </div>
79+   <div id="splitbar" style="-moz-user-select:none;">
80+     <div class="ui-resizable-handle">
81+       </div>
82+   </div>
83+   <script type="text/javascript">
84+     $(document).ready(function(){initNavTree('64_bit_integer_8cl_source.html','');});
85+   </script>
86+   <div id="doc-content">
87+     <!-- window showing the filter options -->
88+     <div id="MSearchSelectWindow"
89+       onmouseover="return searchBox.OnSearchSelectShow()"
90+       onmouseout="return searchBox.OnSearchSelectHide()"
91+       onkeydown="return searchBox.OnSearchSelectKey(event)">
92+       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93+
94+     <!-- iframe showing the search results (closed by default) -->
95+     <div id="MSearchResultsWindow">
96+       <iframe src="javascript:void(0)" frameborder="0"
97+         name="MSearchResults" id="MSearchResults">
98+     </iframe>
99+   </div>
100+
101+   <div class="header">
102+     <div class="headertitle">
103+       <div class="title">64_bit_integer.cl</div> </div>
104+     </div><!--header-->
105+   <div class="contents">
106+     <a href="64_bit_integer_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100002">2</a><span class="comment"> * This confidential and propri
107+     <div class="line"><a name="100003">3</a><span class="comment"> * authorised by a licensing ag
108+     <div class="line"><a name="100004">4</a><span class="comment"> * (C) COPYRIGHT 2013 ARM Li
109+     <div class="line"><a name="100005">5</a><span class="comment"> * ALL RIGHTS RESERVED<
110+     <div class="line"><a name="100006">6</a><span class="comment"> * The entire notice above must
111+     <div class="line"><a name="100007">7</a><span class="comment"> * copies and copies may only b
112+     <div class="line"><a name="100008">8</a><span class="comment"> * by a licensing agreement fro

```

```

114 + <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 + <div class="line"><a name="100010"></a><span class="lineno">10</span>&#160;</div>
116 + <div class="line"><a name="100020"></a><span class="lineno">20</span>&#160;<span class="comment">/* [Enable atom_add extension]
117 + <div class="line"><a name="100021"></a><span class="lineno">21</span>&#160;<span class="preprocessor">#pragma OPENCL EXTENSION cl_khr_atomic_counters : enable
118 + <div class="line"><a name="100022"></a><span class="lineno">22</span>&#160;<span class="preprocessor">/</span><span class="comment">
119 + <div class="line"><a name="100023"></a><span class="lineno">23</span>&#160;</div>
120 + <div class="line"><a name="100024"></a><span class="lineno"><a class="code" href="64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8">
121 + <div class="line"><a name="100025"></a><span class="lineno">25</span>&#160;          __global ulong* restrict s
122 + <div class="line"><a name="100026"></a><span class="lineno">26</span>&#160;          __global ulong* restrict s
123 + <div class="line"><a name="100027"></a><span class="lineno">27</span>&#160;{</div>
124 + <div class="line"><a name="100028"></a><span class="lineno">28</span>&#160;      <span class="comment"> /*</span></div>
125 + <div class="line"><a name="100029"></a><span class="lineno">29</span>&#160;<span class="comment"> * Set i to be the ID of th
126 + <div class="line"><a name="100030"></a><span class="lineno">30</span>&#160;<span class="comment"> * If the global work size
127 + <div class="line"><a name="100031"></a><span class="lineno">31</span>&#160;<span class="comment"> * then n kernels will be r
128 + <div class="line"><a name="100032"></a><span class="lineno">32</span>&#160;<span class="comment"> */</span></div>
129 + <div class="line"><a name="100033"></a><span class="lineno">33</span>&#160;      <span class="keywordtype">int</span> i = get_glob
130 + <div class="line"><a name="100034"></a><span class="lineno">34</span>&#160;</div>
131 + <div class="line"><a name="100035"></a><span class="lineno">35</span>&#160;      <span class="comment"> /* [Squares and sums]*</span>
132 + <div class="line"><a name="100036"></a><span class="lineno">36</span>&#160;      <span class="comment"> /* Load 8 pixels (char) and
133 + <div class="line"><a name="100037"></a><span class="lineno">37</span>&#160;      ushort8 pixelShort = convert_ushort8(vload8(i, in
134 + <div class="line"><a name="100038"></a><span class="lineno">38</span>&#160;      <span class="comment"> /* Square of 255 < 2 ^ 1
135 + <div class="line"><a name="100039"></a><span class="lineno">39</span>&#160;      ushort8 newSquareShort = pixelShort * pixelShort;
136 + <div class="line"><a name="100040"></a><span class="lineno">40</span>&#160;</div>
137 + <div class="line"><a name="100041"></a><span class="lineno">41</span>&#160;      <span class="comment"> /*</span></div>
138 + <div class="line"><a name="100042"></a><span class="lineno">42</span>&#160;<span class="comment"> * Convert original pixel v
139 + <div class="line"><a name="100043"></a><span class="lineno">43</span>&#160;<span class="comment"> * all the vectors together
140 + <div class="line"><a name="100044"></a><span class="lineno">44</span>&#160;<span class="comment"> * respective accumulators.
141 + <div class="line"><a name="100045"></a><span class="lineno">45</span>&#160;<span class="comment"> */</span></div>
142 + <div class="line"><a name="100046"></a><span class="lineno">46</span>&#160;      ulong8 pixelLong = convert_ulong8(pixelShort);</c
143 + <div class="line"><a name="100047"></a><span class="lineno">47</span>&#160;      ulong8 newSquareLong = convert_ulong8(newSquareSh
144 + <div class="line"><a name="100048"></a><span class="lineno">48</span>&#160;</div>
145 + <div class="line"><a name="100049"></a><span class="lineno">49</span>&#160;      <span class="comment"> /*</span></div>
146 + <div class="line"><a name="100050"></a><span class="lineno">50</span>&#160;<span class="comment"> * Use vector data type su
147 + <div class="line"><a name="100051"></a><span class="lineno">51</span>&#160;<span class="comment"> * until we obtain one sing
148 + <div class="line"><a name="100052"></a><span class="lineno">52</span>&#160;<span class="comment"> */</span></div>
149 + <div class="line"><a name="100053"></a><span class="lineno">53</span>&#160;      ulong4 sumLongPixels1 = pixelLong.hi + pixelLong.
150 + <div class="line"><a name="100054"></a><span class="lineno">54</span>&#160;      ulong2 sumLongPixels2 = sumLongPixels1.hi + sumLo
151 + <div class="line"><a name="100055"></a><span class="lineno">55</span>&#160;      ulong sumLongPixels3 = sumLongPixels2.hi + sumLo
152 + <div class="line"><a name="100056"></a><span class="lineno">56</span>&#160;</div>
153 + <div class="line"><a name="100057"></a><span class="lineno">57</span>&#160;      ulong4 sumLongSquares1 = newSquareLong.hi + newSq
154 + <div class="line"><a name="100058"></a><span class="lineno">58</span>&#160;      ulong2 sumLongSquares2 = sumLongSquares1.hi + sun
155 + <div class="line"><a name="100059"></a><span class="lineno">59</span>&#160;      ulong sumLongSquares3 = sumLongSquares2.hi + sumL
156 + <div class="line"><a name="100060"></a><span class="lineno">60</span>&#160;      <span class="comment"> /* [Squares and sums]*</span>
157 + <div class="line"><a name="100061"></a><span class="lineno">61</span>&#160;</div>
158 + <div class="line"><a name="100062"></a><span class="lineno">62</span>&#160;      <span class="comment"> /*</span></div>
159 + <div class="line"><a name="100063"></a><span class="lineno">63</span>&#160;<span class="comment"> * As all the kernels are a
160 + <div class="line"><a name="100064"></a><span class="lineno">64</span>&#160;<span class="comment"> * and squareOfPixels at th
161 + <div class="line"><a name="100065"></a><span class="lineno">65</span>&#160;<span class="comment"> * we use atom_add to ensur
162 + <div class="line"><a name="100066"></a><span class="lineno">66</span>&#160;<span class="comment"> * at a time can access the
163 + <div class="line"><a name="100067"></a><span class="lineno">67</span>&#160;<span class="comment"> * This means that this ope
164 + <div class="line"><a name="100068"></a><span class="lineno">68</span>&#160;<span class="comment"> * so we want to use it onl
165 + <div class="line"><a name="100069"></a><span class="lineno">69</span>&#160;<span class="comment"> */</span></div>
166 + <div class="line"><a name="100070"></a><span class="lineno">70</span>&#160;      <span class="comment"> /* [Atomic transaction] */<
167 + <div class="line"><a name="100071"></a><span class="lineno">71</span>&#160;      atom_add(sumOfPixels, sumLongPixels3);</div>
168 + <div class="line"><a name="100072"></a><span class="lineno">72</span>&#160;      atom_add(squareOfPixels, sumLongSquares3);</div>
169 + <div class="line"><a name="100073"></a><span class="lineno">73</span>&#160;      <span class="comment"> /* [Atomic transaction] */<
170 + <div class="line"><a name="100074"></a><span class="lineno">74</span>&#160;}</div>
171 + </div><!-- fragment --></div><!-- contents -->
172 + </div><!-- doc-content -->
173 + <!-- start footer part -->
174 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
175 +   <ul>
176 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class
177 +       <li class="footer">
178 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
179 +       </li>
180 +     </ul>
181 +   </div>
182 + </body>

```

164 docs/html/64_bit_integer_8cpp.html

```
... ... @@ -0,0 +1,164 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/64_bit_integer/64_bit_int
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('64_bit_integer_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">64_bit_integer.cpp File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 + <div class="textblock"><code>#include "<a class="el" href="common_8h_source.html">common.h</a>"</code><br/>
109 + <code>#include "<a class="el" href="image_8h_source.html">image.h</a>"</code><br/>
110 + <code>#include <CL/cl.h></code><br/>
111 + <code>#include <iostream></code><br/>
112 + <code>#include <fstream></code><br/>
113 + <code>#include <sstream></code><br/>
114 + <code>#include <csstddef></code><br/>
115 + <code>#include <cmath></code><br/>
116 + </div>
117 + <p><a href="64_bit_integer_8cpp_source.html">Go to the source code of this file.</a></p>
118 + <table class="memberdecls">
119 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
120 +   Functions</h2></td></tr>
121 + <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;</td><td class="memItemRight" align="left" valign="top">
122 + <tr class="memdesc:a840291bc02cba5474a4cb46a9b9566fe"><td class="mdescLeft">&#160;</td><td class="mdescRight" Long data type (64-bit)>
123 + <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2">&#160;</td></tr>
124 + </table>
125 + <h2 class="groupheader">Function Documentation</h2>
126 + <a class="anchor" id="a840291bc02cba5474a4cb46a9b9566fe"></a>
127 + <div class="memitem">
128 +   <div class="memproto">
129 +     <table class="memname">
130 +       <tr>
131 +         <td class="memname">int main </td>
132 +         <td>(</td>

```

```

133 +         <td class="paramtype">void&#160;</td>
134 +         <td class="paramname"></td><td></td>
135 +         <td></td>
136 +     </tr>
137 +   </table>
138 + </div><div class="memdoc">
139 +
140 + <p>Long data type (64-bit integer) OpenCL example. </p>
141 + <p>An example to calculate, for an image:</p>
142 + <ul>
143 +   <li>the sum of the squares of the pixels values</li>
144 +   <li>sum of the pixels values. Makes use of the long data type and 64-bit atomics. The main calculation code is in an OpenCL kernel</li>
145 + </li>
146 + </ul>
147 +
148 + <p>Definition at line <a class="el" href="64_bit_integer_8cpp_source.html#l00032">32</a> of file <a class="el" href="64_bit_integer_8cpp_source.html#l00032">64_bit_integer_8cpp.h</a>.</p>
149 +
150 + </div>
151 + </div>
152 + </div><!-- contents -->
153 + </div><!-- doc-content -->
154 + <!-- start footer part -->
155 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
156 +   <ul>
157 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">64_bit_integer_8cpp</a></li>
158 +     <li class="footer">
159 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
160 +     </li>
161 +   </ul>
162 + </div>
163 + </body>
164 + </html>

```

4 docs/html/64_bit_integer_8cpp.js

...	...	@@ -0,0 +1,4 @@
		1 + var 64_bit_integer_8cpp =
		2 + [
		3 + ["main", "64_bit_integer_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null]
		4 +]; -

357 docs/html/64_bit_integer_8cpp_source.html

Load diff

Large diffs are not rendered by default.

118 docs/html/64_bit_integer_8dox.html

...	...	@@ -0,0 +1,118 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: tutorials/64_bit_integer.dox File Reference</title>
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);

```

15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 +   <table cellspacing="0" cellpadding="0">
27 +     <tbody>
28 +       <tr style="height: 56px;">
29 +         <td id="projectlogo"></td>
30 +         <td style="padding-left: 0.5em;">
31 +           <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
```

```
84 + $(document).ready(function(){initNavTree('64_bit_integer_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +         name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/64_bit_integer.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="64_bit_integer_8dox.html">64_bit_integer.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▽ BIN +12.2 KB docs/html/alloc_host_ptr.png 

Unable to render code block

▽ 118 ████████ docs/html/annotated.html 

...	...	@@ -0,0 +1,118 @@
1		+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2		+ <html xmlns="http://www.w3.org/1999/xhtml">
3		+ <head>
4		+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5		+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6		+ <title>Mali OpenCL SDK v1.1.0: Class List</title>
7		+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
8		+ <script type="text/javascript" src="jquery.js"></script>
9		+ <script type="text/javascript" src="dynsections.js"></script>
10		+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
11		+ <script type="text/javascript" src="resize.js"></script>
12		+ <script type="text/javascript" src="navtree.js"></script>
13		+ <script type="text/javascript">
14		+ \$(document).ready(initResizable);
15		+ </script>
16		+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
17		+ <script type="text/javascript" src="search/search.js"></script>
18		+ <script type="text/javascript">
19		+ \$(document).ready(function() { searchBox.OnSelectItem(0); });
20		+ </script>
21		+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
22		+ </head>
23		+ <body>

```

24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('annotated.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 + </iframe>

```

```
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Class List</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock">Here are the classes, structs, unions and interfaces with brief descriptions:</div><div class="directory">
101 +   <table class="directory">
102 +     <tr id="row_0_" class="even"><td class="entry">
104 +     <tr id="row_2_" class="even"><td class="entry">
106 +   </div><!-- directory -->
107 + </div><!-- contents -->
108 + </div><!-- doc-content -->
109 + <!-- start footer part -->
110 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
111 +   <ul>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▽ BIN +676 Bytes docs/html/bc_s.png

Unable to render code block

▽ BIN +147 Bytes docs/html/bdwn.png

Unable to render code block

▽ 120 ██████████ docs/html/classes.html

```
...
...
@@ -0,0 +1,120 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 +   <head>
4 +     <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 +     <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 +     <title>Mali OpenCL SDK v1.1.0: Class Index</title>
7 +     <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 +     <script type="text/javascript" src="jquery.js"></script>
9 +     <script type="text/javascript" src="dynsections.js"></script>
10 +    <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 +    <script type="text/javascript" src="resize.js"></script>
12 +    <script type="text/javascript" src="navtree.js"></script>
13 +    <script type="text/javascript">
14 +      $(document).ready(initResizable);
15 +    </script>
16 +    <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 +    <script type="text/javascript" src="search/search.js"></script>
18 +    <script type="text/javascript">
19 +      $(document).ready(function() { searchBox.OnSelectItem(0); });
20 +    </script>
21 +    <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 +  </head>
23 +  <body>
24 +    <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 +    <div id="titlearea">
26 +      <table cellspacing="0" cellpadding="0">
```

```

27 + <tbody>
28 + <tr style="height: 56px;">
29 +   <td id="projectlogo"></td>
30 +   <td style="padding-left: 0.5em;">
31 +     <div id="projectname">Mali OpenCL SDK v1.1.0
32 +   </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('classes.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
```

```

96 +   <div class="headertitle">
97 +     <div class="title">Class Index</div>  </div>
98 +   </div><!--header-->
99 +   <div class="contents">
100 +     <div class="qindex"><a class="qindex" href="#letter_B">B</a></div>
101 +     <table style="margin: 10px; white-space: nowrap;" align="center" width="95%" border="0" cellspacing="0" cellpadding="0">
102 +       <tr><td rowspan="2" valign="bottom"><a name="letter_B"></a><table border="0" cellspacing="0" cellpadding="0"><tr><td><div class="ah">
103 +         </td><td valign="top"><a class="el" href="structbitmap_information_header.html">bitmapInformationHeader</a>&#160;&#160;</td></tr>
104 +       </tr><td></td><td></td><td></td></tr>
105 +       <tr><td valign="top"><a class="el" href="structbitmap_header.html">bitmapHeader</a>&#160;&#160;</td><td></td><td></td></tr>
106 +       <tr><td></td><td></td><td></td></tr>
107 +     </table>
108 +     <div class="qindex"><a class="qindex" href="#letter_B">B</a></div>
109 +   </div><!-- contents -->
110 +   </div><!-- doc-content -->
111 +   <!-- start footer part -->
112 +   <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
113 +     <ul>
114 +       <li class="footer">
115 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
116 +       </li>
117 +     </ul>
118 +   </div>
119 + </body>
120 + </html>

```

▽ BIN +132 Bytes docs/html/closed.png

Unable to render code block

▽ 533 ████████ docs/html/common_8cpp.html

[Load diff](#)

Large diffs are not rendered by default.

▽ 14 ████████ docs/html/common_8cpp.js

...	...	@@ -0,0 +1,14 @@
1	+ var common_8cpp =	
2	+ [
3	+ ["checkSuccess", "common_8cpp.html#a73727ed6f5d821d8c97756404e145644", null],	
4	+ ["cleanUpOpenCL", "common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d", null],	
5	+ ["createCommandQueue", "common_8cpp.html#a30ee399cc6a4b82d46c581f037b447fa", null],	
6	+ ["createContext", "common_8cpp.html#a6fc67d121370b02ac8bff71ec00a7665", null],	
7	+ ["createProgram", "common_8cpp.html#a4feec45e4b990aad8e40cc3faa32a9c8", null],	
8	+ ["errorNumberToString", "common_8cpp.html#a119c92d8d25b68950de4d0e6f337df18", null],	
9	+ ["imageChannelDataTypeToString", "common_8cpp.html#af351b63fc0df43f3702d01de76d344ae", null],	
10	+ ["imageChannelOrderToString", "common_8cpp.html#afbc9c225ddee8ca4913817d1d9f55307", null],	
11	+ ["isExtensionSupported", "common_8cpp.html#ad800ae2b2358904a9051a31f76e711c3", null],	
12	+ ["printProfilingInfo", "common_8cpp.html#a33ff0013574626bb47147495e02b5d08", null],	
13	+ ["printSupported2DImageFormats", "common_8cpp.html#a736045ae74d9ed8d35cacce59b92772a", null]	
14	+];	

▽ 627 ████████ docs/html/common_8cpp_source.html

[Load diff](#)

Large diffs are not rendered by default.

```
@@ -0,0 +1,558 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/common.h File Reference</title>
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
+   $(document).ready(initResizable);
+ </script>
+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="search/search.js"></script>
+ <script type="text/javascript">
+   $(document).ready(function() { searchBox.OnSelectItem(0); });
+ </script>
+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
+ </head>
+ <body>
+ <div id="top"><!-- do not remove this div, it is closed by doxygen! --&gt;
+ &lt;div id="titlearea"&gt;
+ &lt;table cellspacing="0" cellpadding="0"&gt;
+   &lt;tbody&gt;
+     &lt;tr style="height: 56px;"&gt;
+       &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt;
+       &lt;td style="padding-left: 0.5em;"&gt;
+         &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0
+       &lt;/div&gt;
+     &lt;/td&gt;
+   &lt;/tr&gt;
+ &lt;/tbody&gt;
+ &lt;/table&gt;
+ &lt;/div&gt;
+ &lt;!-- end header part --&gt;
+ &lt;!-- Generated by Doxygen 1.8.2 --&gt;
+ &lt;script type="text/javascript"&gt;
+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');
+ &lt;/script&gt;
+ &lt;div id="navrow1" class="tabs"&gt;
+   &lt;ul class="tablist"&gt;
+     &lt;li&gt;&lt;a href="index.html"&gt;&lt;span&gt;Home&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
+     &lt;li&gt;&lt;a href="pages.html"&gt;&lt;span&gt;Help&amp;#160;and&amp;#160;Tutorials&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
+     &lt;li class="current"&gt;&lt;a href="files.html"&gt;&lt;span&gt;Files&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
+     &lt;li&gt;
+       &lt;div id="MSearchBox" class="MSearchBoxInactive"&gt;
+         &lt;span class="left"&gt;
+           &lt;img id="MSearchSelect" src="search/mag_sel.png"
+             onmouseover="return searchBox.OnSearchSelectShow()"
+             onmouseout="return searchBox.OnSearchSelectHide()"
+             alt="" /&gt;
+           &lt;input type="text" id="MTextField" value="Search" accesskey="S"
+             onfocus="searchBox.OnSearchFieldFocus(true)"
+             onblur="searchBox.OnSearchFieldFocus(false)"
+             onkeyup="searchBox.OnSearchFieldChange(event)"/&gt;
+         &lt;/span&gt;&lt;span class="right"&gt;
+           &lt;a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()"&gt;&lt;img id="MSearchCloseImg" border="0" src="search/&gt;
+         &lt;/span&gt;
+       &lt;/div&gt;
+     &lt;/li&gt;
+   &lt;/ul&gt;
+ &lt;/div&gt;</pre>
```

```

66 +   <div id="navrow2" class="tabs2">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('common_8h.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">common.h File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +
109 + <p>Functions to simplify the use of OpenCL API.
110 + <a href="#details">More...</a></p>
111 + <div class="textblock"><code>#include &lt;CL/cl.h&gt;</code><br/>
112 + <code>#include &lt;string&gt;</code><br/>
113 + </div>
114 + <p><a href="common_8h_source.html">Go to the source code of this file.</a></p>
115 + <table class="memberdecls">
116 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
117 +   Functions</h2></td></tr>
118 + <tr class="memitem:a33ff0013574626bb47147495e02b5d08"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
119 + <tr class="memdesc:a33ff0013574626bb47147495e02b5d08"><td class="mdescLeft">&#160;</td><td class="mdescRight">Print the profiling i
120 + <tr class="separator:a33ff0013574626bb47147495e02b5d08"><td class="memSeparator" colspan="2">&#160;</td></tr>
121 + <tr class="memitem:a736045ae74d9ed8d35cacce59b92772a"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
122 + <tr class="memdesc:a736045ae74d9ed8d35cacce59b92772a"><td class="mdescLeft">&#160;</td><td class="mdescRight">Print a list of the 2
123 + <tr class="separator:a736045ae74d9ed8d35cacce59b92772a"><td class="memSeparator" colspan="2">&#160;</td></tr>
124 + <tr class="memitem:abf4221def5272b7188679785d807f6cb"><td class="memItemLeft" align="right" valign="top">std::string&#160;</td><td class='
125 + <tr class="memdesc:abf4221def5272b7188679785d807f6cb"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert cl_channel_o
126 + <tr class="separator:abf4221def5272b7188679785d807f6cb"><td class="memSeparator" colspan="2">&#160;</td></tr>
127 + <tr class="memitem:a1200474d0c84aaaf23b5bf36b4d9abfd"><td class="memItemLeft" align="right" valign="top">std::string&#160;</td><td class='
128 + <tr class="memdesc:a1200474d0c84aaaf23b5bf36b4d9abfd"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert cl_channel_ty
129 + <tr class="separator:a1200474d0c84aaaf23b5bf36b4d9abfd"><td class="memSeparator" colspan="2">&#160;</td></tr>
130 + <tr class="memitem:acd459e74d0cef3c4616c7ce1a5a47f4d"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
131 + <tr class="memdesc:acd459e74d0cef3c4616c7ce1a5a47f4d"><td class="mdescLeft">&#160;</td><td class="mdescRight">Release any OpenCL ob
132 + <tr class="separator:acd459e74d0cef3c4616c7ce1a5a47f4d"><td class="memSeparator" colspan="2">&#160;</td></tr>
133 + <tr class="memitem:a6fc67d121370b02ac8bff71ec00a7665"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
134 + <tr class="memdesc:a6fc67d121370b02ac8bff71ec00a7665"><td class="mdescLeft">&#160;</td><td class="mdescRight">Create an OpenCL con

```

```

135 + <tr class="separator:a6fc67d121370b02ac8bff71ec00a7665"><td class="memSeparator" colspan="2">&#160;</td></tr>
136 + <tr class="memitem:a30ee399cc6a4b82d46c581f037b447fa"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
137 + <tr class="memdesc:a30ee399cc6a4b82d46c581f037b447fa"><td class="mdescLeft">&#160;</td><td class="mdescRight">Create an OpenCL comm
138 + <tr class="separator:a30ee399cc6a4b82d46c581f037b447fa"><td class="memSeparator" colspan="2">&#160;</td></tr>
139 + <tr class="memitem:a7fe72dc9fb4aad614e19d6bfbb2a7fce"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
140 + <tr class="memdesc:a7fe72dc9fb4aad614e19d6bfbb2a7fce"><td class="mdescLeft">&#160;</td><td class="mdescRight">Create an OpenCL prog
141 + <tr class="separator:a7fe72dc9fb4aad614e19d6bfbb2a7fce"><td class="memSeparator" colspan="2">&#160;</td></tr>
142 + <tr class="memitem:a8ce6fa1f13405092e05b3a1b464b1f77"><td class="memItemLeft" align="right" valign="top">std::string&#160;</td><td class='
143 + <tr class="memdesc:a8ce6fa1f13405092e05b3a1b464b1f77"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert OpenCL error
144 + <tr class="separator:a8ce6fa1f13405092e05b3a1b464b1f77"><td class="memSeparator" colspan="2">&#160;</td></tr>
145 + <tr class="memitem:a73727ed6f5d821d8c97756404e145644"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
146 + <tr class="memdesc:a73727ed6f5d821d8c97756404e145644"><td class="mdescLeft">&#160;</td><td class="mdescRight">Check an OpenCL error
147 + <tr class="separator:a73727ed6f5d821d8c97756404e145644"><td class="memSeparator" colspan="2">&#160;</td></tr>
148 + <tr class="memitem:a4b392a835c01476e368c4444bfef3017"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
149 + <tr class="memdesc:a4b392a835c01476e368c4444bfef3017"><td class="mdescLeft">&#160;</td><td class="mdescRight">Query an OpenCL devic
150 + <tr class="separator:a4b392a835c01476e368c4444bfef3017"><td class="memSeparator" colspan="2">&#160;</td></tr>
151 + </table>
152 + <a name="details" id="details"></a><h2 class="groupheader">Detailed Description</h2>
153 + <div class="textblock"><p>Functions to simplify the use of OpenCL API. </p>
154 +
155 + <p>Definition in file <a class="el" href="common_8h_source.html">common.h</a>.</p>
156 + </div><h2 class="groupheader">Function Documentation</h2>
157 + <a class="anchor" id="a73727ed6f5d821d8c97756404e145644"></a>
158 + <div class="memitem">
159 + <div class="memproto">
160 + <table class="mlabels">
161 +   <tr>
162 +     <td class="mlabels-left">
163 +       <table class="memname">
164 +         <tr>
165 +           <td class="memname">bool checkSuccess </td>
166 +           <td>(</td>
167 +           <td class="paramtype">cl_int&#160;</td>
168 +           <td class="paramname"><em>errorNumber</em></td><td>)</td>
169 +         <td></td>
170 +       </tr>
171 +       </table>
172 +     </td>
173 +     <td class="mlabels-right">
174 +       <span class="mlabels"><span class="mlabel">inline</span></span> </td>
175 +     </tr>
176 +   </table>
177 + </div><div class="memdoc">
178 +
179 + <p>Check an OpenCL error number for errors. </p>
180 + <p>If errorNumber is not CL_SUCCESS, the function will print the string form of the error number. </p>
181 + <dl class="params"><dt>Parameters</dt><dd>
182 +   <table class="params">
183 +     <tr><td class="paramdir">[in]</td><td class="paramname">errorNumber</td><td>The error number returned from an OpenCL command. <
184 +   </table>
185 + </dd>
186 + </dl>
187 + <dl class="section return"><dt>Returns</dt><dd>False if errorNumber != CL_SUCCESS, true otherwise. </dd></dl>
188 +
189 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00358">358</a> of file <a class="el" href="common_8cpp_source.h
190 +
191 + </div>
192 + </div>
193 + <a class="anchor" id="acd459e74d0cef3c4616c7ce1a5a47f4d"></a>
194 + <div class="memitem">
195 + <div class="memproto">
196 +   <table class="memname">
197 +     <tr>
198 +       <td class="memname">bool cleanUpOpenCL </td>
199 +       <td>(</td>
200 +       <td class="paramtype">cl_context&#160;</td>
201 +       <td class="paramname"><em>context</em>, </td>
202 +     </tr>
203 +     <tr>

```

```

204 +         <td class="paramkey"></td>
205 +         <td></td>
206 +         <td class="paramtype">cl_command_queue</td>
207 +         <td class="paramname"><em>commandQueue</em>, </td>
208 +     </tr>
209 +     <tr>
210 +         <td class="paramkey"></td>
211 +         <td></td>
212 +         <td class="paramtype">cl_program</td>
213 +         <td class="paramname"><em>program</em>, </td>
214 +     </tr>
215 +     <tr>
216 +         <td class="paramkey"></td>
217 +         <td></td>
218 +         <td class="paramtype">cl_kernel</td>
219 +         <td class="paramname"><em>kernel</em>, </td>
220 +     </tr>
221 +     <tr>
222 +         <td class="paramkey"></td>
223 +         <td></td>
224 +         <td class="paramtype">cl_mem*</td>
225 +         <td class="paramname"><em>memoryObjects</em>, </td>
226 +     </tr>
227 +     <tr>
228 +         <td class="paramkey"></td>
229 +         <td></td>
230 +         <td class="paramtype">int</td>
231 +         <td class="paramname"><em>numberOfMemoryObjects</em></td>
232 +     </tr>
233 +     <tr>
234 +         <td></td>
235 +         <td>)</td>
236 +         <td></td><td></td>
237 +     </tr>
238 +   </table>
239 + </div><div class="memdoc">
240 +
241 + <p>Release any OpenCL objects that have been created. </p>
242 + <p>If any of the OpenCL objects passed in are not NULL, they will be freed using the appropriate OpenCL function. </p>
243 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
244 +
245 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00170">l00170</a> of file <a class="el" href="common_8cpp_source.h1
246 +
247 + </div>
248 + </div>
249 + <a class="anchor" id="a30ee399cc6a4b82d46c581f037b447fa"></a>
250 + <div class="memitem">
251 + <div class="memproto">
252 +   <table class="memname">
253 +     <tr>
254 +       <td class="memname">bool createCommandQueue </td>
255 +       <td>(</td>
256 +       <td class="paramtype">cl_context</td>
257 +       <td class="paramname"><em>context</em>, </td>
258 +     </tr>
259 +     <tr>
260 +       <td class="paramkey"></td>
261 +       <td></td>
262 +       <td class="paramtype">cl_command_queue*</td>
263 +       <td class="paramname"><em>commandQueue</em>, </td>
264 +     </tr>
265 +     <tr>
266 +       <td class="paramkey"></td>
267 +       <td></td>
268 +       <td class="paramtype">cl_device_id*</td>
269 +       <td class="paramname"><em>device</em></td>
270 +     </tr>
271 +     <tr>
272 +       <td></td>

```

```

273 +         <td>)</td>
274 +         <td></td><td></td>
275 +     </tr>
276 +   </table>
277 + </div><div class="memdoc">
278 +
279 + <p>Create an OpenCL command queue for a given context. </p>
280 + <dl class="params"><dt>Parameters</dt><dd>
281 +   <table class="params">
282 +     <tr><td class="paramdir">[in]</td><td class="paramname">context</td><td>The OpenCL context to use. </td></tr>
283 +     <tr><td class="paramdir">[out]</td><td class="paramname">commandQueue</td><td>The created OpenCL command queue. </td></tr>
284 +     <tr><td class="paramdir">[out]</td><td class="paramname">device</td><td>The device in which the command queue is created. </td>
285 +   </table>
286 + </dd>
287 + </dl>
288 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
289 +
290 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00255">255</a> of file <a class="el" href="common_8cpp_source.h
291 +
292 + </div>
293 + </div>
294 + <a class="anchor" id="a6fc67d121370b02ac8bff71ec00a7665"></a>
295 + <div class="memitem">
296 + <div class="memproto">
297 +   <table class="memname">
298 +     <tr>
299 +       <td class="memname">bool createContext </td>
300 +       <td>(</td>
301 +         <td class="paramtype">cl_context *const</td>
302 +         <td class="paramname"><em>context</em></td><td>)</td>
303 +       <td></td>
304 +     </tr>
305 +   </table>
306 + </div><div class="memdoc">
307 +
308 + <p>Create an OpenCL context on a GPU on the first available platform. </p>
309 + <dl class="params"><dt>Parameters</dt><dd>
310 +   <table class="params">
311 +     <tr><td class="paramdir">[out]</td><td class="paramname">context</td><td>Pointer to the created OpenCL context. </td></tr>
312 +   </table>
313 + </dd>
314 + </dl>
315 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
316 +
317 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00224">224</a> of file <a class="el" href="common_8cpp_source.h
318 +
319 + </div>
320 + </div>
321 + <a class="anchor" id="a7fe72dc9fb4aad614e19d6bfbb2a7fce"></a>
322 + <div class="memitem">
323 + <div class="memproto">
324 +   <table class="memname">
325 +     <tr>
326 +       <td class="memname">bool createProgram </td>
327 +       <td>(</td>
328 +         <td class="paramtype">cl_context const</td>
329 +         <td class="paramname"><em>context</em>, </td>
330 +       <td></td>
331 +     </tr>
332 +     <tr>
333 +       <td class="paramkey">></td>
334 +       <td></td>
335 +       <td class="paramtype">cl_device_id const</td>
336 +       <td class="paramname">><em>device</em>, </td>
337 +     </tr>
338 +     <tr>
339 +       <td class="paramkey">></td>
340 +       <td></td>
341 +       <td class="paramtype">>std::string const</td>

```

```

342 +         </tr>
343 +         <tr>
344 +             <td class="paramkey"></td>
345 +             <td></td>
346 +             <td class="paramtype">cl_program *; </td>
347 +             <td class="paramname"><em>program</em>; </td>
348 +         </tr>
349 +         <tr>
350 +             <td></td>
351 +             <td>)</td>
352 +             <td></td><td></td>
353 +         </tr>
354 +     </table>
355 + </div><div class="memdoc">
356 +
357 + <p>Create an OpenCL program from a given file and compile it. </p>
358 + <dl class="params"><dt>Parameters</dt><dd>
359 +   <table class="params">
360 +     <tr><td class="paramdir">[in]</td><td class="paramname">context</td><td>The OpenCL context in use. </td></tr>
361 +     <tr><td class="paramdir">[in]</td><td class="paramname">device</td><td>The OpenCL device to compile the kernel for. </td></tr>
362 +     <tr><td class="paramdir">[in]</td><td class="paramname">filename</td><td>Name of the file containing the OpenCL kernel code to
363 +     <tr><td class="paramdir">[out]</td><td class="paramname">program</td><td>The created OpenCL program object. </td></tr>
364 +   </table>
365 + </dd>
366 + </dl>
367 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
368 +
369 + </div>
370 + </div>
371 + <a class="anchor" id="a8ce6fa1f13405092e05b3a1b464b1f77"></a>
372 + <div class="memitem">
373 +   <div class="memproto">
374 +     <table class="memname">
375 +       <tr>
376 +         <td class="memname">std::string errorNumberToString </td>
377 +         <td>(</td>
378 +         <td class="paramtype">cl_int; </td>
379 +         <td class="paramname"><em>errorNumber</em></td><td>)</td>
380 +       <td></td>
381 +     </tr>
382 +   </table>
383 + </div><div class="memdoc">
384 +
385 + <p>Convert OpenCL error numbers to their string form. </p>
386 + <p>Uses the error number definitions from cl.h. </p>
387 + <dl class="params"><dt>Parameters</dt><dd>
388 +   <table class="params">
389 +     <tr><td class="paramdir">[in]</td><td class="paramname">errorNumber</td><td>The error number returned from an OpenCL command. </td>
390 +   </table>
391 + </dd>
392 + </dl>
393 + <dl class="section return"><dt>Returns</dt><dd>A name of the error. </dd></dl>
394 +
395 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00368">368</a> of file <a class="el" href="common_8cpp_source.h"
396 +
397 + </div>
398 + </div>
399 + <a class="anchor" id="a1200474d0c84aaaf23b5bf36b4d9abfd"></a>
400 + <div class="memitem">
401 +   <div class="memproto">
402 +     <table class="memname">
403 +       <tr>
404 +         <td class="memname">std::string imageChannelDataTypeToString </td>
405 +         <td>(</td>
406 +         <td class="paramtype">cl_channel_type; </td>
407 +         <td class="paramname"><em>channelDataType</em></td><td>)</td>
408 +       <td></td>
409 +     </tr>
410 +   </table>

```

```
411 + </div><div class="memdoc">
412 +
413 + <p>Convert cl_channel_type values into their string form. </p>
414 + <p>Uses the channel data type definitions from cl.h. </p>
415 + <dl class="params"><dt>Parameters</dt><dd>
416 +   <table class="params">
417 +     <tr><td class="paramdir">[in]</td><td class="paramname">channelDataType</td><td>The channel data type value to convert. </td></tr>
418 +   </table>
419 + </dd>
420 + </dl>
421 + <dl class="section return"><dt>Returns</dt><dd>The string form of the channel data type. </dd></dl>
422 +
423 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00131">131</a> of file <a class="el" href="common_8cpp_source.htr
424 +
425 + </div>
426 + </div>
427 + <a class="anchor" id="abf4221def5272b7188679785d807f6cb"></a>
428 + <div class="memitem">
429 + <div class="memproto">
430 +   <table class="memname">
431 +     <tr>
432 +       <td class="memname">std::string imageChannelOrderToString </td>
433 +       <td>(</td>
434 +         <td class="paramtype">cl_channel_order&#160;</td>
435 +         <td class="paramname"><em>channelOrder</em></td><td>) </td>
436 +       <td></td>
437 +     </tr>
438 +   </table>
439 + </div><div class="memdoc">
440 +
441 + <p>Convert cl_channel_order values into their string form. </p>
442 + <p>Uses the channel order definitions from cl.h. </p>
443 + <dl class="params"><dt>Parameters</dt><dd>
444 +   <table class="params">
445 +     <tr><td class="paramdir">[in]</td><td class="paramname">channelOrder</td><td>The channel order value to convert. </td></tr>
446 +   </table>
447 + </dd>
448 + </dl>
449 + <dl class="section return"><dt>Returns</dt><dd>The string form of the channel order. </dd></dl>
450 +
451 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00096">96</a> of file <a class="el" href="common_8cpp_source.htr
452 +
453 + </div>
454 + </div>
455 + <a class="anchor" id="a4b392a835c01476e368c4444bfef3017"></a>
456 + <div class="memitem">
457 + <div class="memproto">
458 +   <table class="memname">
459 +     <tr>
460 +       <td class="memname">bool isExtensionSupported </td>
461 +       <td>(</td>
462 +         <td class="paramtype">cl_device_id&#160;</td>
463 +         <td class="paramname"><em>device</em>, </td>
464 +       </tr>
465 +       <tr>
466 +         <td class="paramkey"></td>
467 +         <td></td>
468 +         <td class="paramtype">std::string&#160;</td>
469 +         <td class="paramname"><em>extension</em>&#160;</td>
470 +       </tr>
471 +       <tr>
472 +         <td></td>
473 +         <td>)</td>
474 +       <td></td><td></td>
475 +     </tr>
476 +   </table>
477 + </div><div class="memdoc">
478 +
479 + <p>Query an OpenCL device to see if it supports an extension. </p>
```

```

480 + <dl class="params"><dt>Parameters</dt><dd>
481 +   <table class="params">
482 +     <tr><td class="paramdir">[in]</td><td class="paramname">device</td><td>The device to query. </td></tr>
483 +     <tr><td class="paramdir">[in]</td><td class="paramname">extension</td><td>The string name of the extension to query for. </td></tr>
484 +   </table>
485 + </dd>
486 + </dl>
487 + <dl class="section return"><dt>Returns</dt><dd>True if the extension is supported on the given device, false otherwise. </dd></dl>
488 +
489 + </div>
490 + </div>
491 + <a class="anchor" id="a33ff0013574626bb47147495e02b5d08"></a>
492 + <div class="memitem">
493 + <div class="memproto">
494 +   <table class="memname">
495 +     <tr>
496 +       <td class="memname">bool printProfilingInfo </td>
497 +       <td>(</td>
498 +         <td class="paramtype">cl_event&#160;</td>
499 +         <td class="paramname"><em>event</em></td><td>)</td>
500 +       <td></td>
501 +     </tr>
502 +   </table>
503 + </div><div class="memdoc">
504 +
505 + <p>Print the profiling information associated with an OpenCL event. </p>
506 + <p>Prints the time spent in the command queue, the time spent waiting before being submitted to a device, and the execution time. </p>
507 + <dl class="params"><dt>Parameters</dt><dd>
508 +   <table class="params">
509 +     <tr><td class="paramdir">[in]</td><td class="paramname">event</td><td>The event to get profiling information for. </td></tr>
510 +   </table>
511 + </dd>
512 + </dl>
513 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
514 +
515 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00018">18</a> of file <a class="el" href="common_8cpp_source.htm
516 +
517 + </div>
518 + </div>
519 + <a class="anchor" id="a736045ae74d9ed8d35cacce59b92772a"></a>
520 + <div class="memitem">
521 + <div class="memproto">
522 +   <table class="memname">
523 +     <tr>
524 +       <td class="memname">bool printSupported2DImageFormats </td>
525 +       <td>(</td>
526 +         <td class="paramtype">cl_context&#160;</td>
527 +         <td class="paramname"><em>context</em></td><td>)</td>
528 +       <td></td>
529 +     </tr>
530 +   </table>
531 + </div><div class="memdoc">
532 +
533 + <p>Print a list of the 2D OpenCL image formats supported. </p>
534 + <dl class="params"><dt>Parameters</dt><dd>
535 +   <table class="params">
536 +     <tr><td class="paramdir">[in]</td><td class="paramname">context</td><td>The OpenCL context to use. </td></tr>
537 +   </table>
538 + </dd>
539 + </dl>
540 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, otherwise true. </dd></dl>
541 +
542 + <p>Definition at line <a class="el" href="common_8cpp_source.html#l00057">57</a> of file <a class="el" href="common_8cpp_source.htm
543 +
544 + </div>
545 + </div>
546 + </div><!-- contents -->
547 + </div><!-- doc-content -->
548 + <!-- start footer part -->
```

```
549 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
550 +   <ul>
551 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efd9c6973a4f.html">common</a></li><li class="navelem"><a class="el" href="dir_a5d540de89e9fe90efd9c6973a4f.html">common</a></li>
552 +     <li class="footer">
553 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
554 +     </li>
555 +   </ul>
556 + </div>
557 + </body>
558 + </html>
```

< 14 docs/html/common_8h.js □

```
... @@ -0,0 +1,14 @@
1 + var common_8h =
2 + [
3 +     [ "checkSuccess", "common_8h.html#a73727ed6f5d821d8c97756404e145644", null ],
4 +     [ "cleanUpOpenCL", "common_8h.html#acd459e74d0cef3c4616c7ce1a5a47f4d", null ],
5 +     [ "createCommandQueue", "common_8h.html#a30ee399cc6a4b82d46c581f037b447fa", null ],
6 +     [ "createContext", "common_8h.html#a6fc67d121370b02ac8bff71ec00a7665", null ],
7 +     [ "createProgram", "common_8h.html#a7fe72dc9fb4aad614e19d6bfbb2a7fce", null ],
8 +     [ "errorNumberToString", "common_8h.html#a8ce6fa1f13405092e05b3a1b464b1f77", null ],
9 +     [ "imageChannelDataTypeToString", "common_8h.html#a1200474d0c84aaaf23b5bf36b4d9abfd", null ],
10 +    [ "imageChannelOrderToString", "common_8h.html#abf4221def5272b7188679785d807f6cb", null ],
11 +    [ "isExtensionSupported", "common_8h.html#a4b392a835c01476e368c4444bfef3017", null ],
12 +    [ "printProfilingInfo", "common_8h.html#a33ff0013574626bb47147495e02b5d08", null ],
13 +    [ "printSupported2DImageFormats", "common_8h.html#a736045ae74d9ed8d35cacce59b92772a", null ]
14 +]; -
```

156 docs/html/common_8h_source.html

```
@@ -0,0 +1,156 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/common.h Source File</title>
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
+   $(document).ready(initResizable);
+ </script>
+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="search/search.js"></script>
+ <script type="text/javascript">
+   $(document).ready(function() { searchBox.OnSelectItem(0); });
+ </script>
+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
+ </head>
+ <body>
+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
+ <div id="titlearea">
+ <table cellspacing="0" cellpadding="0">
+   <tbody>
+     <tr style="height: 56px;">
+       <td id="projectlogo"></td>
+       <td style="padding-left: 0.5em;">
+         <div id="projectname">Mali OpenCL SDK v1.1.0
+       </div>
+     </td>
+   </tr>
+ </tbody>
+ </table>
+ </div>
+ </div>
```

```

37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('common_8h_source.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 +   onmouseover="return searchBox.OnSearchSelectShow()"
91 +   onmouseout="return searchBox.OnSearchSelectHide()"
92 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
93 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">common.h</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
```

```
+ <a href="common_8h.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="l00001"></a><span class="lineno"> 1</span>&#160;<span class="comment"> * This confidential and propri</span>&#160;<span class="comment"> * authorised by a licensing ag</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Lim</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> * by a licensing agreement fro</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Lim</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * The entire notice above must</span>&#160;<span class="comment"> * copies and copies may only b</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
+ <div class="line"><a name="l00010"></a><span class="lineno"> 10</span>&#160;</div>
+ <div class="line"><a name="l00011"></a><span class="lineno"> 11</span>&#160;<span class="preprocessor">#ifndef COMMON_H</span></div>
+ <div class="line"><a name="l00012"></a><span class="lineno"> 12</span>&#160;<span class="preprocessor"></span><span class="preprocessor">#ifne</span>&#160;<span class="preprocessor">#endif COMMON_H</span></div>
+ <div class="line"><a name="l00013"></a><span class="lineno"> 13</span>&#160;<span class="preprocessor"></span><span class="preprocessor">#endif COMMON_H</span></div>
+ <div class="line"><a name="l00014"></a><span class="lineno"> 14</span>&#160;<span class="preprocessor">#include <lt;CL/cl.h>></span></div>
+ <div class="line"><a name="l00015"></a><span class="lineno"> 15</span>&#160;<span class="preprocessor">#include <lt;string>></span></div>
+ <div class="line"><a name="l00016"></a><span class="lineno"> 16</span>&#160;</div>
+ <div class="line"><a name="l00028"></a><span class="lineno"> 28</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00028">common</a></div>
+ <div class="line"><a name="l00029"></a><span class="lineno"> 29</span>&#160;</div>
+ <div class="line"><a name="l00035"></a><span class="lineno"> 35</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00035">common</a></div>
+ <div class="line"><a name="l00036"></a><span class="lineno"> 36</span>&#160;</div>
+ <div class="line"><a name="l00043"></a><span class="lineno"> 43</span>&#160;std::string <a class="code" href="common_8cpp.html#l00043">common</a></div>
+ <div class="line"><a name="l00044"></a><span class="lineno"> 44</span>&#160;</div>
+ <div class="line"><a name="l00051"></a><span class="lineno"> 51</span>&#160;std::string <a class="code" href="common_8cpp.html#l00051">common</a></div>
+ <div class="line"><a name="l00052"></a><span class="lineno"> 52</span>&#160;</div>
+ <div class="line"><a name="l00058"></a><span class="lineno"> 58</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00058">common</a></div>
+ <div class="line"><a name="l00059"></a><span class="lineno"> 59</span>&#160;</div>
+ <div class="line"><a name="l00065"></a><span class="lineno"> 65</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00065">common</a></div>
+ <div class="line"><a name="l00066"></a><span class="lineno"> 66</span>&#160;</div>
+ <div class="line"><a name="l00074"></a><span class="lineno"> 74</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00074">common</a></div>
+ <div class="line"><a name="l00075"></a><span class="lineno"> 75</span>&#160;</div>
+ <div class="line"><a name="l00084"></a><span class="lineno"> 84</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00084">common</a></div>
+ <div class="line"><a name="l00085"></a><span class="lineno"> 85</span>&#160;</div>
+ <div class="line"><a name="l00092"></a><span class="lineno"> 92</span>&#160;std::string <a class="code" href="common_8cpp.html#l00092">common</a></div>
+ <div class="line"><a name="l00093"></a><span class="lineno"> 93</span>&#160;</div>
+ <div class="line"><a name="l00100"></a><span class="lineno"> 100</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00100">common</a></div>
+ <div class="line"><a name="l00101"></a><span class="lineno"> 101</span>&#160;</div>
+ <div class="line"><a name="l00108"></a><span class="lineno"> 108</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="common_8cpp.html#l00108">common</a></div>
+ <div class="line"><a name="l00109"></a><span class="lineno"> 109</span>&#160;<span class="preprocessor">#endif</span></div>
+ </div><!-- fragment --></div><!-- contents -->
+ </div><!-- doc-content -->
+ <!-- start footer part -->
+ <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
+   <ul>
+     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efdfc6973a4f.html">common</a></li><li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efdfc6973a4f.html">common</a></li>
+     <li class="footer">
+       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
+     </li>
+   </ul>
+ </div>
+ </body>
+ </html>
```

118 docs/html/common_errors_8dox.html

```
@@ -0,0 +1,118 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: common_errors.dox File Reference</title>
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
```

```

14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +   </div>

```

```

83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('common__errors_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 +   <!-- window showing the filter options -->
88 +   <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 +   <!-- iframe showing the search results (closed by default) -->
95 +   <div id="MSearchResultsWindow">
96 +     <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">common_errors.dox File Reference</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 +   </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="common__errors_8dox.html">common_errors.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

135 docs/html/common_issues.html

...	...	@@ -0,0 +1,135 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: Common Issues</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> 17 + <script type="text/javascript" src="search/search.js"></script> 18 + <script type="text/javascript"> 19 + \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + </script> 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" /> 22 + </head> 23 + <body> 24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! --> 25 + <div id="titlearea"> 26 + <table cellspacing="0" cellpadding="0"> 27 + <tbody> 28 + <tr style="height: 56px;"> </pre>

```

29 +   <td id="projectlogo"></td>
30 +   <td style="padding-left: 0.5em;">
31 +     <div id="projectname">Mali OpenCL SDK v1.1.0
32 +   </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +               onfocus="searchBox.OnSearchFieldFocus(true)"
57 +               onblur="searchBox.OnSearchFieldFocus(false)"
58 +               onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +       </div>
76 +     </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('common_issues.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Common Issues </div> </div>
```

```

98 + </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>Solutions to common issues found when using the Mali OpenCL SDK v1.1.0.</p>
101 + <h1><a class="anchor" id="board"></a>
102 + On the Board</h1>
103 + <ol type="1">
104 + <li><p class="startli"><b>error while loading shared libraries: libOpenCL.so: cannot open shared object file: No such file or direc
105 + <p class="startli">While running a sample on the board the OpenCL library cannot be found.</p>
106 + <p class="startli">Add it to your LD_LIBRARY_PATH on the board. For example: </p>
107 + <div class="fragment"><div class="line">export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:<path to OpenCL library (libOpenCL.so)>;</div>
108 + </div><!-- fragment --></li>
109 + </ol>
110 + <h1><a class="anchor" id="host"></a>
111 + On the Host</h1>
112 + <ol type="1">
113 + <li><p class="startli"><b>make: command not found</b></p>
114 + <p class="startli">The Linux tool make is not installed.</p>
115 + <p class="startli">Install the make package. For example: </p>
116 + <div class="fragment"><div class="line">sudo apt-<span class="keyword">get</span> install make</div>
117 + </div><!-- fragment --></li>
118 + <li><p class="startli"><b>make: arm-none-linux-gnueabi-g++: Command not found</b></p>
119 + <p class="startli">The Sourcery CodeBench cross compiler cannot be found.</p>
120 + <p class="startli">Make sure it is installed and in the path. For example: </p>
121 + <div class="fragment"><div class="line">export PATH=$PATH:<path to Sourcery CodeBench executables>;</div>
122 + </div><!-- fragment --> </li>
123 + </ol>
124 + </div></div><!-- contents -->
125 + </div><!-- doc-content -->
126 + <!-- start footer part -->
127 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
128 +   <ul>
129 +     <li class="footer">
130 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
131 +     </li>
132 +   </ul>
133 + </div>
134 + </body>
135 + </html>

```

▼ 123 docs/html/dir_0289395444cf489a29bc36f15be66f35.html □

...	...	@@ -0,0 +1,123 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_vector Direct 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> 17 + <script type="text/javascript" src="search/search.js"></script> 18 + <script type="text/javascript"> 19 + \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + </script> 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" /> 22 + </head> 23 + <body> 24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! --> 25 + <div id="titlearea"> 26 + <table cellspacing="0" cellpadding="0"> </pre>

```

27 + <tbody>
28 + <tr style="height: 56px;">
29 +   <td id="projectlogo"></td>
30 +   <td style="padding-left: 0.5em;">
31 +     <div id="projectname">Mali OpenCL SDK v1.1.0
32 +   </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_0289395444cf489a29bc36f15be66f35.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
```

```

96 +   <div class="headertitle">
97 +     <div class="title">hello_world_vector Directory Reference</div>  </div>
98 +   </div><!--header-->
99 +   <div class="contents">
100 +     <table class="memberdecls">
101 +       <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 +         Directories</h2></td></tr>
103 +       <tr class="memitem:dir_536689d07d4a9d8d4d9f119eb2909e9b"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_536689d07d4a9d8d4d9f119eb2909e9b.html">dir_536689d07d4a9d8d4d9f119eb2909e9b</a></td>
104 +       <tr class="separator"><td class="memSeparator" colspan="2">&#160;</td></tr>
105 +     </table><table class="memberdecls">
106 +       <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 +         Files</h2></td></tr>
108 +       <tr class="memitem:hello_world_vector_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="hello_world_vector_8cpp.html">hello_world_vector_8cpp</a></td>
109 +       <tr class="separator"><td class="memSeparator" colspan="2">&#160;</td></tr>
110 +     </table>
111 +   </div><!-- contents -->
112 +   </div><!-- doc-content -->
113 +   <!-- start footer part -->
114 +   <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +     <ul>
116 +       <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_536689d07d4a9d8d4d9f119eb2909e9b.html">dir_536689d07d4a9d8d4d9f119eb2909e9b</a></li>
117 +       <li class="footer">
118 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +       </li>
120 +     </ul>
121 +   </div>
122 + </body>
123 + </html>

```

▼ 5 docs/html/dir_0289395444cf489a29bc36f15be66f35.js □

...	...	@@ -0,0 +1,5 @@
	1	+ var dir_0289395444cf489a29bc36f15be66f35 =
	2	+ [
	3	+ ["assets", "dir_536689d07d4a9d8d4d9f119eb2909e9b.html", "dir_536689d07d4a9d8d4d9f119eb2909e9b"],
	4	+ ["hello_world_vector.cpp", "hello_world_vector_8cpp.html", "hello_world_vector_8cpp"]
	5	+]; -

▼ 118 docs/html/dir_0dae9d24a39dcc22094c5116ff3a8be1.html □

...	...	@@ -0,0 +1,118 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling/assets Directories</title>
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>
	13	+ <script type="text/javascript">
	14	+ \$(document).ready(initResizable);
	15	+ </script>
	16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
	17	+ <script type="text/javascript" src="search/search.js"></script>
	18	+ <script type="text/javascript">
	19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });
	20	+ </script>
	21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
	22	+ </head>
	23	+ <body>
	24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
	25	+ <div id="titlearea">
	26	+ <table cellspacing="0" cellpadding="0">
	27	+ <tbody>

```

28 + <tr style="height: 56px;">
29 +   <td id="projectlogo"></td>
30 +   <td style="padding-left: 0.5em;">
31 +     <div id="projectname">Mali OpenCL SDK v1.1.0
32 +   </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_0dae9d24a39dcc22094c5116ff3a8be1.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
```

```

97 + <div class="title">assets Directory Reference</div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 + Files</h2></td></tr>
103 + <tr class="memitem:image_scaling_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight">
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_0dae9d24a39dcc22094c5116ff3a8be1.js">image_scaling.cl</a></li>
112 +   <li class="footer">
113 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +   </li>
115 + </ul>
116 + </div>
117 + </body>
118 + </html>

```

4 docs/html/dir_0dae9d24a39dcc22094c5116ff3a8be1.js

...	...	@@ -0,0 +1,4 @@
		+ var dir_0dae9d24a39dcc22094c5116ff3a8be1 =
		+ [
		+ ["image_scaling.cl", "image_scaling_8cl.html", "image_scaling_8cl"]
		+]; -

123 docs/html/dir_10f12679427188891e820fce3e11401a.html

...	...	@@ -0,0 +1,123 @@
		+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		+ <html xmlns="http://www.w3.org/1999/xhtml">
		+ <head>
		+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling Directory Reference</title>
		+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="jquery.js"></script>
		+ <script type="text/javascript" src="dynsections.js"></script>
		+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="resize.js"></script>
		+ <script type="text/javascript" src="navtree.js"></script>
		+ <script type="text/javascript">
		+ \$(document).ready(initResizable);
		+ </script>
		+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="search/search.js"></script>
		+ <script type="text/javascript">
		+ \$(document).ready(function() { searchBox.OnSelectItem(0); });
		+ </script>
		+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
		+ </head>
		+ <body>
		+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		+ <div id="titlearea">
		+ <table cellspacing="0" cellpadding="0">
		+ <tbody>
		+ <tr style="height: 56px;">
		+ <td id="projectlogo"></td>
		+ <td style="padding-left: 0.5em;">
		+ <div id="projectname">Mali OpenCL SDK v1.1.0
		+ </div>
		+ </td>
		+ </tr>

```

35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_10f12679427188891e820fce3e11401a.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">image_scaling Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_0dae9d24a39dcc22094c5116ff3a8be1"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td

```

```

104 + <tr class="separator:><td class="memSeparator" colspan="2">#160;</td></tr>
105 + </table><table class="memberdecls">
106 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 + <tr class="memitem:image_scaling_8cpp"><td class="memItemLeft" align="right" valign="top">file #160;</td><td class="memItemRight"
109 + <tr class="separator:><td class="memSeparator" colspan="2">#160;</td></tr>
110 + </table>
111 + </div><!-- contents -->
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class=
117 +       <li class="footer">
118 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +       </li>
120 +     </ul>
121 +   </div>
122 + </body>
123 + </html>

```

▽ 5 docs/html/dir_10f12679427188891e820fce3e11401a.js □

...	...	@@ -0,0 +1,5 @@
	1	+ var dir_10f12679427188891e820fce3e11401a =
	2	+ [
	3	+ ["assets", "dir_0dae9d24a39dcc22094c5116ff3a8be1.html", "dir_0dae9d24a39dcc22094c5116ff3a8be1"],
	4	+ ["image_scaling.cpp", "image_scaling_8cpp.html", "image_scaling_8cpp"]
	5	+]; -

▽ 118 docs/html/dir_2057de030161fe0957379729a87c463f.html □

...	...	@@ -0,0 +1,118 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template/assets Directory
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>
	13	+ <script type="text/javascript">
	14	+ \$(document).ready(initResizable);
	15	+ </script>
	16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
	17	+ <script type="text/javascript" src="search/search.js"></script>
	18	+ <script type="text/javascript">
	19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });
	20	+ </script>
	21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
	22	+ </head>
	23	+ <body>
	24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
	25	+ <div id="titlearea">
	26	+ <table cellspacing="0" cellpadding="0">
	27	+ <tbody>
	28	+ <tr style="height: 56px;">
	29	+ <td id="projectlogo"></td>
	30	+ <td style="padding-left: 0.5em;">
	31	+ <div id="projectname">Mali OpenCL SDK v1.1.0
	32	+ </div>
	33	+ </td>
	34	+ </tr>
	35	+ </tbody>

```

36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_2057de030161fe0957379729a87c463f.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 +   Files</h2></td></tr>
103 +   <tr class="memitem:template_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
104 + <tr class="separator"><td class="memSeparator" colspan="2">&#160;</td></tr>

```

```
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_a5a8e0343a371a2d.html">ARM C++ API Reference</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

4 docs/html/dir_2057de030161fe0957379729a87c463f.js

```
...     ...     @@ -0,0 +1,4 @@
1 + var dir_2057de030161fe0957379729a87c463f =
2 +
3 +     [ "template.cl", "template_8cl.html", "template_8cl" ]
4 + ]; -
```

123 docs/html/dir_33f3275c1127fb7d435e719a53b54021.html

```
... @@ -0,0 +1,123 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors Director
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
```

```

43 +   <div id="navrow1" class="tabs">
44 +     <ul class="tablist">
45 +       <li><a href="index.html"><span>Home</span></a></li>
46 +       <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +       <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_33f3275c1127fb7d435e719a53b54021.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">sobel_no_vectors Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_53e809feb72b43d0f52f5efc50237d2d"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_53e809feb72b43d0f52f5efc50237d2d.html">dir_53e809feb72b43d0f52f5efc50237d2d</a></td>
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table><table class="memberdecls">
106 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 + <tr class="memitem:sobel_no_vectors_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="sobel_no_vectors_8cpp.html">sobel_no_vectors_8cpp</a></td>
109 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
110 + </table>
111 + </div><!-- contents -->
```

```
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_53e809feb72b43d0f52f5efc50237d2d.html">(C) ARM Ltd. 2013</a></li>
117 +   <li class="footer">
118 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +   </li>
120 + </ul>
121 + </div>
122 + </body>
123 + </html>
```

5 docs/html/dir_33f3275c1127fb7d435e719a53b54021.js

```
... ... @@ -0,0 +1,5 @@
1 + var dir_33f3275c1127fb7d435e719a53b54021 =
2 + [
3 +   [ "assets", "dir_53e809feb72b43d0f52f5efc50237d2d.html", "dir_53e809feb72b43d0f52f5efc50237d2d" ],
4 +   [ "sobel_no_vectors.cpp", "sobel_no_vectors_8cpp.html", "sobel_no_vectors_8cpp" ]
5 + ]; -
```

118 docs/html/dir_3d70ec2e68ff85e042132c1108ba337a.html

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/64_bit_integer/assets Dir
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
```

```

44 +     <ul class="tablist">
45 +         <li><a href="index.html"><span>Home</span></a></li>
46 +         <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +         <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +         <div id="MSearchBox" class="MSearchBoxInactive">
50 +             <span class="left">
51 +                 
55 +                 <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                     onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                     onblur="searchBox.OnSearchFieldFocus(false)"
58 +                     onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +             </span><span class="right">
60 +                 <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61 +             </span>
62 +         </div>
63 +     </li>
64 +   </ul>
65 + </div>
66 + </div><!-- top -->
67 + <div id="side-nav" class="ui-resizable side-nav-resizable">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle"></div>
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_3d70ec2e68ff85e042132c1108ba337a.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +           name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 +     Files</h2></td></tr>
103 +   <tr class="memitem:64_bit_integer_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight">
104 +     <a href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></td></tr>
105 +   </table>
106 + </div><!-- contents -->
107 + <div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_3d70ec2e68ff85e042132c1108ba337a.html">All</a></li>
112 +     <li class="footer">

```

```
113 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▽ 4 ━━━━ docs/html/dir_3d70ec2e68ff85e042132c1108ba337a.js □

...	...	@@ -0,0 +1,4 @@
1	+ var	dir_3d70ec2e68ff85e042132c1108ba337a =
2	+ [
3	+ ["64_bit_integer.cl", "64_bit_integer_8cl.html", "64_bit_integer_8cl"
4	+];	⊖

▽ 123 ━━━━ docs/html/dir_490217e45394b06d48a471b031b70a3e.html □

...	...	@@ -0,0 +1,123 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/mandelbrot Directory Refe	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	
14	+ \$(document).ready(initResizable);	
15	+ </script>	
16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>	
17	+ <script type="text/javascript" src="search/search.js"></script>	
18	+ <script type="text/javascript">	
19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });	
20	+ </script>	
21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />	
22	+ </head>	
23	+ <body>	
24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! --></td> <td></td>	
25	+ <div id="titlearea">	
26	+ <table cellspacing="0" cellpadding="0">	
27	+ <tbody>	
28	+ <tr style="height: 56px;">	
29	+ <td id="projectlogo"></td>	
30	+ <td style="padding-left: 0.5em;">	
31	+ <div id="projectname">Mali OpenCL SDK v1.1.0	
32	+ </div>	
33	+ </td>	
34	+ </tr>	
35	+ </tbody>	
36	+ </table>	
37	+ </div>	
38	+ <!-- end header part -->	
39	+ <!-- Generated by Doxygen 1.8.2 -->	
40	+ <script type="text/javascript">	
41	+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');	
42	+ </script>	
43	+ <div id="navrow1" class="tabs">	
44	+ <ul class="tablist">	
45	+ Home	
46	+ Help and Tutorials	
47	+ Files	
48	+ 	
49	+ <div id="MSearchBar" class="MSearchBarInactive">	
50	+ 	

```

51+         
55+         <input type="text" id="MSearchField" value="Search" accesskey="S"
56+             onfocus="searchBox.OnSearchFieldFocus(true)"
57+             onblur="searchBox.OnSearchFieldFocus(false)"
58+             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+     </span><span class="right">
60+         <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61+     </span>
62+   </div>
63+ </li>
64+ </ul>
65+ </div>
66+ </div><!-- top -->
67+ <div id="side-nav" class="ui-resizable side-nav-resizable">
68+   <div id="nav-tree">
69+     <div id="nav-tree-contents">
70+       <div id="nav-sync" class="sync"></div>
71+     </div>
72+   </div>
73+   <div id="splitbar" style="-moz-user-select:none;">
74+     <div class="ui-resizable-handle">
75+       </div>
76+     </div>
77+   <script type="text/javascript">
78+     $(document).ready(function(){initNavTree('dir_490217e45394b06d48a471b031b70a3e.html','');});
79+   </script>
80+   <div id="doc-content">
81+     <!-- window showing the filter options -->
82+     <div id="MSearchSelectWindow"
83+         onmouseover="return searchBox.OnSearchSelectShow()"
84+         onmouseout="return searchBox.OnSearchSelectHide()"
85+         onkeydown="return searchBox.OnSearchSelectKey(event)">
86+       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark" style="font-size: 1.5em;">&#160;

```

```
120 +   </ul>
121 + </div>
122 + </body>
123 + </html>
```

5 docs/html/dir_490217e45394b06d48a471b031b70a3e.js

```
... ... @@ -0,0 +1,5 @@
1 + var dir_490217e45394b06d48a471b031b70a3e =
2 + [
3 +   [ "assets", "dir_f1436c75c3fc029af44aa811691e101e.html", "dir_f1436c75c3fc029af44aa811691e101e" ],
4 +   [ "mandelbrot.cpp", "mandelbrot_8cpp.html", "mandelbrot_8cpp" ]
5 + ];
```

118 docs/html/dir_536689d07d4a9d8d4d9f119eb2909e9b.html

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_vector/assets</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +         <input type="text" id="MSearchField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +       class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_536689d07d4a9d8d4d9f119eb2909e9b.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +       name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 + Files</h2></td></tr>
103 + <tr class="memitem:hello__world__vector_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></td></tr>
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_536689d07d4a9d8d4d9f119eb2909e9b.html">All</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▽ 4 ━━━━ docs/html/dir_536689d07d4a9d8d4d9f119eb2909e9b.js □

```
... ... @@ -0,0 +1,4 @@
1 + var dir_536689d07d4a9d8d4d9f119eb2909e9b =
2 + [
3 +     [ "hello_world_vector.cl", "hello_world_vector_8cl.html", "hello_world_vector_8cl" ]
4 + ]; -
```

▽ 118 ━━━━ docs/html/dir_53e809feb72b43d0f52f5efc50237d2d.html □

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors/assets [D
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
```

```

58 +         onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +     </span><span class="right">
60 +       <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +       </div>
76 +     </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_53e809feb72b43d0f52f5efc50237d2d.html','');});
79 + </script>
80 +   <div id="doc-content">
81 +     <!-- window showing the filter options -->
82 +   <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 +     <!-- iframe showing the search results (closed by default) -->
89 +   <div id="MSearchResultsWindow">
90 +     <iframe src="javascript:void(0)" frameborder="0"
91 +       name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 +   <div class="header">
96 +     <div class="headertitle">
97 +       <div class="title">assets Directory Reference</div> </div>
98 +     </div><!--header-->
99 +   <div class="contents">
100 +     <table class="memberdecls">
101 +       <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 +         Files</a></td></tr>
103 +       <tr class="memitem:sobel_no_vectors_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight">
104 +         <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
105 +       </table>
106 +     </div><!-- contents -->
107 +   </div><!-- doc-content -->
108 +   <!-- start footer part -->
109 +   <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +     <ul>
111 +       <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_53e809feb72b43d0f52f5efc50237d2d.html">assets</a></li>
112 +       <li class="footer">
113 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +       </li>
115 +     </ul>
116 +   </div>
117 + </body>
118 + </html>

```

▽ 4 [docs/html/dir_53e809feb72b43d0f52f5efc50237d2d.js]

...	...	@@ -0,0 +1,4 @@
		+ var dir_53e809feb72b43d0f52f5efc50237d2d =
		+ [
		+ ["sobel_no_vectors.cl", "sobel_no_vectors_8cl.html", "sobel_no_vectors_8cl"]

4 +]; -

▽ 138 docs/html/dir_6f9635d4fbfa321d4c00f29df5cd540c.html -

```
... ... @@ -0,0 +1,138 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples Directory Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_6f9635d4fbfa321d4c00f29df5cd540c.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +   name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">samples Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_98aa652b5938058672ba296b58b44cbf"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_98aa652b5938058672ba296b58b44cbf.html">dir_98aa652b5938058672ba296b58b44cbf</a></td>
104 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + <tr class="memitem:dir_cbd57f3d7d7e9034c814d8124b45dbb2"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_cbd57f3d7d7e9034c814d8124b45dbb2.html">dir_cbd57f3d7d7e9034c814d8124b45dbb2</a></td>
106 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
107 + <tr class="memitem:dir_e76a63218516693600e6e995cc89a2c4"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_e76a63218516693600e6e995cc89a2c4.html">dir_e76a63218516693600e6e995cc89a2c4</a></td>
108 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
109 + <tr class="memitem:dir_75d5c689b70aefa142bdf5ebcb7d98a3"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_75d5c689b70aefa142bdf5ebcb7d98a3.html">dir_75d5c689b70aefa142bdf5ebcb7d98a3</a></td>
110 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
111 + <tr class="memitem:dir_0289395444cf489a29bc36f15be66f35"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_0289395444cf489a29bc36f15be66f35.html">dir_0289395444cf489a29bc36f15be66f35</a></td>
112 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
113 + <tr class="memitem:dir_10f12679427188891e820fce3e11401a"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_10f12679427188891e820fce3e11401a.html">dir_10f12679427188891e820fce3e11401a</a></td>
114 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
115 + <tr class="memitem:dir_490217e45394b06d48a471b031b70a3e"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_490217e45394b06d48a471b031b70a3e.html">dir_490217e45394b06d48a471b031b70a3e</a></td>
116 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
117 + <tr class="memitem:dir_df019e407d3fcab5e49d9c13350c94c"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_df019e407d3fcab5e49d9c13350c94c.html">dir_df019e407d3fcab5e49d9c13350c94c</a></td>
118 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
119 + <tr class="memitem:dir_dd0c2a8767cfede8cdb873abaafa716f"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_dd0c2a8767cfede8cdb873abaafa716f.html">dir_dd0c2a8767cfede8cdb873abaafa716f</a></td>
120 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
121 + <tr class="memitem:dir_33f3275c1127fb7d435e719a53b54021"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_33f3275c1127fb7d435e719a53b54021.html">dir_33f3275c1127fb7d435e719a53b54021</a></td>
122 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
123 + <tr class="memitem:dir_8c530a8c9903b6ceb2227ad2f52f6cd5"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_8c530a8c9903b6ceb2227ad2f52f6cd5.html">dir_8c530a8c9903b6ceb2227ad2f52f6cd5</a></td>
124 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
125 + </table>
126 + </div><!-- contents -->
127 + </div><!-- doc-content -->
128 + <!-- start footer part -->
129 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
130 +   <ul>
131 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
132 +     <li class="footer">
```

```
133 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
134 +     </li>
135 +   </ul>
136 + </div>
137 + </body>
138 + </html>
```

▽ 14 ━━━━━━ docs/html/dir_6f9635d4fbfa321d4c00f29df5cd540c.js ▁

```
... ... @@ -0,0 +1,14 @@
1 + var dir_6f9635d4fbfa321d4c00f29df5cd540c =
2 + [
3 +   [ "64_bit_integer", "dir_98aa652b5938058672ba296b58b44cbf.html", "dir_98aa652b5938058672ba296b58b44cbf" ],
4 +   [ "fir_float", "dir_cbd57f3d7d7e9034c814d8124b45dbb2.html", "dir_cbd57f3d7d7e9034c814d8124b45dbb2" ],
5 +   [ "hello_world_c", "dir_e76a63218516693600e6e995cc89a2c4.html", "dir_e76a63218516693600e6e995cc89a2c4" ],
6 +   [ "hello_world_opencl", "dir_75d5c689b70aefa142bdf5ebcb7d98a3.html", "dir_75d5c689b70aefa142bdf5ebcb7d98a3" ],
7 +   [ "hello_world_vector", "dir_0289395444cf489a29bc36f15be66f35.html", "dir_0289395444cf489a29bc36f15be66f35" ],
8 +   [ "image_scaling", "dir_10f12679427188891e820fce3e11401a.html", "dir_10f12679427188891e820fce3e11401a" ],
9 +   [ "mandelbrot", "dir_490217e45394b06d48a471b031b70a3e.html", "dir_490217e45394b06d48a471b031b70a3e" ],
10 +  [ "sgemm", "dir_df019e407d3fcaab5e49d9c13350c94c.html", "dir_df019e407d3fcaab5e49d9c13350c94c" ],
11 +  [ "sobel", "dir_dd0c2a8767cfede8cdb873abaafa716f.html", "dir_dd0c2a8767cfede8cdb873abaafa716f" ],
12 +  [ "sobel_no_vectors", "dir_33f3275c1127fb7d435e719a53b54021.html", "dir_33f3275c1127fb7d435e719a53b54021" ],
13 +  [ "template", "dir_8c530a8c9903b6ceb2227ad2f52f6cd5.html", "dir_8c530a8c9903b6ceb2227ad2f52f6cd5" ]
14 + ]; ⏎
```

▽ 123 ━━━━━━ docs/html/dir_75d5c689b70aefa142bdf5ebcb7d98a3.html ▁

```
... ... @@ -0,0 +1,123 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_opencl Direct
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top">!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
```

```

41 + var searchBox = new SearchBox("searchBox", "search",false,'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +       </div>
76 +     </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_75d5c689b70aefa142bdf5ebcb7d98a3.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">hello_world_opencl Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 +   <tr class="memitem:dir_9127a1cb36a7caf66e62b387863738ab"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="#dir_9127a1cb36a7caf66e62b387863738ab">dir_9127a1cb36a7caf66e62b387863738ab</a></td></tr>
104 +   <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table><table class="memberdecls">
106 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 +   <tr class="memitem:hello_world_opencl_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="#hello_world_opencl_8cpp">hello_world_opencl_8cpp</a></td></tr>
109 +   <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>

```

```
110 + </table>
111 + </div><!-- contents -->
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_75d5c689b70aefa142bdf5ebcb7d98a3.html">docs</a></li>
117 +   <li class="footer">
118 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +   </li>
120 + </ul>
121 + </div>
122 + </body>
123 + </html>
```

5 docs/html/dir_75d5c689b70aefa142bdf5ebcb7d98a3.js

...	...	@@ -0,0 +1,5 @@
1	+ var dir_75d5c689b70aefa142bdf5ebcb7d98a3 =	
2	+ [
3	+ ["assets", "dir_9127a1cb36a7caf66e62b387863738ab.html", "dir_9127a1cb36a7caf66e62b387863738ab"],	
4	+ ["hello_world_opencl.cpp", "hello_world_opencl_8cpp.html", "hello_world_opencl_8cpp"]	
5	+];	⊖

118 docs/html/dir_75f962b3696c1618a5722e38faad1027.html

...	...	@@ -0,0 +1,118 @@
1	+ !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/fir_float/assets Director	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	
14	+ \$(document).ready(initResizable);	
15	+ </script>	
16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>	
17	+ <script type="text/javascript" src="search/search.js"></script>	
18	+ <script type="text/javascript">	
19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });	
20	+ </script>	
21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />	
22	+ </head>	
23	+ <body>	
24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->	
25	+ <div id="titlearea">	
26	+ <table cellspacing="0" cellpadding="0">	
27	+ <tbody>	
28	+ <tr style="height: 56px;">	
29	+ <td id="projectlogo"></td>	
30	+ <td style="padding-left: 0.5em;">	
31	+ <div id="projectname">Mali OpenCL SDK v1.1.0	
32	+ </div>	
33	+ </td>	
34	+ </tr>	
35	+ </tbody>	
36	+ </table>	
37	+ </div>	
38	+ <!-- end header part -->	
39	+ <!-- Generated by Doxygen 1.8.2 -->	
40	+ <script type="text/javascript">	
41	+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');	

```

42 + </script>
43 +   <div id="navrow1" class="tabs">
44 +     <ul class="tablist">
45 +       <li><a href="index.html"><span>Home</span></a></li>
46 +       <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +       <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_75f962b3696c1618a5722e38faad1027.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 +   Files</h2></td></tr>
103 +   <tr class="memitem:fir_float_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" vali
104 +   <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>

```

```
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_75f962b3696c1618a5722e38faad1027.js">docs/html/dir_75f962b3696c1618a5722e38faad1027.js</a></li>
112 +     <li class="footer">
113 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

4 docs/html/dir_75f962b3696c1618a5722e38faad1027.js

```
... ... @@ -0,0 +1,4 @@
1 + var dir_75f962b3696c1618a5722e38faad1027 =
2 + [
3 +     [ "fir_float.cl", "fir_float_8cl.html", "fir_float_8cl" ]
4 + ]; -
```

123 docs/html/dir_8c530a8c9903b6ceb2227ad2f52f6cd5.html

```
... ... @@ -0,0 +1,123 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template Directory Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! --&gt;
25 + &lt;div id="titlearea"&gt;
26 + &lt;table cellspacing="0" cellpadding="0"&gt;
27 + &lt;tbody&gt;
28 + &lt;tr style="height: 56px;"&gt;
29 + &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt;
30 + &lt;td style="padding-left: 0.5em;"&gt;
31 + &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0
32 + &lt;/div&gt;
33 + &lt;/td&gt;
34 + &lt;/tr&gt;
35 + &lt;/tbody&gt;
36 + &lt;/table&gt;
37 + &lt;/div&gt;
38 + &lt;!-- end header part --&gt;
39 + &lt;!-- Generated by Doxygen 1.8.2 --&gt;
40 + &lt;script type="text/javascript"&gt;
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + &lt;/script&gt;
43 + &lt;div id="navrow1" class="tabs"&gt;
44 + &lt;ul class="tablist"&gt;
45 + &lt;li&gt;&lt;a href="index.html"&gt;&lt;span&gt;Home&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
46 + &lt;li&gt;&lt;a href="pages.html"&gt;&lt;span&gt;Help&amp;#160;and&amp;#160;Tutorials&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
47 + &lt;li&gt;&lt;a href="files.html"&gt;&lt;span&gt;Files&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
48 + &lt;li&gt;</pre>
```

```
49+         <div id="MSearchBox" class="MSearchBoxInactive">
50+             <span class="left">
51+                 
55+                 <input type="text" id="MSearchField" value="Search" accesskey="S"
56+                     onfocus="searchBox.OnSearchFieldFocus(true)"
57+                     onblur="searchBox.OnSearchFieldFocus(false)"
58+                     onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+             </span><span class="right">
60+                 <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68+     <div id="nav-tree">
69+         <div id="nav-tree-contents">
70+             <div id="nav-sync" class="sync"></div>
71+         </div>
72+     </div>
73+     <div id="splitbar" style="-moz-user-select:none;">
74+         <div class="ui-resizable-handle">
75+             </div>
76+         </div>
77+     <script type="text/javascript">
78+ $(document).ready(function(){initNavTree('dir_8c530a8c9903b6ceb2227ad2f52f6cd5.html','');});
79+ </script>
80+     <div id="doc-content">
81+         <!-- window showing the filter options -->
82+         <div id="MSearchSelectWindow"
83+             onmouseover="return searchBox.OnSearchSelectShow()"
84+             onmouseout="return searchBox.OnSearchSelectHide()"
85+             onkeydown="return searchBox.OnSearchSelectKey(event)">
86+             <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark" style="font-size: small;">All
```

```
118 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +     </li>
120 +   </ul>
121 + </div>
122 + </body>
123 + </html>
```

▽ 5 ━━━━━━ docs/html/dir_8c530a8c9903b6ceb2227ad2f52f6cd5.js ▁

...	...	@@ -0,0 +1,5 @@
1	+ var	dir_8c530a8c9903b6ceb2227ad2f52f6cd5 =
2	+ [
3	+ ["assets", "dir_2057de030161fe0957379729a87c463f.html", "dir_2057de030161fe0957379729a87c463f"],	
4	+ ["template.cpp", "template_8cpp.html", "template_8cpp"]	
5	+];	(-)

▽ 118 ━━━━━━ docs/html/dir_9127a1cb36a7caf66e62b387863738ab.html ▁

...	...	@@ -0,0 +1,118 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_opencl/assets	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	
14	+ \$(document).ready(initResizable);	
15	+ </script>	
16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>	
17	+ <script type="text/javascript" src="search/search.js"></script>	
18	+ <script type="text/javascript">	
19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });	
20	+ </script>	
21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />	
22	+ </head>	
23	+ <body>	
24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->	
25	+ <div id="titlearea">	
26	+ <table cellspacing="0" cellpadding="0">	
27	+ <tbody>	
28	+ <tr style="height: 56px;">	
29	+ <td id="projectlogo"></td>	
30	+ <td style="padding-left: 0.5em;">	
31	+ <div id="projectname">Mali OpenCL SDK v1.1.0	
32	+ </div>	
33	+ </td>	
34	+ </tr>	
35	+ </tbody>	
36	+ </table>	
37	+ </div>	
38	+ <!-- end header part -->	
39	+ <!-- Generated by Doxygen 1.8.2 -->	
40	+ <script type="text/javascript">	
41	+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');	
42	+ </script>	
43	+ <div id="navrow1" class="tabs">	
44	+ <ul class="tablist">	
45	+ Home	
46	+ Help and Tutorials	
47	+ Files	
48	+ 	
49	+ <div id="MSearchBox" class="MSearchBoxInactive">	

```
50 +         <span class="left">
51 +             
55 +             <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61 +         </span>
62 +     </div>
63 +   </li>
64 + </ul>
65 + </div>
66 + </div><!-- top -->
67 + <div id="side-nav" class="ui-resizable side-nav-resizable">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle"></div>
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_9127a1cb36a7caf66e62b387863738ab.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark" style="font-size: small;">&#160;
```

4 docs/html/dir_9127a1cb36a7caf66e62b387863738ab.js

```
... ... @@ -0,0 +1,4 @@
1 + var dir_9127a1cb36a7caf66e62b387863738ab =
2 +
3 + [ "hello_world_opencl.cl", "hello_world_opencl_8cl.html", "hello_world_opencl_8cl" ]
4 + ]; -
```

123 docs/html/dir_98aa652b5938058672ba296b58b44cbf.html

```
... ... @@ -0,0 +1,123 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/64_bit_integer Directory
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
```

```
57 +         onblur="searchBox.OnSearchFieldFocus(false)"
58 +         onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +     </span><span class="right">
60 +         <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_98aa652b5938058672ba296b58b44cbf.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">64_bit_integer Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_3d70ec2e68ff85e042132c1108ba337a"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_3d70ec2e68ff85e042132c1108ba337a.html">dir_3d70ec2e68ff85e042132c1108ba337a</a></td>
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table><table class="memberdecls">
106 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 + <tr class="memitem:64_bit_integer_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="64_bit_integer_8cpp.html">64_bit_integer_8cpp</a></td>
109 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
110 + </table>
111 + </div><!-- contents -->
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
117 +     <li class="footer">
118 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +     </li>
120 +   </ul>
121 + </div>
122 + </body>
123 + </html>
```

▽ 5 ━━━━━━ docs/html/dir_98aa652b5938058672ba296b58b44cbf.js □

```
... ... @@ -0,0 +1,5 @@
1 + var dir_98aa652b5938058672ba296b58b44cbf =
2 + [
3 +   [ "assets", "dir_3d70ec2e68ff85e042132c1108ba337a.html", "dir_3d70ec2e68ff85e042132c1108ba337a" ],
4 +   [ "64_bit_integer.cpp", "64_bit_integer_8cpp.html", "64_bit_integer_8cpp" ]
5 + ]; -
```

▽ 118 ━━━━━━ docs/html/dir_a37fa8be2cc2eecbd460c0442aa89426.html □

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel/assets Directory Re
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MSearchField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
```

```

57 +         onblur="searchBox.OnSearchFieldFocus(false)"
58 +         onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +     </span><span class="right">
60 +       <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_a37fa8be2cc2eecd460c0442aa89426.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 +   Files</h2></td></tr>
103 + <tr class="memitem:sobel_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="t
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

4 docs/html/dir_a37fa8be2cc2eecd460c0442aa89426.js

... ... @@ -0,0 +1,4 @@

```

1 + var dir_a37fa8be2cc2eecd460c0442aa89426 =
2 + [

```

```
3 +     [ "sobel.cl", "sobel_8cl.html", "sobel_8cl" ]
4 + ]; -
```

118 docs/html/dir_ab99bc0d9adf5322737f71f92fb9e408.html

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sgemm/assets Directory Re
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_ab99bc0d9adf5322737f71f92fb9e408.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +   name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">assets Directory Reference</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 + Files</h2></td></tr>
103 + <tr class="memitem:sgemm_8cl"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table>
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_ab99bc0d9adf5322737f71f92fb9e408.html">All</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

▽ 4 ■■■■■ docs/html/dir_ab99bc0d9adf5322737f71f92fb9e408.js □

...	...	@@ -0,0 +1,4 @@
		1 + var dir_ab99bc0d9adf5322737f71f92fb9e408 =
		2 + [
		3 + ["sgemm.cl", "sgemm_8cl.html", "sgemm_8cl"]
		4 +]; -

▽ 126 ■■■■■ docs/html/dir_bdd9a5d540de89e9fe90efdfc6973a4f.html □

...	...	@@ -0,0 +1,126 @@
-----	-----	-------------------

```
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common Directory Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
```

```

70 +         <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_bdd9a5d540de89e9fe90efdfc6973a4f.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +         name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">common Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
102 + Files</h2></td></tr>
103 + <tr class="memitem:common_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
104 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + <tr class="memitem:common_8h"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
106 + <tr class="memdesc:common_8h"><td class="mdescLeft">&#160;</td><td class="mdescRight">Functions to simplify the use of OpenCL API.
107 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
108 + <tr class="memitem:image_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
109 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
110 + <tr class="memitem:image_8h"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" valign="top">
111 + <tr class="memdesc:image_8h"><td class="mdescLeft">&#160;</td><td class="mdescRight">Functions for working with bitmap images. <br/>
112 + <tr class="separator:"><td class="memSeparator" colspan="2">&#160;</td></tr>
113 + </table>
114 + </div><!-- contents -->
115 + </div><!-- doc-content -->
116 + <!-- start footer part -->
117 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
118 +   <ul>
119 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efdfc6973a4f.html">common</a></li>
120 +     <li class="footer">
121 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
122 +     </li>
123 +   </ul>
124 + </div>
125 + </body>
126 + </html>

```

< >

▼ 7 docs/html/dir_bdd9a5d540de89e9fe90efdfc6973a4f.js □

...	...	@@ -0,0 +1,7 @@
1	+ var	dir_bdd9a5d540de89e9fe90efdfc6973a4f =
2	+ [
3	+ ["common.cpp", "common_8cpp.html", "common_8cpp"],	
4	+ ["common.h", "common_8h.html", "common_8h"],	
5	+ ["image.cpp", "image_8cpp.html", "image_8cpp"],	
6	+ ["image.h", "image_8h.html", "image_8h"]	
7	+];	⊖

```
@@ -0,0 +1,123 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/fir_float Directory Refer
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
+   $(document).ready(initResizable);
+ </script>
+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="search/search.js"></script>
+ <script type="text/javascript">
+   $(document).ready(function() { searchBox.OnSelectItem(0); });
+ </script>
+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
+ </head>
+ <body>
+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
+ <div id="titlearea">
+ <table cellspacing="0" cellpadding="0">
+   <tbody>
+     <tr style="height: 56px;">
+       <td id="projectlogo"></td>
+       <td style="padding-left: 0.5em;">
+         <div id="projectname">Mali OpenCL SDK v1.1.0
+       </div>
+     </td>
+   </tr>
+ </tbody>
+ </table>
+ </div>
+ <!-- end header part -->
+ <!-- Generated by Doxygen 1.8.2 -->
+ <script type="text/javascript">
+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');
+ </script>
+ <div id="navrow1" class="tabs">
+   <ul class="tablist">
+     <li><a href="index.html"><span>Home</span></a></li>
+     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
+     <li><a href="files.html"><span>Files</span></a></li>
+     <li>
+       <div id="MSearchBox" class="MSearchBoxInactive">
+         <span class="left">
+           
+           <input type="text" id="MTextField" value="Search" accesskey="S"
+             onfocus="searchBox.OnSearchFieldFocus(true)"
+             onblur="searchBox.OnSearchFieldFocus(false)"
+             onkeyup="searchBox.OnSearchFieldChange(event)"/>
+         </span><span class="right">
+           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_cbd57f3d7d7e9034c814d8124b45dbb2.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +   name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">fir_float Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_75f962b3696c1618a5722e38faad1027"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_75f962b3696c1618a5722e38faad1027.html">...</a></td></tr>
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table><table class="memberdecls">
106 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 + <tr class="memitem:fir_float_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="fir_float_8cpp.html">...</a></td></tr>
109 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
110 + </table>
111 + </div><!-- contents -->
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
117 +     <li class="footer">
118 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +     </li>
120 +   </ul>
121 + </div>
122 + </body>
123 + </html>
```

▼ 5 docs/html/dir_cbd57f3d7d7e9034c814d8124b45dbb2.js

Load diff

```
... ... @@ -0,0 +1,123 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel Directory Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <script type="text/javascript" src="resize.js"></script>
11 + <script type="text/javascript" src="navtree.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_dd0c2a8767cfede8cdb873abaafa716f.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +   name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">sobel Directory Reference</div>  </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <table class="memberdecls">
101 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="subdirs"></a>
102 + Directories</h2></td></tr>
103 + <tr class="memitem:dir_a37fa8be2cc2eecd460c0442aa89426"><td class="memItemLeft" align="right" valign="top">directory &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_dd0c2a8767cfede8cdb873abaafa716f.html#subdirs">...</a></td></tr>
104 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
105 + </table><table class="memberdecls">
106 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="files"></a>
107 + Files</h2></td></tr>
108 + <tr class="memitem:sobel_8cpp"><td class="memItemLeft" align="right" valign="top">file &#160;</td><td class="memItemRight" align="left" valign="top"><a href="dir_dd0c2a8767cfede8cdb873abaafa716f.html#files">...</a></td></tr>
109 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
110 + </table>
111 + </div><!-- contents -->
112 + </div><!-- doc-content -->
113 + <!-- start footer part -->
114 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
115 +   <ul>
116 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_dd0c2a8767cfede8cdb873abaafa716f.html">...</a></li>
117 +     <li class="footer">
118 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
119 +     </li>
120 +   </ul>
121 + </div>
122 + </body>
123 + </html>

```

docs/html/dir_dd0c2a8767cfede8cdb873abaafa716f.js

...	...	@@ -0,0 +1,5 @@
		1 + var dir_dd0c2a8767cfede8cdb873abaafa716f =
		2 + [
		3 + ["assets", "dir_a37fa8be2cc2eecd460c0442aa89426.html", "dir_a37fa8be2cc2eecd460c0442aa89426"],
		4 + ["sobel.cpp", "sobel_8cpp.html", "sobel_8cpp"]
		5 +]; -

▽ 123 [docs/html/dir_df019e407d3fcaab5e49d9c13350c94c.html] □

Load diff

▽ 5 [docs/html/dir_df019e407d3fcaab5e49d9c13350c94c.js] □

```
... ... @@ -0,0 +1,5 @@
1 + var dir_df019e407d3fcaab5e49d9c13350c94c =
2 + [
3 +     [ "assets", "dir_ab99bc0d9adf5322737f71f92fb9e408.html", "dir_ab99bc0d9adf5322737f71f92fb9e408" ],
4 +     [ "sgemm.cpp", "sgemm_8cpp.html", "sgemm_8cpp" ]
5 + ]; ⊖
```

▽ 118 [docs/html/dir_e76a63218516693600e6e995cc89a2c4.html] □

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_c Directory F
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + <li><a href="index.html"><span>Home</span></a></li>
46 + <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 + <li><a href="files.html"><span>Files</span></a></li>
```

```

48 +     <li>
49 +         <div id="MSearchBox" class="MSearchBoxInactive">
50 +             <span class="left">
51 +                 
55 +                 <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                     onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                     onblur="searchBox.OnSearchFieldFocus(false)"
58 +                     onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +             </span><span class="right">
60 +                 <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61 +             </span>
62 +         </div>
63 +     </li>
64 +   </ul>
65 + </div>
66 + </div><!-- top -->
67 + <div id="side-nav" class="ui-resizable side-nav-resizable">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('dir_e76a63218516693600e6e995cc89a2c4.html','');});
79 + </script>
80 +   <div id="doc-content">
81 +     <!-- window showing the filter options -->
82 +     <div id="MSearchSelectWindow"
83 +         onmouseover="return searchBox.OnSearchSelectShow()"
84 +         onmouseout="return searchBox.OnSearchSelectHide()"
85 +         onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark" style="font-size: small;">&#160;

```

```
117 + </body>
118 + </html>
```

4 docs/html/dir_e76a63218516693600e6e995cc89a2c4.js

```
... @@ -0,0 +1,4 @@
1 + var dir_e76a63218516693600e6e995cc89a2c4 =
2 +
3 +     [ "hello_world_c.cpp", "hello_world_c_8cpp.html", "hello_world_c_8cpp" ]
4 + ]; -
```

118 docs/html/dir_f1436c75c3fc029af44aa811691e101e.html

Load diff

4 docs/html/dir_f1436c75c3fc029af44aa811691e101e.js

Load diff

1,172 docs/html/doxygen.css

Load diff

◀ BIN docs/html/doxygen.png ⌂

78 docs/html/dynsections.js

Load diff

169 docs/html/files.html

Load diff

5 docs/html/files.js

Load diff

339 docs/html/fir_float_8cl.html

Load diff

14 docs/html/fir_float_8cl.js

```
... ... @@ -0,0 +1,14 @@
1 + var fir_float_8cl =
2 + [
3 +     [ "FW_BL", "fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6", null ],
4 +     [ "FW_BM", "fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f", null ],
5 +     [ "FW_BR", "fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566", null ],
6 +     [ "FW_CL", "fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e", null ],
7 +     [ "FW_CM", "fir_float_8cl.html#a5d47ed70581c7a693231547336cb00aa", null ],
8 +     [ "FW_CR", "fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19", null ],
9 +     [ "FW_SCALE", "fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba7210", null ],
10 +    [ "FW_UL", "fir_float_8cl.html#ad4c882aae33d779624d02d0d88bae565", null ],
11 +    [ "FW_UM", "fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01", null ],
12 +    [ "FW_UR", "fir_float_8cl.html#a86163952d447939d88b2ab454efd091a", null ],
13 +    [ "fir_float", "fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c", null ]
14 +]; -
```

221 docs/html/fir_float_8cl_source.html

```
... ... @@ -0,0 +1,221 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/fir_float/assets/fir_float_8cl.html</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
```

```

33 +   </td>
34 +   </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 +     $(document).ready(function(){initNavTree('fir_float_8cl_source.html','');});
86 +   </script>
87 +   <div id="doc-content">
88 +     <!-- window showing the filter options -->
89 +     <div id="MSearchSelectWindow"
90 +       onmouseover="return searchBox.OnSearchSelectShow()"
91 +       onmouseout="return searchBox.OnSearchSelectHide()"
92 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
93 +       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
94 +     </div>
95 +     <!-- iframe showing the search results (closed by default) -->
96 +     <div id="MSearchResultsWindow">
97 +       <iframe src="javascript:void(0)" frameborder="0"
98 +         name="MSearchResults" id="MSearchResults">
99 +       </iframe>
100 +     </div>
101 +   <div class="header">
```

```

102 + <div class="headertitle">
103 + <div class="title">fir_float.cl</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + <a href="fir_float_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="l00001"></a>
107 + <div class="line"><a name="l00002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108 + <div class="line"><a name="l00003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109 + <div class="line"><a name="l00004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line"><a name="l00005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
111 + <div class="line"><a name="l00006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112 + <div class="line"><a name="l00007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113 + <div class="line"><a name="l00008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114 + <div class="line"><a name="l00009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 + <div class="line"><a name="l00010"></a><span class="lineno"> 10</span>&#160;</div>
116 + <div class="line"><a name="l00011"></a><span class="lineno"> 11</span>&#160;<span class="comment"> /* FW_SCALE = 1 / 256. */</span>
117 + <div class="line"><a name="l00012"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba
118 + <div class="line"><a name="l00013"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#ad4c882aae33d779624d02d0d88ba
119 + <div class="line"><a name="l00014"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#ada3c939d265394a260f3bcf800c1
120 + <div class="line"><a name="l00015"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a86163952d447939d88b2ab454efc
121 + <div class="line"><a name="l00016"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb
122 + <div class="line"><a name="l00017"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a5d47ed70581c7a693231547336cb
123 + <div class="line"><a name="l00018"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a1a85069496abcfd6757ca710c18
124 + <div class="line"><a name="l00019"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a8
125 + <div class="line"><a name="l00020"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6c
126 + <div class="line"><a name="l00021"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32
127 + <div class="line"><a name="l00022"></a><span class="lineno"> 22</span>&#160;<span class="preprocessor"></span></div>
128 + <div class="line"><a name="l00029"></a><span class="lineno"> <a class="code" href="fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e
129 + <div class="line"><a name="l00030"></a><span class="lineno"> 30</span>&#160; __global <span class="keyword">span class="comment">
130 + <div class="line"><a name="l00031"></a><span class="lineno"> 31</span>&#160; <span class="comment">const</span>
131 + <div class="line"><a name="l00032"></a><span class="lineno"> 32</span>&#160;{</div>
132 + <div class="line"><a name="l00033"></a><span class="lineno"> 33</span>&#160; <span class="comment"> /* [Kernel size] */</span>
133 + <div class="line"><a name="l00034"></a><span class="lineno"> 34</span>&#160; <span class="comment"> */</span></div>
134 + <div class="line"><a name="l00035"></a><span class="lineno"> 35</span>&#160;<span class="comment"> * Each kernel calculates a
135 + <div class="line"><a name="l00036"></a><span class="lineno"> 36</span>&#160;<span class="comment"> * column is in the range [0,
136 + <div class="line"><a name="l00037"></a><span class="lineno"> 37</span>&#160;<span class="comment"> * row is in the range [0,
137 + <div class="line"><a name="l00038"></a><span class="lineno"> 38</span>&#160;<span class="comment"> */</span></div>
138 + <div class="line"><a name="l00039"></a><span class="lineno"> 39</span>&#160; <span class="keyword">const</span> <span class="comment">
139 + <div class="line"><a name="l00040"></a><span class="lineno"> 40</span>&#160; <span class="keyword">const</span> <span class="comment">
140 + <div class="line"><a name="l00041"></a><span class="lineno"> 41</span>&#160; <span class="comment"> /* Offset calculates the po
141 + <div class="line"><a name="l00042"></a><span class="lineno"> 42</span>&#160; <span class="keyword">const</span> <span class="comment">
142 + <div class="line"><a name="l00043"></a><span class="lineno"> 43</span>&#160; <span class="comment"> /* [Kernel size] */</span>
143 + <div class="line"><a name="l00044"></a><span class="lineno"> 44</span>&#160;</div>
144 + <div class="line"><a name="l00045"></a><span class="lineno"> 45</span>&#160; <span class="comment"> /* Accumulator array of 4
145 + <div class="line"><a name="l00046"></a><span class="lineno"> 46</span>&#160; float4 accumulator = (float4)0.0f;</div>
146 + <div class="line"><a name="l00047"></a><span class="lineno"> 47</span>&#160;</div>
147 + <div class="line"><a name="l00048"></a><span class="lineno"> 48</span>&#160; <span class="comment"> /*</span></div>
148 + <div class="line"><a name="l00049"></a><span class="lineno"> 49</span>&#160;<span class="comment"> * As mentioned before the
149 + <div class="line"><a name="l00050"></a><span class="lineno"> 50</span>&#160;<span class="comment"> * e.g. If the data in the
150 + <div class="line"><a name="l00051"></a><span class="lineno"> 51</span>&#160;<span class="comment"> * [0 1 2 3 4 5]</span>
151 + <div class="line"><a name="l00052"></a><span class="lineno"> 52</span>&#160;<span class="comment"> * [6 7 8 9 10 11]</span>
152 + <div class="line"><a name="l00053"></a><span class="lineno"> 53</span>&#160;<span class="comment"> * [12 13 14 15 16 17]</span>
153 + <div class="line"><a name="l00054"></a><span class="lineno"> 54</span>&#160;<span class="comment"> *</span></div>
154 + <div class="line"><a name="l00055"></a><span class="lineno"> 55</span>&#160;<span class="comment"> * We load overlapping data
155 + <div class="line"><a name="l00056"></a><span class="lineno"> 56</span>&#160;<span class="comment"> *</span></div>
156 + <div class="line"><a name="l00057"></a><span class="lineno"> 57</span>&#160;<span class="comment"> * data0 = [0 1 2 3]</span>
157 + <div class="line"><a name="l00058"></a><span class="lineno"> 58</span>&#160;<span class="comment"> * data1 = [1 2 3 4]</span>
158 + <div class="line"><a name="l00059"></a><span class="lineno"> 59</span>&#160;<span class="comment"> * data2 = [2 3 4 5]</span>
159 + <div class="line"><a name="l00060"></a><span class="lineno"> 60</span>&#160;<span class="comment"> *</span></div>
160 + <div class="line"><a name="l00061"></a><span class="lineno"> 61</span>&#160;<span class="comment"> * Which means the first re
161 + <div class="line"><a name="l00062"></a><span class="lineno"> 62</span>&#160;<span class="comment"> * accumulator.s0 = data0.s
162 + <div class="line"><a name="l00063"></a><span class="lineno"> 63</span>&#160;<span class="comment"> *</span></div>
163 + <div class="line"><a name="l00064"></a><span class="lineno"> 64</span>&#160;<span class="comment"> * The same is done for the
164 + <div class="line"><a name="l00065"></a><span class="lineno"> 65</span>&#160;<span class="comment"> * multiplied by the corres
165 + <div class="line"><a name="l00066"></a><span class="lineno"> 66</span>&#160;<span class="comment"> * If this indices are comp
166 + <div class="line"><a name="l00067"></a><span class="lineno"> 67</span>&#160;<span class="comment"> */</span></div>
167 + <div class="line"><a name="l00068"></a><span class="lineno"> 68</span>&#160;</div>
168 + <div class="line"><a name="l00069"></a><span class="lineno"> 69</span>&#160; <span class="comment"> /* [Load first row] */</span>
169 + <div class="line"><a name="l00070"></a><span class="lineno"> 70</span>&#160; <span class="comment"> */</span></div>
170 + <div class="line"><a name="l00071"></a><span class="lineno"> 71</span>&#160;<span class="comment"> * Access the first row in

```

```

171 + <div class="line"><a name="100072"></a><span class="lineno"> 72</span>&#160;<span class="comment"> * data1 can be constructed
172 + <div class="line"><a name="100073"></a><span class="lineno"> 73</span>&#160;<span class="comment"> */</span></div>
173 + <div class="line"><a name="100074"></a><span class="lineno"> 74</span>&#160; float4 data0 = vload4(0, input + offset);</div>
174 + <div class="line"><a name="100075"></a><span class="lineno"> 75</span>&#160; float4 data2 = vload4(0, input + offset + 2);</div>
175 + <div class="line"><a name="100076"></a><span class="lineno"> 76</span>&#160; float4 data1 = (float4)(data0.s12, data2.s12);</div>
176 + <div class="line"><a name="100077"></a><span class="lineno"> 77</span>&#160; <span class="comment"> /* [Load first row] */</span>
177 + <div class="line"><a name="100078"></a><span class="lineno"> 78</span>&#160;</div>
178 + <div class="line"><a name="100079"></a><span class="lineno"> 79</span>&#160; <span class="comment"> /* [Filter first row] */</span>
179 + <div class="line"><a name="100080"></a><span class="lineno"> 80</span>&#160; accumulator += data0 * <a class="code" href="#fir_
180 + <div class="line"><a name="100081"></a><span class="lineno"> 81</span>&#160; accumulator += data1 * <a class="code" href="#fir_
181 + <div class="line"><a name="100082"></a><span class="lineno"> 82</span>&#160; accumulator += data2 * <a class="code" href="#fir_
182 + <div class="line"><a name="100083"></a><span class="lineno"> 83</span>&#160; <span class="comment"> /* [Filter first row] */</span>
183 + <div class="line"><a name="100084"></a><span class="lineno"> 84</span>&#160;</div>
184 + <div class="line"><a name="100085"></a><span class="lineno"> 85</span>&#160; <span class="comment"> /* [Load and filter second
185 + <div class="line"><a name="100086"></a><span class="lineno"> 86</span>&#160; <span class="comment"> /* Access the second row in
186 + <div class="line"><a name="100087"></a><span class="lineno"> 87</span>&#160; data0 = vload4(0, input + offset + width);</div>
187 + <div class="line"><a name="100088"></a><span class="lineno"> 88</span>&#160; data2 = vload4(0, input + offset + width + 2);</div>
188 + <div class="line"><a name="100089"></a><span class="lineno"> 89</span>&#160; data1 = (float4)(data0.s12, data2.s12);</div>
189 + <div class="line"><a name="100090"></a><span class="lineno"> 90</span>&#160;</div>
190 + <div class="line"><a name="100091"></a><span class="lineno"> 91</span>&#160; accumulator += data0 * <a class="code" href="#fir_
191 + <div class="line"><a name="100092"></a><span class="lineno"> 92</span>&#160; accumulator += data1 * <a class="code" href="#fir_
192 + <div class="line"><a name="100093"></a><span class="lineno"> 93</span>&#160; accumulator += data2 * <a class="code" href="#fir_
193 + <div class="line"><a name="100094"></a><span class="lineno"> 94</span>&#160;</div>
194 + <div class="line"><a name="100095"></a><span class="lineno"> 95</span>&#160; <span class="comment"> /* Access the third row in
195 + <div class="line"><a name="100096"></a><span class="lineno"> 96</span>&#160; data0 = vload4(0, input + offset + width * 2);</div>
196 + <div class="line"><a name="100097"></a><span class="lineno"> 97</span>&#160; data2 = vload4(0, input + offset + width * 2 + 2);
197 + <div class="line"><a name="100098"></a><span class="lineno"> 98</span>&#160; data1 = (float4)(data0.s12, data2.s12);</div>
198 + <div class="line"><a name="100099"></a><span class="lineno"> 99</span>&#160;</div>
199 + <div class="line"><a name="100100"></a><span class="lineno"> 100</span>&#160; accumulator += data0 * <a class="code" href="#fir_
200 + <div class="line"><a name="100101"></a><span class="lineno"> 101</span>&#160; accumulator += data1 * <a class="code" href="#fir_
201 + <div class="line"><a name="100102"></a><span class="lineno"> 102</span>&#160; accumulator += data2 * <a class="code" href="#fir_
202 + <div class="line"><a name="100103"></a><span class="lineno"> 103</span>&#160; <span class="comment"> /* [Load and filter second
203 + <div class="line"><a name="100104"></a><span class="lineno"> 104</span>&#160;</div>
204 + <div class="line"><a name="100105"></a><span class="lineno"> 105</span>&#160; <span class="comment"> /* [Store] */</span></div>
205 + <div class="line"><a name="100106"></a><span class="lineno"> 106</span>&#160; <span class="comment"> /* Store the accumulator. */</span>
206 + <div class="line"><a name="100107"></a><span class="lineno"> 107</span>&#160; vstore4(accumulator, 0, output + offset);</div>
207 + <div class="line"><a name="100108"></a><span class="lineno"> 108</span>&#160; <span class="comment"> /* [Store] */</span></div>
208 + <div class="line"><a name="100109"></a><span class="lineno"> 109</span>&#160; }</div>
209 + </div><!-- fragment --></div><!-- contents -->
210 + </div><!-- doc-content -->
211 + <!-- start footer part -->
212 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
213 + <ul>
214 +   <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
215 +   <li class="footer">
216 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
217 +   </li>
218 + </ul>
219 + </div>
220 + </body>
221 + </html>

```

160 docs/html/fir_float_8cpp.html

...	...	@@ -0,0 +1,160 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/fir_float/fir_float.cpp F	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	

```

14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +     </div>
82 +   </div>

```

```

83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('fir_float_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 +   <!-- window showing the filter options -->
88 +   <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 +   <!-- iframe showing the search results (closed by default) -->
95 +   <div id="MSearchResultsWindow">
96 +     <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +     </iframe>
99 +   </div>
100 +
101 +   <div class="header">
102 +     <div class="summary">
103 +       <a href="#func-members">Functions</a>  </div>
104 +     <div class="headertitle">
105 +       <div class="title">fir_float.cpp File Reference</div>  </div>
106 +     </div><!--header-->
107 +   <div class="contents">
108 +     <div class="textblock"><code>#include "<a class="el" href="common_8h_source.html">common.h</a>";</code><br/>
109 +     <code>#include "<a class="el" href="image_8h_source.html">image.h</a>";</code><br/>
110 +     <code>#include &lt;CL/cl.h&gt;;</code><br/>
111 +     <code>#include &lt;iostream&gt;;</code><br/>
112 +     <code>#include &lt;fstream&gt;;</code><br/>
113 +     <code>#include &lt;sstream&gt;;</code><br/>
114 +     <code>#include &lt;cstddef&gt;;</code><br/>
115 +     <code>#include &lt;cmath&gt;;</code><br/>
116 +   </div>
117 +   <p><a href="fir_float_8cpp_source.html">Go to the source code of this file.</a></p>
118 +   <table class="memberdecls">
119 +     <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
120 +       Functions</h2></td></tr>
121 +     <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;</td><td class="memItemRight" align="left" valign="top"><a href="fir_float_8cpp_source.html#l00030">30</a></td></tr>
122 +     <tr class="memdesc:a840291bc02cba5474a4cb46a9b9566fe"><td class="mdescLeft">&#160;</td><td class="mdescRight">Simple FIR filter OpenCL sample. </td></tr>
123 +     <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2">&#160;</td></tr>
124 +   </table>
125 +   <h2 class="groupheader">Function Documentation</h2>
126 +   <a class="anchor" id="a840291bc02cba5474a4cb46a9b9566fe"></a>
127 +   <div class="memitem">
128 +     <div class="memproto">
129 +       <table class="memname">
130 +         <tr>
131 +           <td class="memname">int main </td>
132 +           <td>(</td>
133 +             <td class="paramtype">void&#160;;</td>
134 +             <td class="paramname"></td><td>)</td>
135 +           <td></td>
136 +         </tr>
137 +       </table>
138 +     </div><div class="memdoc">
139 +
140 +       <p>Simple FIR filter OpenCL sample. </p>
141 +       <p>A sample which loads an image from assets/input.bmp and then passes it to the GPU. An OpenCL kernel applies FIR filtering on the image. The result is saved to assets/output.bmp. The application also prints the exit code to the console. If the exit code is non-zero, it means that there was a problem during execution. </p>
142 +       <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
143 +
144 +       <p>Definition at line <a class="el" href="fir_float_8cpp_source.html#l00030">30</a> of file <a class="el" href="fir_float_8cpp_source.html#l00030">fir_float_8cpp</a>.</p>
145 +
146 +     </div>
147 +   </div>
148 +   <div><!-- contents -->
149 +   </div><!-- doc-content -->
150 +   <!-- start footer part -->
151 +   <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
```

```
152 +     <ul>
153 +       <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">API Reference</a></li>
154 +       <li class="footer">
155 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
156 +       </li>
157 +     </ul>
158 +   </div>
159 + </body>
160 + </html>
```

▼ 4 docs/html/fir_float_8cpp.js □

```
... ... @@ -0,0 +1,4 @@
1 + var fir_float_8cpp =
2 + [
3 +   [ "main", "fir_float_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ]
4 + ]; -
```

▼ 326 docs/html/fir_float_8cpp_source.html □

Load diff

▼ 118 docs/html/fir_float_8dox.html □

Load diff

▼ BIN docs/html/fir_float_input.bmp □

Binary file not shown.

▼ BIN docs/html/fir_float_output.bmp □

Binary file not shown.

▼ 256 docs/html/fir_tutorial.html □

```
... ... @@ -0,0 +1,256 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 +   <head>
4 +     <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 +     <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 +     <title>Mali OpenCL SDK v1.1.0: FIR Filter</title>
7 +     <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 +     <script type="text/javascript" src="jquery.js"></script>
9 +     <script type="text/javascript" src="dynsections.js"></script>
10 +    <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 +    <script type="text/javascript" src="resize.js"></script>
12 +    <script type="text/javascript" src="navtree.js"></script>
13 +    <script type="text/javascript">
14 +      $(document).ready(initResizable);
15 +    </script>
16 +    <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 +    <script type="text/javascript" src="search/search.js"></script>
18 +    <script type="text/javascript">
19 +      $(document).ready(function() { searchBox.OnSelectItem(0); });
20 +    </script>
```

```

+ </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('fir_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +       onmouseover="return searchBox.OnSearchSelectShow()"
84 +       onmouseout="return searchBox.OnSearchSelectHide()"
85 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->

```

```

89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">FIR Filter </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>Floating point FIR (Finite Input Response) image filter for pixelization and/or noise reduction.</p>
101 +   <h1><a class="anchor" id="firExampleResult"></a>
102 +   Example Result</h1>
103 +   <div class="image">
104 +     
105 +   <div class="caption">
106 +     Input image</div></div>
107 +   <div class="image">
108 +     
109 +   <div class="caption">
110 +     Output image</div></div>
111 +   <h1><a class="anchor" id="firAlgorithm"></a>
112 +   The Algorithm</h1>
113 +   <p>The FIR filter is designed to calculate averages from a finite input.</p>
114 +   <p>To simplify the concept of FIR filtering, consider the one-dimensional signal [17 76 17 84 29], to which we will apply a 3x1 fil
115 +   <ol type="1">
116 +     <li>The filter is overlaid on top of the start of the signal and "reads" the values [17 76 17].</li>
117 +     <li><p class="startli">The output is the sum of the signal-values multiplied with the filter coefficients.</p>
118 +       <p class="startli">[17 76 17] &rarr; [(17 * 3/15) + (76 * 9/15) + (17 * 3/15)] &rarr; [52.4] &rarr; [52]. (Using integers for simp
119 +     </li>
120 +     <li>The "kernel" (i.e. the filter as applied to the signal, sometimes also known as the "window") is then slid one step to the right
121 +     <li>The ouput is now: [(76 * 3/15) + (17 * 9/15) + (84 * 3/15)] &rarr; [42.2] &rarr; [42].</li>
122 +     <li>Next it reads [17 84 29] &rarr; [59.6] &rarr; [59]</li>
123 +     <li>Since we can no longer slide the kernel along the signal without going out of bounds we stop there and the full output signal i
124 +   </ol>
125 +   <h1><a class="anchor" id="firImplementation"></a>
126 +   Implementation</h1>
127 +   <h2><a class="anchor" id="firSize"></a>
128 +   Image Size</h2>
129 +   <p>We have included a 512x512 input bitmap for use with this sample (to keep the size of the installer small). However, you are mor
130 +   <p>This sample has been coded to allow any input bitmap to be used. Simply change <em>input.bmp</em> in the assets directory of the
131 +   <h2><a class="anchor" id="firPadding"></a>
132 +   Padding</h2>
133 +   <p>It is important to note that we have not considered padding here. The output image is two pixels smaller in both dimensions. Be
134 +   <p>Sometimes it can be desirable to have the size of the output-signal be the same as the size of the input-signal, in which case '
135 +   <h2><a class="anchor" id="firMali"></a>
136 +   Mali-T600 Series Hardware</h2>
137 +   <p>Mali-T600 series GPU pipelines provide true IEEE-754 single-precision floating-point math in hardware. We recommend to use vecto
138 +   <p>In this sample, the calculations use 32-bit floating point numbers. One 128-bit vector can fit four 32-bit floating point number
139 +   <p><b>We recommend the use of vectors wherever possible when using a Mali-T600 series GPU.</b></p>
140 +   <h2><a class="anchor" id="firSpecifics"></a>
141 +   Implementation Specifics</h2>
142 +   <p>We implement FIR filtering on a single 8-bit channel for simplicity. To do FIR filtering on RGB images you can run the FIR filter
143 +   <p>Each FIR calculation gives an output for the centre pixel of the mask. The output value of the centre pixel is the sum of the pi
144 +   <h2><a class="anchor" id="firFilter"></a>
145 +   The Filter</h2>
146 +   <p>The kernel applies a 3x3 FIR filter with constant coefficients (weights) to a 6x3 window in an input luminance image to produce
147 +   <p>The input and output images are represented using arrays of floating point numbers.</p>
148 +   <p>The FIR coefficients are defined as constant floats and organized as follows:</p>
149 +   <pre class="fragment">FW_UL FW_UM FW_UR
150 +   FW_CL FW_CM FW_CR
151 +   FW_BL FW_BM FW_BR
152 +   </pre><p>In a real application, these values can be derived in a number of different ways depending on the intended result. For thi
153 +   <p>Our common coefficient denominator is 256, so the output pixel fits within a char. And as explained in <a class="el" href="#fir_i
154 +   <p>The coefficients being used are: </p>
155 +   <pre class="fragment">[30 5 6 ]
156 +   [19 30 9 ] / 256
157 +   [15 5 40]

```

```

158 + </pre><h2><a class="anchor" id="firCode"></a>
159 + The Code</h2>
160 + <p>Unless otherwise noted, all code snippets come from the OpenCL kernel found in <a class="el" href="fir_float_8cl.html">fir_float.cl</a>.
161 + <ol type="1">
162 + <li><p class="startli"><b>Choosing the size of the kernel</b></p>
163 + <p class="startli">We are using vector types in the kernel and so we are actually outputting 4 results per kernel. See above for more information on vector types.
164 + <div class="fragment"><div class="line">    <span class="comment"> /*</span></div>
165 + <div class="line"><span class="comment"> * Each kernel calculates 4 output pixels in the same row (hence the '4').</span></div>
166 + <div class="line"><span class="comment"> * column is in the range [0, width] in steps of 4.</span></div>
167 + <div class="line"><span class="comment"> * row is in the range [0, height].</span></div>
168 + <div class="line"><span class="comment"> */</span></div>
169 + <div class="line">    <span class="keyword">const</span> <span class="keywordtype">int</span> column = get_global_id(0) * 4;</div>
170 + <div class="line">    <span class="keyword">const</span> <span class="keywordtype">int</span> row = get_global_id(1);</div>
171 + <div class="line">    <span class="comment"> /* Offset calculates the position in the linear data for the row and the column. */</span></div>
172 + <div class="line">    <span class="keyword">const</span> <span class="keywordtype">int</span> offset = row * width + column;</div>
173 + </div><!-- fragment --><p> And when we enqueue the kernel in <a class="el" href="fir_float_8cpp.html">fir_float.cpp</a>, we reduce the global work size by dividing by 4.
174 + <div class="fragment"><div class="line">    <span class="comment"> /*</span></div>
175 + <div class="line"><span class="comment"> * Each instance of the kernel operates on a 4 * 1 portion of the image.</span></div>
176 + <div class="line"><span class="comment"> * Therefore, the global work size must be width / 4 by height / 1 work items.</span></div>
177 + <div class="line"><span class="comment"> */</span></div>
178 + <div class="line">    <span class="keywordtype">size_t</span> globalWorksize[2] = {width / 4, height / 1};</div>
179 + </div><!-- fragment --></li>
180 + <li><p class="startli"><b>Loading the input data</b></p>
181 + <p class="startli">Here we do vector loads from one row of the data: </p>
182 + <div class="fragment"><div class="line">    <span class="comment"> /*</span></div>
183 + <div class="line"><span class="comment"> * Access the first row in the 6x3 window to apply FW_U coefficients.</span></div>
184 + <div class="line"><span class="comment"> * data1 can be constructed from the other vectors without doing an additional load.</span></div>
185 + <div class="line"><span class="comment"> */</span></div>
186 + <div class="line">    float4 data0 = vload4(0, input + offset);</div>
187 + <div class="line">    float4 data2 = vload4(0, input + offset + 2);</div>
188 + <div class="line">    float4 data1 = (float4)(data0.s12, data2.s12);</div>
189 + </div><!-- fragment --></li>
190 + <li><p class="startli"><b>Applying the filter</b></p>
191 + <p class="startli">Then we carry out the calculation on 4 pixels. Each vector calculation can be done as a single operation on Mali.
192 + <div class="fragment"><div class="line">    accumulator += data0 * <a class="code" href="fir_float_8cl.html#ad4c882aae33d779624d02">FW_U</a>;
193 + <div class="line">    accumulator += data1 * <a class="code" href="fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01">FW_UM</a>;
194 + <div class="line">    accumulator += data2 * <a class="code" href="fir_float_8cl.html#a86163952d447939d88b2ab454efd091a">FW_UR</a>;
195 + </div><!-- fragment --><p> We apply the same pattern to the second and third row, to accumulate the result in the <em>accumulator</em>.
196 + <div class="fragment"><div class="line">    <span class="comment"> /* Access the second row in the 6x3 window and repeat the process. */</span></div>
197 + <div class="line">    data0 = vload4(0, input + offset + width);</div>
198 + <div class="line">    data2 = vload4(0, input + offset + width + 2);</div>
199 + <div class="line">    data1 = (float4)(data0.s12, data2.s12);</div>
200 + <div class="line"></div>
201 + <div class="line">    accumulator += data0 * <a class="code" href="fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e">FW_CL</a>;
202 + <div class="line">    accumulator += data1 * <a class="code" href="fir_float_8cl.html#a5d47ed70581c7a693231547336cb00aa">FW_CM</a>;
203 + <div class="line">    accumulator += data2 * <a class="code" href="fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19">FW_CR</a>;
204 + <div class="line"></div>
205 + <div class="line">    <span class="comment"> /* Access the third row in the 6x3 window and repeat the process, but with FW_B coefficients. */</span>
206 + <div class="line">    data0 = vload4(0, input + offset + width * 2);</div>
207 + <div class="line">    data2 = vload4(0, input + offset + width * 2 + 2);</div>
208 + <div class="line">    data1 = (float4)(data0.s12, data2.s12);</div>
209 + <div class="line"></div>
210 + <div class="line">    accumulator += data0 * <a class="code" href="fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6">FW_BL</a>;
211 + <div class="line">    accumulator += data1 * <a class="code" href="fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f">FW_BM</a>;
212 + <div class="line">    accumulator += data2 * <a class="code" href="fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566">FW_BR</a>;
213 + </div><!-- fragment --></li>
214 + <li><p class="startli"><b>Storing the result</b></p>
215 + <p class="startli">Finally store the data. We use a vector store to write out the 4 results at once: </p>
216 + <div class="fragment"><div class="line">    <span class="comment"> /* Store the accumulator. */</span></div>
217 + <div class="line">    vstore4(accumulator, 0, output + offset);</div>
218 + </div><!-- fragment --></li>
219 + </ol>
220 + <h1><a class="anchor" id="firRunning"></a>
221 + Running the Sample</h1>
222 + <ol type="1">
223 + <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
224 + <div class="fragment"><div class="line">cd samples/<a class="code" href="fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c" title="fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c">make install</a></div>
225 + </div><!-- fragment --><div class="fragment"><div class="line">make install</div>
226 + </div><!-- fragment --><p class="startli">This compiles the FIR float sample code and copies all the files it needs to run to the build directory.

```

```
227 + </li>
228 + <li>Copy this folder to the board.</li>
229 + <li><p class="startli">Navigate to the folder on the board and run the FIR float binary:</p>
230 + <div class="fragment"><div class="line">./<a class="code" href="fir_float_8cl.html#a1bacdbae8f7bf3c8ac34929a28e689c" title="FIR float binary">fir_float_8cl</a></div>
231 + </div><!-- fragment --></li>
232 + <li><p class="startli">You should see output similar to:</p>
233 + <div class="fragment"><div class="line">Profiling information:</div>
234 + <div class="line">Queued time: 0.057ms</div>
235 + <div class="line">Wait time: 0.071017ms</div>
236 + <div class="line">Run time: 0.475355ms</div>
237 + </div><!-- fragment --><p class="startli">An output image should be created on the board called output.bmp.</p>
238 + </li>
239 + </ol>
240 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</p>
241 + <h1><a class="anchor" id="firMoreInformation"></a>
242 + More Information</h1>
243 + <p>For more information have a look at the code in <a class="el" href="fir_float_8cpp.html">fir_float.cpp</a> and <a class="el" href="fir_float_8cl.html#a1bacdbae8f7bf3c8ac34929a28e689c" title="FIR float binary">fir_float_8cl</a>.</p>
244 + </div></div><!-- contents -->
245 + </div><!-- doc-content -->
246 + <!-- start footer part -->
247 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
248 +   <ul>
249 +     <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
250 +     <li class="footer">
251 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
252 +     </li>
253 +   </ul>
254 + </div>
255 + </body>
256 + </html>
```

▼ BIN docs/html/ftv2blank.png

Unable to render code block

▼ BIN docs/html/ftv2c1.png

Unable to render code block

▼ BIN docs/html/ftv2doc.png

Unable to render code block

▼ BIN docs/html/ftv2folderclosed.png

Unable to render code block

▼ BIN docs/html/ftv2folderopen.png

Unable to render code block

▼ BIN docs/html/ftv2lastnode.png

Unable to render code block

▼ BIN docs/html/ftv2link.png

Unable to render code block

▽ BIN  docs/html/ftv2mlastnode.png 

Unable to render code block

▽ BIN  docs/html/ftv2mnode.png 

Unable to render code block

▽ BIN  docs/html/ftv2mo.png 

Unable to render code block

▽ BIN  docs/html/ftv2node.png 

Unable to render code block

▽ BIN  docs/html/ftv2ns.png 

Unable to render code block

▽ BIN  docs/html/ftv2plastnode.png 

Unable to render code block

▽ BIN  docs/html/ftv2pnnode.png 

Unable to render code block

▽ BIN  docs/html/ftv2splitbar.png 

Unable to render code block

▽ BIN  docs/html/ftv2vertline.png 

Unable to render code block

▽ 163  docs/html/functions.html 

...	...	@@ -0,0 +1,163 @@
1		+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2		+ <html xmlns="http://www.w3.org/1999/xhtml">
3		+ <head>
4		+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5		+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6		+ <title>Mali OpenCL SDK v1.1.0: Class Members</title>
7		+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
8		+ <script type="text/javascript" src="jquery.js"></script>
9		+ <script type="text/javascript" src="dynsections.js"></script>
10		+ <link href="navtree.css" rel="stylesheet" type="text/css"/>

```

11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li class="current"><a href="functions.html"><span>All</span></a></li>
69 +     <li><a href="functions_vars.html"><span>Variables</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
```

```
80 +         class="ui-resizable-handle">
81 +     </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('functions.html','');});
85 + </script>
86 + <div id="doc-content">
87 +     <!-- window showing the filter options --&gt;
88 +     &lt;div id="MSearchSelectWindow"
89 +         onmouseover="return searchBox.OnSearchSelectShow()"
90 +         onmouseout="return searchBox.OnSearchSelectHide()"
91 +         onkeydown="return searchBox.OnSearchSelectKey(event)"&gt;
92 +         &lt;a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"&gt;&lt;span class="SelectionMark"&gt;All&lt;/span&gt;&lt;/a&gt;
93 +
94 +         <!-- iframe showing the search results (closed by default) --&gt;
95 +         &lt;div id="MSearchResultsWindow"&gt;
96 +             &lt;iframe src="javascript:void(0)" frameborder="0"
97 +                 name="MSearchResults" id="MSearchResults"&gt;
98 +             &lt;/iframe&gt;
99 +         &lt;/div&gt;
100 +
101 +     &lt;div class="contents"&gt;
102 +         &lt;div class="textblock"&gt;Here is a list of all class members with links to the classes they belong to:&lt;/div&gt;&lt;ul&gt;
103 +         &lt;li&gt;bitsPerPixel
104 +             : &lt;a class="el" href="structbitmap_information_header.html#ae25aec64837eed48f745ae772af7dff"&gt;bitmapInformationHeader&lt;/a&gt;
105 +         &lt;/li&gt;
106 +         &lt;li&gt;compressionType
107 +             : &lt;a class="el" href="structbitmap_information_header.html#a1a6659ee7987cc1be662ec93a6f2eef7"&gt;bitmapInformationHeader&lt;/a&gt;
108 +         &lt;/li&gt;
109 +         &lt;li&gt;creator1
110 +             : &lt;a class="el" href="structbitmap_header.html#ad1281577a12cb4314cfe869877135231"&gt;bitmapHeader&lt;/a&gt;
111 +         &lt;/li&gt;
112 +         &lt;li&gt;creator2
113 +             : &lt;a class="el" href="structbitmap_header.html#aafdafe00204ad8448ab9cd98aa3040b2"&gt;bitmapHeader&lt;/a&gt;
114 +         &lt;/li&gt;
115 +         &lt;li&gt;fileSize
116 +             : &lt;a class="el" href="structbitmap_header.html#ad06f4dbac80aa4d85163d3862ed34197"&gt;bitmapHeader&lt;/a&gt;
117 +         &lt;/li&gt;
118 +         &lt;li&gt;height
119 +             : &lt;a class="el" href="structbitmap_information_header.html#a5c5209b385872825e8f9c629ac288a12"&gt;bitmapInformationHeader&lt;/a&gt;
120 +         &lt;/li&gt;
121 +         &lt;li&gt;horizontalResolution
122 +             : &lt;a class="el" href="structbitmap_information_header.html#a39272c25c46f5628cdefc3965f4f6e0d"&gt;bitmapInformationHeader&lt;/a&gt;
123 +         &lt;/li&gt;
124 +         &lt;li&gt;magic
125 +             : &lt;a class="el" href="structbitmap_magic.html#a477646205ecad5019613626f0b478694"&gt;bitmapMagic&lt;/a&gt;
126 +         &lt;/li&gt;
127 +         &lt;li&gt;numberOfColorPlanes
128 +             : &lt;a class="el" href="structbitmap_information_header.html#a92ce2fb0499b65ccb0dccbec12b44c4c"&gt;bitmapInformationHeader&lt;/a&gt;
129 +         &lt;/li&gt;
130 +         &lt;li&gt;numberOfColors
131 +             : &lt;a class="el" href="structbitmap_information_header.html#ab8a3e77e6b66d1361d65523a99104f5f"&gt;bitmapInformationHeader&lt;/a&gt;
132 +         &lt;/li&gt;
133 +         &lt;li&gt;numberOfImportantColors
134 +             : &lt;a class="el" href="structbitmap_information_header.html#aa6296b037bae6831a6c53f6115c29769"&gt;bitmapInformationHeader&lt;/a&gt;
135 +         &lt;/li&gt;
136 +         &lt;li&gt;offset
137 +             : &lt;a class="el" href="structbitmap_header.html#a5e74a0bfe6340ad581369b48bce59dbe"&gt;bitmapHeader&lt;/a&gt;
138 +         &lt;/li&gt;
139 +         &lt;li&gt;rawBitmapSize
140 +             : &lt;a class="el" href="structbitmap_information_header.html#abd9001c6c1eefbef9c53f15ec6f3162a"&gt;bitmapInformationHeader&lt;/a&gt;
141 +         &lt;/li&gt;
142 +         &lt;li&gt;size
143 +             : &lt;a class="el" href="structbitmap_information_header.html#afd30cb5246210713920211afb56f13f0"&gt;bitmapInformationHeader&lt;/a&gt;
144 +         &lt;/li&gt;
145 +         &lt;li&gt;verticalResolution
146 +             : &lt;a class="el" href="structbitmap_information_header.html#a9596ce6332941aafbbf85b7e379e948f"&gt;bitmapInformationHeader&lt;/a&gt;
147 +         &lt;/li&gt;
148 +         &lt;li&gt;width</li>

```

```
149 + : <a class="el" href="structbitmap_information_header.html#abb2a108b489900502eb06b3982b0dc02">bitmapInformationHeader</a>
150 + </li>
151 + </ul>
152 + </div><!-- contents -->
153 + </div><!-- doc-content -->
154 + <!-- start footer part -->
155 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
156 +   <ul>
157 +     <li class="footer">
158 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
159 +     </li>
160 +   </ul>
161 + </div>
162 + </body>
163 + </html>
```

... 163 docs/html/functions_vars.html

```
@@ -0,0 +1,163 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Class Members - Variables</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
```

```

50 +         <span class="left">
51 +             
55 +             <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()"></a>
61 +         </span>
62 +     </div>
63 +   </li>
64 + </ul>
65 + </div>
66 + <div id="navrow3" class="tabs2">
67 +   <ul class="tablist">
68 +     <li><a href="functions.html"><span>All</span></a></li>
69 +     <li class="current"><a href="functions_vars.html"><span>Variables</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle"></div>
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('functions_vars.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark" style="font-size: small;">All

```

```

119 + : <a class="el" href="structbitmap_information_header.html#a5c5209b385872825e8f9c629ac288a12">bitmapInformationHeader</a>
120 + </li>
121 + <li>horizontalResolution
122 + : <a class="el" href="structbitmap_information_header.html#a39272c25c46f5628cdefc3965f4f6e0d">bitmapInformationHeader</a>
123 + </li>
124 + <li>magic
125 + : <a class="el" href="structbitmap_magic.html#a477646205ecad5019613626f0b478694">bitmapMagic</a>
126 + </li>
127 + <li>numberOfColorPlanes
128 + : <a class="el" href="structbitmap_information_header.html#a92ce2fb0499b65ccb0dccbec12b44c4c">bitmapInformationHeader</a>
129 + </li>
130 + <li>numberOfColors
131 + : <a class="el" href="structbitmap_information_header.html#ab8a3e77e6b66d1361d65523a99104f5f">bitmapInformationHeader</a>
132 + </li>
133 + <li>numberOfImportantColors
134 + : <a class="el" href="structbitmap_information_header.html#aa6296b037bae6831a6c53f6115c29769">bitmapInformationHeader</a>
135 + </li>
136 + <li>offset
137 + : <a class="el" href="structbitmap_header.html#a5e74a0bfe6340ad581369b48bce59dbe">bitmapHeader</a>
138 + </li>
139 + <li>rawBitmapSize
140 + : <a class="el" href="structbitmap_information_header.html#abd9001c6c1eefbef9c53f15ec6f3162a">bitmapInformationHeader</a>
141 + </li>
142 + <li>size
143 + : <a class="el" href="structbitmap_information_header.html#afd30cb5246210713920211afb56f13f0">bitmapInformationHeader</a>
144 + </li>
145 + <li>verticalResolution
146 + : <a class="el" href="structbitmap_information_header.html#a9596ce6332941aafbbf85b7e379e948f">bitmapInformationHeader</a>
147 + </li>
148 + <li>width
149 + : <a class="el" href="structbitmap_information_header.html#abb2a108b489900502eb06b3982b0dc02">bitmapInformationHeader</a>
150 + </li>
151 + </ul>
152 + </div><!-- contents -->
153 + </div><!-- doc-content -->
154 + <!-- start footer part -->
155 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
156 +   <ul>
157 +     <li class="footer">
158 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
159 +     </li>
160 +   </ul>
161 + </div>
162 + </body>
163 + </html>

```

333 docs/html/globals.html

[Load diff](#)

156 docs/html/globals_defs.html

...	...	@@ -0,0 +1,156 @@
1	2	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
3		+ <html xmlns="http://www.w3.org/1999/xhtml">
4		+ <head>
5		+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
6		+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
7		+ <title>Mali OpenCL SDK v1.1.0: File Members</title>
8		+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
9		+ <script type="text/javascript" src="jquery.js"></script>
		+ <script type="text/javascript" src="dynsections.js"></script>

```

10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li class="current"><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 +   <div id="navrow3" class="tabs2">
73 +     <ul class="tablist">
74 +       <li><a href="globals.html"><span>All</span></a></li>
75 +       <li><a href="globals_func.html"><span>Functions</span></a></li>
76 +       <li><a href="globals_vars.html"><span>Variables</span></a></li>
77 +       <li class="current"><a href="globals_defs.html"><span>Macros</span></a></li>
78 +     </ul>

```

```

79 +   </div>
80 + </div><!-- top -->
81 + <div id="side-nav" class="ui-resizable side-nav-resizable">
82 +   <div id="nav-tree">
83 +     <div id="nav-tree-contents">
84 +       <div id="nav-sync" class="sync"></div>
85 +     </div>
86 +   </div>
87 +   <div id="splitbar" style="-moz-user-select:none;">
88 +     class="ui-resizable-handle">
89 +   </div>
90 + </div>
91 + <script type="text/javascript">
92 + $(document).ready(function(){initNavTree('globals_defs.html','');});
93 + </script>
94 + <div id="doc-content">
95 + <!-- window showing the filter options -->
96 + <div id="MSearchSelectWindow"
97 +   onmouseover="return searchBox.OnSearchSelectShow()"
98 +   onmouseout="return searchBox.OnSearchSelectHide()"
99 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
100 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
101 +
102 + <!-- iframe showing the search results (closed by default) -->
103 + <div id="MSearchResultsWindow">
104 + <iframe src="javascript:void(0)" frameborder="0"
105 +   name="MSearchResults" id="MSearchResults">
106 + </iframe>
107 + </div>
108 +
109 + <div class="contents">
110 + &#160;<ul>
111 + <li>FW_BL
112 + : <a class="el" href="fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6">fir_float.cl</a>
113 + </li>
114 + <li>FW_BM
115 + : <a class="el" href="fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f">fir_float.cl</a>
116 + </li>
117 + <li>FW_BR
118 + : <a class="el" href="fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566">fir_float.cl</a>
119 + </li>
120 + <li>FW_CL
121 + : <a class="el" href="fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e">fir_float.cl</a>
122 + </li>
123 + <li>FW_CM
124 + : <a class="el" href="fir_float_8cl.html#a5d47ed70581c7a693231547336cb00aa">fir_float.cl</a>
125 + </li>
126 + <li>FW_CR
127 + : <a class="el" href="fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19">fir_float.cl</a>
128 + </li>
129 + <li>FW_SCALE
130 + : <a class="el" href="fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba7210">fir_float.cl</a>
131 + </li>
132 + <li>FW_UL
133 + : <a class="el" href="fir_float_8cl.html#ad4c882aae33d779624d02d0d88bae565">fir_float.cl</a>
134 + </li>
135 + <li>FW_UM
136 + : <a class="el" href="fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01">fir_float.cl</a>
137 + </li>
138 + <li>FW_UR
139 + : <a class="el" href="fir_float_8cl.html#a86163952d447939d88b2ab454efd091a">fir_float.cl</a>
140 + </li>
141 + <li>MAX_ITER
142 + : <a class="el" href="mandelbrot_8cl.html#acd517c6f195c75b9dd0f3aad65326f3b">mandelbrot.cl</a>
143 + </li>
144 + </ul>
145 + </div><!-- contents -->
146 + </div><!-- doc-content -->
147 + <!-- start footer part -->
```

```
148 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
149 +   <ul>
150 +     <li class="footer">
151 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
152 +     </li>
153 +   </ul>
154 + </div>
155 + </body>
156 + </html>
```

▼ 297 ■■■■■ docs/html/globals_func.html □

```
... ... @@ -0,0 +1,297 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: File Members</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MSearchField" value="Search" accesskey="S"
```

```

56 +         onfocus="searchBox.OnSearchFieldFocus(true)"
57 +         onblur="searchBox.OnSearchFieldFocus(false)"
58 +         onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +     </span><span class="right">
60 +         <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li class="current"><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + <div id="navrow3" class="tabs2">
73 +   <ul class="tablist">
74 +     <li><a href="globals.html"><span>All</span></a></li>
75 +     <li class="current"><a href="globals_func.html"><span>Functions</span></a></li>
76 +     <li><a href="globals_vars.html"><span>Variables</span></a></li>
77 +     <li><a href="globals_defs.html"><span>Macros</span></a></li>
78 +   </ul>
79 + </div>
80 + <div id="navrow4" class="tabs3">
81 +   <ul class="tablist">
82 +     <li><a href="#index_c"><span>c</span></a></li>
83 +     <li><a href="#index_e"><span>e</span></a></li>
84 +     <li><a href="#index_f"><span>f</span></a></li>
85 +     <li><a href="#index_h"><span>h</span></a></li>
86 +     <li><a href="#index_i"><span>i</span></a></li>
87 +     <li><a href="#index_l"><span>l</span></a></li>
88 +     <li><a href="#index_m"><span>m</span></a></li>
89 +     <li><a href="#index_p"><span>p</span></a></li>
90 +     <li><a href="#index_r"><span>r</span></a></li>
91 +     <li><a href="#index_s"><span>s</span></a></li>
92 +     <li><a href="#index_t"><span>t</span></a></li>
93 +   </ul>
94 + </div>
95 + </div><!-- top -->
96 + <div id="side-nav" class="ui-resizable side-nav-resizable">
97 +   <div id="nav-tree">
98 +     <div id="nav-tree-contents">
99 +       <div id="nav-sync" class="sync"></div>
100 +     </div>
101 +   </div>
102 +   <div id="splitbar" style="-moz-user-select:none;">
103 +     <div class="ui-resizable-handle">
104 +   </div>
105 + </div>
106 + <script type="text/javascript">
107 + $(document).ready(function(){initNavTree('globals_func.html','');});
108 + </script>
109 + <div id="doc-content">
110 + <!-- window showing the filter options -->
111 + <div id="MSearchSelectWindow"
112 +     onmouseover="return searchBox.OnSearchSelectShow()"
113 +     onmouseout="return searchBox.OnSearchSelectHide()"
114 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
115 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
116 +
117 + <!-- iframe showing the search results (closed by default) -->
118 + <div id="MSearchResultsWindow">
119 +   <iframe src="javascript:void(0)" frameborder="0"
120 +           name="MSearchResults" id="MSearchResults">
121 +   </iframe>
122 + </div>
123 +
124 + <div class="contents">
```

```

125 + &#160;
126 +
127 + <h3><a class="anchor" id="index_c"></a>- c -</h3><ul>
128 + <li>checkSuccess()
129 + : <a class="el" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">common.cpp</a>
130 + , <a class="el" href="common_8h.html#a73727ed6f5d821d8c97756404e145644">common.h</a>
131 + </li>
132 + <li>cleanUpOpenCL()
133 + : <a class="el" href="common_8h.html#acd459e74d0cef3c4616c7ce1a5a47f4d">common.h</a>
134 + , <a class="el" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d">common.cpp</a>
135 + </li>
136 + <li>createCommandQueue()
137 + : <a class="el" href="common_8cpp.html#a30ee399cc6a4b82d46c581f037b447fa">common.cpp</a>
138 + , <a class="el" href="common_8h.html#a30ee399cc6a4b82d46c581f037b447fa">common.h</a>
139 + </li>
140 + <li>createContext()
141 + : <a class="el" href="common_8h.html#a6fc67d121370b02ac8bff71ec00a7665">common.h</a>
142 + , <a class="el" href="common_8cpp.html#a6fc67d121370b02ac8bff71ec00a7665">common.cpp</a>
143 + </li>
144 + <li>createProgram()
145 + : <a class="el" href="common_8cpp.html#a4feec45e4b990aad8e40cc3faa32a9c8">common.cpp</a>
146 + , <a class="el" href="common_8h.html#a7fe72dc9fb4aad614e19d6bfbb2a7fce">common.h</a>
147 + </li>
148 + <li>createStartX()
149 + : <a class="el" href="mandelbrot_8cl.html#a4dff8ed5ea4612c75f705e514351c4a">mandelbrot.cl</a>
150 + </li>
151 + </ul>
152 +
153 +
154 + <h3><a class="anchor" id="index_e"></a>- e -</h3><ul>
155 + <li>errorNumberToString()
156 + : <a class="el" href="common_8cpp.html#a119c92d8d25b68950de4d0e6f337df18">common.cpp</a>
157 + , <a class="el" href="common_8h.html#a8ce6fa1f13405092e05b3a1b464b1f77">common.h</a>
158 + </li>
159 + </ul>
160 +
161 +
162 + <h3><a class="anchor" id="index_f"></a>- f -</h3><ul>
163 + <li>fir_float()
164 + : <a class="el" href="fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c">fir_float.cl</a>
165 + </li>
166 + </ul>
167 +
168 +
169 + <h3><a class="anchor" id="index_h"></a>- h -</h3><ul>
170 + <li>hello_world_opencl()
171 + : <a class="el" href="hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7">hello_world_opencl.cl</a>
172 + </li>
173 + <li>hello_world_vector()
174 + : <a class="el" href="hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53afd57d89">hello_world_vector.cl</a>
175 + </li>
176 + </ul>
177 +
178 +
179 + <h3><a class="anchor" id="index_i"></a>- i -</h3><ul>
180 + <li>image_scaling()
181 + : <a class="el" href="image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26">image_scaling.cl</a>
182 + </li>
183 + <li>imageChannelDataTypeToString()
184 + : <a class="el" href="common_8cpp.html#af351b63fc0df43f3702d01de76d344ae">common.cpp</a>
185 + , <a class="el" href="common_8h.html#a1200474d0c84aaaf23b5bf36b4d9abfd">common.h</a>
186 + </li>
187 + <li>imageChannelOrderToString()
188 + : <a class="el" href="common_8h.html#abf4221def5272b7188679785d807f6cb">common.h</a>
189 + , <a class="el" href="common_8cpp.html#afbc9c225ddee8ca4913817d1d9f55307">common.cpp</a>
190 + </li>
191 + <li>isExtensionSupported()
192 + : <a class="el" href="common_8cpp.html#ad800ae2b2358904a9051a31f76e711c3">common.cpp</a>
193 + , <a class="el" href="common_8h.html#a4b392a835c01476e368c4444bfef3017">common.h</a>

```

```

194 + </li>
195 + </ul>
196 +
197 +
198 + <h3><a class="anchor" id="index_l"></a>- l -</h3><ul>
199 + <li>loadFromBitmap()
200 + : <a class="el" href="image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39">image.cpp</a>
201 + , <a class="el" href="image_8h.html#ae8afb226cf212cce225a77a0ff79121">image.h</a>
202 + </li>
203 + <li>long_vectors()
204 + : <a class="el" href="64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8fe75539098">64_bit_integer.cl</a>
205 + </li>
206 + <li>luminanceToRGB()
207 + : <a class="el" href="image_8cpp.html#a9390e4ddc634d83452a15e93017ab979">image.cpp</a>
208 + , <a class="el" href="image_8h.html#a9390e4ddc634d83452a15e93017ab979">image.h</a>
209 + </li>
210 + </ul>
211 +
212 +
213 + <h3><a class="anchor" id="index_m"></a>- m -</h3><ul>
214 + <li>main()
215 + : <a class="el" href="64_bit_integer_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">64_bit_integer.cpp</a>
216 + , <a class="el" href="fir_float_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">fir_float.cpp</a>
217 + , <a class="el" href="template_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">template.cpp</a>
218 + , <a class="el" href="sobel_no_vectors_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">sobel_no_vectors.cpp</a>
219 + , <a class="el" href="sobel_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">sobel.cpp</a>
220 + , <a class="el" href="hello_world_opencl_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">hello_world_opencl.cpp</a>
221 + , <a class="el" href="mandelbrot_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">mandelbrot.cpp</a>
222 + , <a class="el" href="image_scaling_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">image_scaling.cpp</a>
223 + , <a class="el" href="hello_world_vector_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">hello_world_vector.cpp</a>
224 + , <a class="el" href="sgemm_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">sgemm.cpp</a>
225 + , <a class="el" href="hello_world_c_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe">hello_world_c.cpp</a>
226 + </li>
227 + <li>mandelbrot()
228 + : <a class="el" href="mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a">mandelbrot.cl</a>
229 + </li>
230 + </ul>
231 +
232 +
233 + <h3><a class="anchor" id="index_p"></a>- p -</h3><ul>
234 + <li>printProfilingInfo()
235 + : <a class="el" href="common_8cpp.html#a33ff0013574626bb47147495e02b5d08">common.cpp</a>
236 + , <a class="el" href="common_8h.html#a33ff0013574626bb47147495e02b5d08">common.h</a>
237 + </li>
238 + <li>printSupported2DImageFormats()
239 + : <a class="el" href="common_8cpp.html#a736045ae74d9ed8d35cacce59b92772a">common.cpp</a>
240 + , <a class="el" href="common_8h.html#a736045ae74d9ed8d35cacce59b92772a">common.h</a>
241 + </li>
242 + </ul>
243 +
244 +
245 + <h3><a class="anchor" id="index_r"></a>- r -</h3><ul>
246 + <li>RGBAToRGB()
247 + : <a class="el" href="image_8cpp.html#a872cec0732df69b80796a61acea716f0">image.cpp</a>
248 + , <a class="el" href="image_8h.html#a3d566da55411efac7e49e2f33bf6c155">image.h</a>
249 + </li>
250 + <li>RGBToLuminance()
251 + : <a class="el" href="image_8h.html#a95b53cb5341aa2660b74a5f3a40228de">image.h</a>
252 + , <a class="el" href="image_8cpp.html#a75fa143dcc45f3d5dc030884ca09cc9">image.cpp</a>
253 + </li>
254 + <li>RGBToRGBA()
255 + : <a class="el" href="image_8h.html#a189e940abcfb40459918c86ab01a1121">image.h</a>
256 + , <a class="el" href="image_8cpp.html#a83b7aea3d44c26db222227c0dc5d19a">image.cpp</a>
257 + </li>
258 + </ul>
259 +
260 +
261 + <h3><a class="anchor" id="index_s"></a>- s -</h3><ul>
262 + <li>saveToBitmap()

```

```
263 + : <a class="el" href="image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31">image.cpp</a>
264 + , <a class="el" href="image_8h.html#ab9744225ef92254ada77ddaeaddad25d">image.h</a>
265 + </li>
266 + <li>sgemm()
267 + : <a class="el" href="sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25">sgemm.cl</a>
268 + </li>
269 + <li>sgemmInitialize()
270 + : <a class="el" href="sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6aff">sgemm.cpp</a>
271 + </li>
272 + <li>sobel()
273 + : <a class="el" href="sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850">sobel.cl</a>
274 + </li>
275 + <li>sobel_no_vectors()
276 + : <a class="el" href="sobel_no_vectors_8cl.html#aba83b870a7ef709e9a5608496084ec3a">sobel_no_vectors.cl</a>
277 + </li>
278 + </ul>
279 +
280 +
281 + <h3><a class="anchor" id="index_t"></a>- t -</h3><ul>
282 + <li>template()
283 + : <a class="el" href="template_8cl.html#a3fd9dfc155a2b110d8632041d0961625">template.cl</a>
284 + </li>
285 + </ul>
286 + </div><!-- contents -->
287 + </div><!-- doc-content -->
288 + <!-- start footer part -->
289 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
290 +   <ul>
291 +     <li class="footer">
292 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
293 +     </li>
294 +   </ul>
295 + </div>
296 + </body>
297 + </html>
```

126 docs/html/globals_vars.html

```
@@ -0,0 +1,126 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: File Members</title>
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
+   $(document).ready(initResizable);
+ </script>
+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="search/search.js"></script>
+ <script type="text/javascript">
+   $(document).ready(function() { searchBox.OnSelectItem(0); });
+ </script>
+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
+ </head>
+ <body>
+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
+ <div id="titlearea">
+ <table cellspacing="0" cellpadding="0">
+   <tbody>
+     <tr style="height: 56px;">
+       <td id="projectlogo"></td>
```

```

30 +   <td style="padding-left: 0.5em;">
31 +     <div id="projectname">Mali OpenCL SDK v1.1.0
32 +   </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li class="current"><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 +   <div id="navrow3" class="tabs2">
73 +     <ul class="tablist">
74 +       <li><a href="globals.html"><span>All</span></a></li>
75 +       <li><a href="globals_func.html"><span>Functions</span></a></li>
76 +       <li class="current"><a href="globals_vars.html"><span>Variables</span></a></li>
77 +       <li><a href="globals_defs.html"><span>Macros</span></a></li>
78 +     </ul>
79 +   </div>
80 + </div><!-- top -->
81 + <div id="side-nav" class="ui-resizable side-nav-resizable">
82 +   <div id="nav-tree">
83 +     <div id="nav-tree-contents">
84 +       <div id="nav-sync" class="sync"></div>
85 +     </div>
86 +   </div>
87 +   <div id="splitbar" style="-moz-user-select:none;">
88 +     <div class="ui-resizable-handle">
89 +   </div>
90 + </div>
91 + <script type="text/javascript">
92 + $(document).ready(function(){initNavTree('globals_vars.html','');});
93 + </script>
94 + <div id="doc-content">
95 + <!-- window showing the filter options -->
96 + <div id="MSearchSelectWindow"
97 +   onmouseover="return searchBox.OnSearchSelectShow()"
98 +   onmouseout="return searchBox.OnSearchSelectHide()"

```

```

99 +     onkeydown="return searchBar.OnSearchSelectKey(event)">
100 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
101 +
102 + <!-- iframe showing the search results (closed by default) -->
103 + <div id="MSearchResultsWindow">
104 +   <iframe src="javascript:void(0)" frameborder="0"
105 +         name="MSearchResults" id="MSearchResults">
106 + </iframe>
107 + </div>
108 +
109 + <div class="contents">
110 +   &#160;<ul>
111 +     <li>sampler
112 +       <a class="el" href="image_scaling_8cl.html#a9165c6046146d2d28cc268394d585f17">image_scaling.cl</a>
113 +     </li>
114 +   </ul>
115 + </div><!-- contents -->
116 + </div><!-- doc-content -->
117 + <!-- start footer part -->
118 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
119 +   <ul>
120 +     <li class="footer">
121 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
122 +     </li>
123 +   </ul>
124 + </div>
125 + </body>
126 + </html>

```

118 docs/html/hello_world_8dox.html

...	...	@@ -0,0 +1,118 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: tutorials/hello_world.dox File Reference</title>
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>
	13	+ <script type="text/javascript">
	14	+ \$(document).ready(initResizable);
	15	+ </script>
	16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
	17	+ <script type="text/javascript" src="search/search.js"></script>
	18	+ <script type="text/javascript">
	19	+ \$(document).ready(function() { searchBar.OnSelectItem(0); });
	20	+ </script>
	21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
	22	+ </head>
	23	+ <body>
	24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
	25	+ <div id="titlearea">
	26	+ <table cellspacing="0" cellpadding="0">
	27	+ <tbody>
	28	+ <tr style="height: 56px;">
	29	+ <td id="projectlogo"></td>
	30	+ <td style="padding-left: 0.5em;">
	31	+ <div id="projectname">Mali OpenCL SDK v1.1.0
	32	+ </div>
	33	+ </td>
	34	+ </tr>
	35	+ </tbody>
	36	+ </table>

```

37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('hello__world_8dox.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 +   onmouseover="return searchBox.OnSearchSelectShow()"
91 +   onmouseout="return searchBox.OnSearchSelectHide()"
92 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
93 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/hello_world.dox File Reference</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
```

```
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="hello_world_8dox.html">hello_world.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▼ 153 docs/html/hello_world_c_8cpp.html □

Load diff

▼ 4 docs/html/hello_world_c_8cpp.js □

...	...	@@ -0,0 +1,4 @@
	1	+ var hello_world_c_8cpp =
	2	+ [
	3	+ ["main", "hello_world_c_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null]
	4	+]; -

▼ 170 docs/html/hello_world_c_8cpp_source.html □

...	...	@@ -0,0 +1,170 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_c/hello_world_c_8cpp.html</title>
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>
	13	+ <script type="text/javascript">
	14	+ \$(document).ready(initResizable);
	15	+ </script>
	16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
	17	+ <script type="text/javascript" src="search/search.js"></script>
	18	+ <script type="text/javascript">
	19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });
	20	+ </script>
	21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
	22	+ </head>
	23	+ <body>
	24	+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
	25	+ <div id="titlearea">
	26	+ <table cellspacing="0" cellpadding="0">
	27	+ <tbody>
	28	+ <tr style="height: 56px;">
	29	+ <td id="projectlogo"></td>
	30	+ <td style="padding-left: 0.5em;">
	31	+ <div id="projectname">Mali OpenCL SDK v1.1.0
	32	+ </div>
	33	+ </td>

```

34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle"></div>
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('hello__world__c_8cpp_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
```


174 docs/html/hello_world_opencl_8cl.html

Load diff

4 docs/html/hello_world_opencl_8cl.js

```
... ... @@ -0,0 +1,4 @@
1 + var hello_world_opencl_8cl =
2 + [
3 +   [ "hello_world_opencl", "hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7", null ]
4 + ]; -
```

144 docs/html/hello_world_opencl_8cl_source.html

```
... ... @@ -0,0 +1,144 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_opencl/assets</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
```

```

49+         <div id="MSearchBox" class="MSearchBoxInactive">
50+             <span class="left">
51+                 
55+                 <input type="text" id="MSearchField" value="Search" accesskey="S"
56+                     onfocus="searchBox.OnSearchFieldFocus(true)"
57+                     onblur="searchBox.OnSearchFieldFocus(false)"
58+                     onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+             </span><span class="right">
60+                 <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61+             </span>
62+         </div>
63+     </li>
64+   </ul>
65+ </div>
66+ <div id="navrow2" class="tabs2">
67+   <ul class="tablist">
68+     <li><a href="files.html"><span>File&#160;List</span></a></li>
69+     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70+   </ul>
71+ </div>
72+ </div><!-- top -->
73+ <div id="side-nav" class="ui-resizable side-nav-resizable">
74+   <div id="nav-tree">
75+     <div id="nav-tree-contents">
76+       <div id="nav-sync" class="sync"></div>
77+     </div>
78+   </div>
79+   <div id="splitbar" style="-moz-user-select:none;" 
80+       class="ui-resizable-handle">
81+   </div>
82+ </div>
83+ <script type="text/javascript">
84+ $(document).ready(function(){initNavTree('hello_world_opencl_8cl_source.html','');});
85+ </script>
86+ <div id="doc-content">
87+ <!-- window showing the filter options -->
88+ <div id="MSearchSelectWindow"
89+     onmouseover="return searchBox.OnSearchSelectShow()"
90+     onmouseout="return searchBox.OnSearchSelectHide()"
91+     onkeydown="return searchBox.OnSearchSelectKey(event)">
92+ <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93+
94+ <!-- iframe showing the search results (closed by default) -->
95+ <div id="MSearchResultsWindow">
96+   <iframe src="javascript:void(0)" frameborder="0"
97+       name="MSearchResults" id="MSearchResults">
98+   </iframe>
99+ </div>
100+
101+ <div class="header">
102+   <div class="headertitle">
103+     <div class="title">hello_world_opencl.cl</div>  </div>
104+   </div><!--header-->
105+ <div class="contents">
106+ <a href="hello_world_opencl_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"> 1</a><span class="comment"> * This confidential and propri
107+ <div class="line"><a name="100002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108+ <div class="line"><a name="100003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109+ <div class="line"><a name="100004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
110+ <div class="line"><a name="100005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> *      ALL RIGHTS RESERVED<
111+ <div class="line"><a name="100006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112+ <div class="line"><a name="100007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113+ <div class="line"><a name="100008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114+ <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115+ <div class="line"><a name="100010"></a><span class="lineno"> 10</span>&#160;</div>
116+ <div class="line"><a name="100017"></a><span class="lineno"> 17</span>&#160;<span class="comment"> /* [OpenCL Implementation] */<
117+ <div class="line"><a name="100018"></a><span class="lineno"><a class="code" href="hello_world_opencl_8cl.html#a1e483e8dc82df49f47

```

```

118 + <div class="line"><a name="100019"></a><span class="lineno"> 19</span>&#160;          __global <span class=
119 + <div class="line"><a name="100020"></a><span class="lineno"> 20</span>&#160;          __global <span class=
120 + <div class="line"><a name="100021"></a><span class="lineno"> 21</span>&#160;{</div>
121 + <div class="line"><a name="100022"></a><span class="lineno"> 22</span>&#160;    <span class="comment"> /*</span></div>
122 + <div class="line"><a name="100023"></a><span class="lineno"> 23</span>&#160;<span class="comment"> * Set i to be the ID of th
123 + <div class="line"><a name="100024"></a><span class="lineno"> 24</span>&#160;<span class="comment"> * If the global work size
124 + <div class="line"><a name="100025"></a><span class="lineno"> 25</span>&#160;<span class="comment"> * then n kernels will be r
125 + <div class="line"><a name="100026"></a><span class="lineno"> 26</span>&#160;<span class="comment"> */</span></div>
126 + <div class="line"><a name="100027"></a><span class="lineno"> 27</span>&#160;    <span class="keywordtype">int</span> i = get_glo
127 + <div class="line"><a name="100028"></a><span class="lineno"> 28</span>&#160;;</div>
128 + <div class="line"><a name="100029"></a><span class="lineno"> 29</span>&#160;    <span class="comment"> /* Use i as an index into t
129 + <div class="line"><a name="100030"></a><span class="lineno"> 30</span>&#160;    output[i] = inputA[i] + inputB[i];</div>
130 + <div class="line"><a name="100031"></a><span class="lineno"> 31</span>&#160;}</div>
131 + <div class="line"><a name="100032"></a><span class="lineno"> 32</span>&#160;<span class="comment"> /* [OpenCL Implementation] */<
132 + </div><!-- fragment --></div><!-- contents -->
133 + </div><!-- doc-content -->
134 + <!-- start footer part -->
135 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
136 +   <ul>
137 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class=
138 +       <li class="footer">
139 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
140 +       </li>
141 +     </ul>
142 +   </div>
143 + </body>
144 + </html>
```

▼ 156 docs/html/hello_world_opencl_8cpp.html □

Load diff

▼ 4 docs/html/hello_world_opencl_8cpp.js □

...	...	@@ -0,0 +1,4 @@
		+ var hello_world_opencl_8cpp =
		+ [
		+ ["main", "hello_world_opencl_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null]
		+]; (–)

▼ 336 docs/html/hello_world_opencl_8cpp_source.html □

...	...	@@ -0,0 +1,336 @@
		+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		+ <html xmlns="http://www.w3.org/1999/xhtml">
		+ <head>
		+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_opencl/hello_
		+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="jquery.js"></script>
		+ <script type="text/javascript" src="dynsections.js"></script>
		+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="resize.js"></script>
		+ <script type="text/javascript" src="navtree.js"></script>
		+ <script type="text/javascript">
		+ \$(document).ready(initResizable);
		+ </script>
		+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
		+ <script type="text/javascript" src="search/search.js"></script>
		+ <script type="text/javascript">
		+ \$(document).ready(function() { searchBox.OnSelectItem(0); });

```

20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <ul class="tablist">
69 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
70 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
71 +   </ul>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('hello__world__opencl_8cpp_source.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
+ <div id="MSearchSelectWindow"

```

```

89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +         name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">hello_world_opencl.cpp</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 +   <a href="hello_world_opencl_8cpp.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name='
107 + <div class="line"><a name="100002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108 + <div class="line"><a name="100003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109 + <div class="line"><a name="100004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line"><a name="100005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
111 + <div class="line"><a name="100006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112 + <div class="line"><a name="100007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113 + <div class="line"><a name="100008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114 + <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 + <div class="line"><a name="100010"></a><span class="lineno">10</span>&#160;</div>
116 + <div class="line"><a name="100011"></a><span class="lineno">11</span>&#160;<span class="preprocessor">#include "<a class="code
117 + <div class="line"><a name="100012"></a><span class="lineno">12</span>&#160;<span class="preprocessor">#include "<a class="code
118 + <div class="line"><a name="100013"></a><span class="lineno">13</span>&#160;</div>
119 + <div class="line"><a name="100014"></a><span class="lineno">14</span>&#160;<span class="preprocessor">#include <CL/cl.h>;
120 + <div class="line"><a name="100015"></a><span class="lineno">15</span>&#160;<span class="preprocessor">#include <iostream>;
121 + <div class="line"><a name="100016"></a><span class="lineno">16</span>&#160;</div>
122 + <div class="line"><a name="100017"></a><span class="lineno">17</span>&#160;<span class="keyword">using namespace </span>std;</d
123 + <div class="line"><a name="100018"></a><span class="lineno">18</span>&#160;</div>
124 + <div class="line"><a name="100025"></a><span class="lineno"><a class="code" href="hello_world_opencl_8cpp.html#a840291bc02cba5474
125 + <div class="line"><a name="100026"></a><span class="lineno">26</span>&#160;{</div>
126 + <div class="line"><a name="100027"></a><span class="lineno">27</span>&#160;    cl_context context = 0;</div>
127 + <div class="line"><a name="100028"></a><span class="lineno">28</span>&#160;    cl_command_queue commandQueue = 0;</div>
128 + <div class="line"><a name="100029"></a><span class="lineno">29</span>&#160;    cl_program program = 0;</div>
129 + <div class="line"><a name="100030"></a><span class="lineno">30</span>&#160;    cl_device_id device = 0;</div>
130 + <div class="line"><a name="100031"></a><span class="lineno">31</span>&#160;    cl_kernel kernel = 0;</div>
131 + <div class="line"><a name="100032"></a><span class="lineno">32</span>&#160;    <span class="keywordtype">int</span> numberofMem
132 + <div class="line"><a name="100033"></a><span class="lineno">33</span>&#160;    cl_mem memoryObjects[3] = {0, 0, 0};</div>
133 + <div class="line"><a name="100034"></a><span class="lineno">34</span>&#160;    cl_int errorNumber;</div>
134 + <div class="line"><a name="100035"></a><span class="lineno">35</span>&#160;</div>
135 + <div class="line"><a name="100036"></a><span class="lineno">36</span>&#160;    <span class="keywordflow">if</span> (<a class="code
136 + <div class="line"><a name="100037"></a><span class="lineno">37</span>&#160;    {</div>
137 + <div class="line"><a name="100038"></a><span class="lineno">38</span>&#160;        <a class="code" href="common_8cpp.html#acd459
138 + <div class="line"><a name="100039"></a><span class="lineno">39</span>&#160;        cerr <lt;< <span class="stringLiteral">&qu
139 + <div class="line"><a name="100040"></a><span class="lineno">40</span>&#160;        <span class="keywordflow">return</span> 1;</c
140 + <div class="line"><a name="100041"></a><span class="lineno">41</span>&#160;    }</div>
141 + <div class="line"><a name="100042"></a><span class="lineno">42</span>&#160;</div>
142 + <div class="line"><a name="100043"></a><span class="lineno">43</span>&#160;    <span class="keywordflow">if</span> (<a class="code
143 + <div class="line"><a name="100044"></a><span class="lineno">44</span>&#160;    {</div>
144 + <div class="line"><a name="100045"></a><span class="lineno">45</span>&#160;        <a class="code" href="common_8cpp.html#acd459
145 + <div class="line"><a name="100046"></a><span class="lineno">46</span>&#160;        cerr <lt;< <span class="stringLiteral">&qu
146 + <div class="line"><a name="100047"></a><span class="lineno">47</span>&#160;        <span class="keywordflow">return</span> 1;</c
147 + <div class="line"><a name="100048"></a><span class="lineno">48</span>&#160;    }</div>
148 + <div class="line"><a name="100049"></a><span class="lineno">49</span>&#160;</div>
149 + <div class="line"><a name="100050"></a><span class="lineno">50</span>&#160;    <span class="keywordflow">if</span> (<a class="code
150 + <div class="line"><a name="100051"></a><span class="lineno">51</span>&#160;    {</div>
151 + <div class="line"><a name="100052"></a><span class="lineno">52</span>&#160;        <a class="code" href="common_8cpp.html#acd459
152 + <div class="line"><a name="100053"></a><span class="lineno">53</span>&#160;        cerr <lt;< <span class="stringLiteral">&qu
153 + <div class="line"><a name="100054"></a><span class="lineno">54</span>&#160;        <span class="keywordflow">return</span> 1;</c
154 + <div class="line"><a name="100055"></a><span class="lineno">55</span>&#160;    }</div>
155 + <div class="line"><a name="100056"></a><span class="lineno">56</span>&#160;</div>
156 + <div class="line"><a name="100057"></a><span class="lineno">57</span>&#160;    kernel = clCreateKernel(program, <span class="str
157 + <div class="line"><a name="100058"></a><span class="lineno">58</span>&#160;    <span class="keywordflow">if</span> (<a class="code

```



```

296 + <div class="line"><a name="100197"></a><span class="lineno"> 197</span>&#160;
297 + <div class="line"><a name="100198"></a><span class="lineno"> 198</span>&#160;
298 + <div class="line"><a name="100199"></a><span class="lineno"> 199</span>&#160;
299 + <div class="line"><a name="100200"></a><span class="lineno"> 200</span>&#160;
300 + <div class="line"><a name="100201"></a><span class="lineno"> 201</span>&#160;
301 + <div class="line"><a name="100202"></a><span class="lineno"> 202</span>&#160;
302 + <div class="line"><a name="100203"></a><span class="lineno"> 203</span>&#160;</div>
303 + <div class="line"><a name="100204"></a><span class="lineno"> 204</span>&#160;   <span class="comment">/* [Output the results] */</span>
304 + <div class="line"><a name="100205"></a><span class="lineno"> 205</span>&#160;   <span class="comment">/* Uncomment the following</span>
305 + <div class="line"><a name="100206"></a><span class="lineno"> 206</span>&#160;   <span class="comment">*/</span></div>
306 + <div class="line"><a name="100207"></a><span class="lineno"> 207</span>&#160;<span class="comment"> for (int i = 0; i < arr</span>
307 + <div class="line"><a name="100208"></a><span class="lineno"> 208</span>&#160;<span class="comment"> {</span></div>
308 + <div class="line"><a name="100209"></a><span class="lineno"> 209</span>&#160;<span class="comment"> cout << i << endl;</span>
309 + <div class="line"><a name="100210"></a><span class="lineno"> 210</span>&#160;<span class="comment"> }</span></div>
310 + <div class="line"><a name="100211"></a><span class="lineno"> 211</span>&#160;<span class="comment"> /*</span></div>
311 + <div class="line"><a name="100212"></a><span class="lineno"> 212</span>&#160;   <span class="comment">/* [Output the results] */</span>
312 + <div class="line"><a name="100213"></a><span class="lineno"> 213</span>&#160;</div>
313 + <div class="line"><a name="100214"></a><span class="lineno"> 214</span>&#160;   <span class="comment">/* Unmap the memory object</span>
314 + <div class="line"><a name="100215"></a><span class="lineno"> 215</span>&#160;   <span class="keywordflow">if</span> (<a class="code" href="common_8cpp.html#acd459e740c.html"> !<a class="code" href="common_8cpp.html#acd459e740c.html">err << <span class="stringLiteral">&quot;i << endl;</span></div>
315 + <div class="line"><a name="100216"></a><span class="lineno"> 216</span>&#160;   <span class="comment">*/</span></div>
316 + <div class="line"><a name="100217"></a><span class="lineno"> 217</span>&#160;   <a class="code" href="common_8cpp.html#acd459e740c.html">cerr << <span class="stringLiteral">&quot;return</span> 1;</div>
317 + <div class="line"><a name="100218"></a><span class="lineno"> 218</span>&#160;   <span class="keywordflow">return</span> 1;</div>
318 + <div class="line"><a name="100219"></a><span class="lineno"> 219</span>&#160;   <span class="comment">/* Release OpenCL objects.</span>
319 + <div class="line"><a name="100220"></a><span class="lineno"> 220</span>&#160;   <a class="code" href="common_8cpp.html#acd459e740c.html">samples</a></div>
320 + <div class="line"><a name="100221"></a><span class="lineno"> 221</span>&#160;</div>
321 + <div class="line"><a name="100222"></a><span class="lineno"> 222</span>&#160;   <span class="comment">*/</span>
322 + <div class="line"><a name="100223"></a><span class="lineno"> 223</span>&#160;   <a class="code" href="common_8cpp.html#acd459e740c.html">(C) ARM Ltd. 2013</a>
323 + <div class="line"><a name="100224"></a><span class="lineno"> 224</span>&#160;}</div>
324 + </div><!-- fragment --></div><!-- contents -->
325 + </div><!-- doc-content -->
326 + <!-- start footer part -->
327 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
328 +   <ul>
329 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="index.html">Index</a></li>
330 +     <li class="footer">
331 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
332 +     </li>
333 +   </ul>
334 + </div>
335 + </body>
336 + </html>

```

118 docs/html/hello_world_opencl_8dox.html

...	...	@@ -0,0 +1,118 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: tutorials/hello_world_opencl.dox File Reference</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> 17 + <script type="text/javascript" src="search/search.js"></script> 18 + <script type="text/javascript"> 19 + \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + </script> 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" /> 22 + </head> 23 + <body>

```

24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('hello__world__opencl_8dox.html','');});
86 + </script>
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>

```

```
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +         name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/hello_world_opencl.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="hello__world__opencl_8dox.html">hello_world_opencl.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

▼ 118 ■■■■■■■ docs/html/hello_world_running_8dox.html □

```
ss="SelectionMark">&#160;</span>Macros</a><a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(6)"><span class="SelectionM
```

174 docs/html/hello_world_vector_8cl.html

Load diff

4 docs/html/hello_world_vector_8cl.js

```
... ... @@ -0,0 +1,4 @@
1 + var hello_world_vector_8cl =
2 + [
3 +   [ "hello_world_vector", "hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53af57d89", null ]
4 + ]; -
```

156 docs/html/hello_world_vector_8cl_source.html

```
... ... @@ -0,0 +1,156 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_vector/assets</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
```

```

36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('hello__world__vector_8cl_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">hello_world_vector.cl</div> </div>
104 + </div><!--header-->
```

```

105 + <div class="contents">
106 + <a href="hello_world_vector_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"><span class="lineno"> 1</span>&#160;<span class="comment"> * This confidential and propri
107 + <div class="line"><a name="100002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108 + <div class="line"><a name="100003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109 + <div class="line"><a name="100004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line"><a name="100005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
111 + <div class="line"><a name="100006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112 + <div class="line"><a name="100007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113 + <div class="line"><a name="100008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114 + <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 + <div class="line"><a name="100010"></a><span class="lineno"> 10</span>&#160;</div>
116 + <div class="line"><a name="100017"></a><span class="lineno"> 11</span>&#160; <span class="comment"> /* [Vector Implementation] */<
117 + <div class="line"><a name="100018"></a><span class="lineno"> 12</span>&#160; <a class="code" href="hello_world_vector_8cl.html#afbd9d391c741f52cb9
118 + <div class="line"><a name="100019"></a><span class="lineno"> 13</span>&#160; <span class="comment"> _global <span class=
119 + <div class="line"><a name="100020"></a><span class="lineno"> 14</span>&#160; <span class="comment"> _global <span class=
120 + <div class="line"><a name="100021"></a><span class="lineno"> 15</span>&#160; <span class="comment">
121 + <div class="line"><a name="100022"></a><span class="lineno"> 16</span>&#160; <span class="comment"> /*</span></div>
122 + <div class="line"><a name="100023"></a><span class="lineno"> 17</span>&#160; <span class="comment"> * We have reduced the glob
123 + <div class="line"><a name="100024"></a><span class="lineno"> 18</span>&#160; <span class="comment"> * Therefore, i will now be
124 + <div class="line"><a name="100025"></a><span class="lineno"> 19</span>&#160; <span class="comment"> */</span></div>
125 + <div class="line"><a name="100026"></a><span class="lineno"> 20</span>&#160; <span class="keywordtype">int</span> i = get_glob
126 + <div class="line"><a name="100027"></a><span class="lineno"> 21</span>&#160; <span class="comment">
127 + <div class="line"><a name="100028"></a><span class="lineno"> 22</span>&#160; <span class="comment"> /*</span></div>
128 + <div class="line"><a name="100029"></a><span class="lineno"> 23</span>&#160; <span class="comment"> * Load 4 integers into &#
129 + <div class="line"><a name="100030"></a><span class="lineno"> 24</span>&#160; <span class="comment"> * The offset calculation i
130 + <div class="line"><a name="100031"></a><span class="lineno"> 25</span>&#160; <span class="comment"> * For vloadN(i, p), the ad
131 + <div class="line"><a name="100032"></a><span class="lineno"> 26</span>&#160; <span class="comment"> * Load from the data from
132 + <div class="line"><a name="100033"></a><span class="lineno"> 27</span>&#160; <span class="comment"> */</span></div>
133 + <div class="line"><a name="100034"></a><span class="lineno"> 28</span>&#160; <span class="comment"> /*</span></div>
134 + <div class="line"><a name="100035"></a><span class="lineno"> 29</span>&#160; <span class="comment"> * Do the same for inputB
135 + <div class="line"><a name="100036"></a><span class="lineno"> 30</span>&#160; <span class="comment"> *
136 + <div class="line"><a name="100037"></a><span class="lineno"> 31</span>&#160; <span class="comment"> * For vloadN(i, p), the ad
137 + <div class="line"><a name="100038"></a><span class="lineno"> 32</span>&#160; <span class="comment"> * Load from the data from
138 + <div class="line"><a name="100039"></a><span class="lineno"> 33</span>&#160; <span class="comment"> */</span></div>
139 + <div class="line"><a name="100040"></a><span class="lineno"> 34</span>&#160; <int4 a = vload4(i, inputA);</div>
140 + <div class="line"><a name="100041"></a><span class="lineno"> 35</span>&#160; <span class="comment"> /* Do the same for inputB
141 + <div class="line"><a name="100042"></a><span class="lineno"> 36</span>&#160; <int4 b = vload4(i, inputB);</div>
142 + <div class="line"><a name="100043"></a><span class="lineno"> 37</span>&#160; <span class="comment"> *
143 + <div class="line"><a name="100044"></a><span class="lineno"> 38</span>&#160; <span class="comment"> /*</span></div>
144 + </div><!-- fragment --></div><!-- contents -->
145 + </div><!-- doc-content -->
146 + <!-- start footer part -->
147 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
148 +   <ul>
149 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class=
150 +     <li class="footer">
151 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
152 +     </li>
153 +   </ul>
154 + </div>
155 + </body>
156 + </html>

```

156 docs/html/hello_world_vector_8cpp.html

...	...	@@ -0,0 +1,156 @@
1	+ !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_vector/hello_	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	

```

13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <class="ui-resizable-handle">
81 +   </div>

```

```
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('hello_world_vector_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 +   <!-- window showing the filter options -->
88 +   <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 +   <!-- iframe showing the search results (closed by default) -->
95 +   <div id="MSearchResultsWindow">
96 +     <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">hello_world_vector.cpp File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +   <div class="textblock"><code>#include "<a class="el" href="common_8h_source.html">common.h</a>"</code><br/>
109 +   <code>#include "<a class="el" href="image_8h_source.html">image.h</a>"</code><br/>
110 +   <code>#include <CL/cl.h></code><br/>
111 +   <code>#include <iostream></code><br/>
112 + </div>
113 +   <p><a href="hello_world_vector_8cpp_source.html">Go to the source code of this file.</a></p>
114 + <table class="memberdecls">
115 +   <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
116 +     Functions</h2></td></tr>
117 +   <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;</td><td class="memItemRight" align="left" valign="top">
118 +     <a class="el" href="image_8h_source.html">image.h</a><br/>
119 +   <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2">&#160;</td></tr>
120 + </table>
121 + <h2 class="groupheader">Function Documentation</h2>
122 + <a class="anchor" id="a840291bc02cba5474a4cb46a9b9566fe"></a>
123 + <div class="memitem">
124 +   <div class="memproto">
125 +     <table class="memname">
126 +       <tr>
127 +         <td class="memname">int main </td>
128 +         <td>(</td>
129 +           <td class="paramtype">void&#160;</td>
130 +           <td class="paramname"></td><td></td></td>
131 +         <td></td>
132 +       </tr>
133 +     </table>
134 +   </div><div class="memdoc">
135 +
136 +   <p>Basic integer array addition implemented in OpenCL. </p>
137 +   <p>A sample which shows how to add two integer arrays and store the result in a third array. The main calculation code is in an OpenCL kernel. The application reads the input arrays from files and writes the result to a file. The exit code of the application, non-zero if a problem occurred. </p>
138 +   <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
139 +
140 +   <p>Definition at line <a class="el" href="hello_world_vector_8cpp_source.html#l00026">26</a> of file <a class="el" href="hello_world_vector_8cpp.html">hello_world_vector_8cpp.html</a>.</p>
141 +
142 + </div>
143 + </div>
144 + </div><!-- contents -->
145 + </div><!-- doc-content -->
146 + <!-- start footer part -->
147 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
148 +   <ul>
149 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
150 +   <li class="footer">
```

```
151 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
152 +     </li>
153 +   </ul>
154 + </div>
155 + </body>
156 + </html>
```

4 docs/html/hello_world_vector_8cpp.js

```
... ... @@ -0,0 +1,4 @@
1 + var hello_world_vector_8cpp =
2 + [
3 +     [ "main", "hello_world_vector_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ]
4 + ]; ⊖
```

343 docs/html/hello_world_vector_8cpp_source.html

```
... ... @@ -0,0 +1,343 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/hello_world_vector/hello_
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! --&gt;
25 + &lt;div id="titlearea"&gt;
26 + &lt;table cellspacing="0" cellpadding="0"&gt;
27 + &lt;tbody&gt;
28 + &lt;tr style="height: 56px;"&gt;
29 + &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt;
30 + &lt;td style="padding-left: 0.5em;"&gt;
31 + &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0
32 + &lt;/div&gt;
33 + &lt;/td&gt;
34 + &lt;/tr&gt;
35 + &lt;/tbody&gt;
36 + &lt;/table&gt;
37 + &lt;/div&gt;
38 + &lt;!-- end header part --&gt;
39 + &lt;!-- Generated by Doxygen 1.8.2 --&gt;
40 + &lt;script type="text/javascript"&gt;
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + &lt;/script&gt;
43 + &lt;div id="navrow1" class="tabs"&gt;
44 + &lt;ul class="tablist"&gt;
45 +     &lt;li&gt;&lt;a href="index.html"&gt;&lt;span&gt;Home&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
46 +     &lt;li&gt;&lt;a href="pages.html"&gt;&lt;span&gt;Help&amp;#160;and&amp;#160;Tutorials&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
47 +     &lt;li class="current"&gt;&lt;a href="files.html"&gt;&lt;span&gt;Files&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;
48 +     &lt;li&gt;
49 +         &lt;div id="MSearchBar" class="MSearchBarInactive"&gt;
50 +             &lt;span class="left"&gt;</pre>
```

```

51+         
55+         <input type="text" id="MSearchField" value="Search" accesskey="S"
56+             onfocus="searchBox.OnSearchFieldFocus(true)"
57+             onblur="searchBox.OnSearchFieldFocus(false)"
58+             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+     </span><span class="right">
60+         <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61+     </span>
62+   </div>
63+ </li>
64+ </ul>
65+ </div>
66+ <div id="navrow2" class="tabs2">
67+   <ul class="tablist">
68+     <li><a href="files.html"><span>File&#160;List</span></a></li>
69+     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70+   </ul>
71+ </div>
72+ </div><!-- top -->
73+ <div id="side-nav" class="ui-resizable side-nav-resizable">
74+   <div id="nav-tree">
75+     <div id="nav-tree-contents">
76+       <div id="nav-sync" class="sync"></div>
77+     </div>
78+   </div>
79+   <div id="splitbar" style="-moz-user-select:none;">
80+     <div class="ui-resizable-handle"></div>
81+   </div>
82+ </div>
83+ <script type="text/javascript">
84+ $(document).ready(function(){initNavTree('hello_world_vector_8cpp_source.html','');});
85+ </script>
86+ <div id="doc-content">
87+ <!-- window showing the filter options -->
88+ <div id="MSearchSelectWindow"
89+     onmouseover="return searchBox.OnSearchSelectShow()"
90+     onmouseout="return searchBox.OnSearchSelectHide()"
91+     onkeydown="return searchBox.OnSearchSelectKey(event)">
92+   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93+
94+ <!-- iframe showing the search results (closed by default) -->
95+ <div id="MSearchResultsWindow">
96+   <iframe src="javascript:void(0)" frameborder="0"
97+     name="MSearchResults" id="MSearchResults">
98+ </iframe>
99+ </div>
100+
101+ <div class="header">
102+   <div class="headertitle">
103+     <div class="title">hello_world_vector.cpp</div> </div>
104+   </div><!--header-->
105+ <div class="contents">
106+   <a href="hello_world_vector_8cpp.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name='100002'></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
107+   <div class="line"><a name='100003'></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
108+   <div class="line"><a name='100004'></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
109+   <div class="line"><a name='100005'></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
110+   <div class="line"><a name='100006'></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
111+   <div class="line"><a name='100007'></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
112+   <div class="line"><a name='100008'></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
113+   <div class="line"><a name='100009'></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
114+   <div class="line"><a name='100010'></a><span class="lineno">10</span>&#160;</div>
115+   <div class="line"><a name='100011'></a><span class="lineno">11</span>&#160;<span class="preprocessor">#include "<a class="
116+   <div class="line"><a name='100012'></a><span class="lineno">12</span>&#160;<span class="preprocessor">#include "<a class="
117+   <div class="line"><a name='100013'></a><span class="lineno">13</span>&#160;</div>
118+   <div class="line"><a name='100014'></a><span class="lineno">14</span>&#160;<span class="preprocessor">#include <CL/cl.h>*</

```

```

120 + <div class="line"><a name="100015"></a><span class="lineno"> 15</span>&#160;<span class="preprocessor">#include <iostream>;<
121 + <div class="line"><a name="100016"></a><span class="lineno"> 16</span>&#160;</div>
122 + <div class="line"><a name="100017"></a><span class="lineno"> 17</span>&#160;<span class="keyword">using namespace std;</span>;
123 + <div class="line"><a name="100018"></a><span class="lineno"> 18</span>&#160;</div>
124 + <div class="line"><a name="100026"></a><span class="lineno"><a class="code" href="hello_world_vector_8cpp.html#a840291bc02cba5474" 27</span>&#160;{</div>
125 + <div class="line"><a name="100027"></a><span class="lineno"> 28</span>&#160;    cl_context context = 0;</div>
126 + <div class="line"><a name="100028"></a><span class="lineno"> 29</span>&#160;    cl_command_queue commandQueue = 0;</div>
127 + <div class="line"><a name="100029"></a><span class="lineno"> 30</span>&#160;    cl_program program = 0;</div>
128 + <div class="line"><a name="100030"></a><span class="lineno"> 31</span>&#160;    cl_device_id device = 0;</div>
129 + <div class="line"><a name="100031"></a><span class="lineno"> 32</span>&#160;    cl_kernel kernel = 0;</div>
130 + <div class="line"><a name="100032"></a><span class="lineno"> 33</span>&#160;    <span class="keywordtype">int</span> numberOfMem
131 + <div class="line"><a name="100033"></a><span class="lineno"> 34</span>&#160;    cl_mem memoryObjects[3] = {0, 0, 0};</div>
132 + <div class="line"><a name="100034"></a><span class="lineno"> 35</span>&#160;    cl_int errorNumber;</div>
133 + <div class="line"><a name="100035"></a><span class="lineno"> 36</span>&#160;{/>
134 + <div class="line"><a name="100036"></a><span class="lineno"> 37</span>&#160;    <span class="keywordflow">if</span> (!<a class="c
135 + <div class="line"><a name="100037"></a><span class="lineno"> 38</span>&#160;    {</div>
136 + <div class="line"><a name="100038"></a><span class="lineno"> 39</span>&#160;        <a class="code" href="common_8cpp.html#acd459"  cerr &lt;&lt; <span class="stringLiteral">&qu
137 + <div class="line"><a name="100039"></a><span class="lineno"> 40</span>&#160;        <span class="keywordflow">return</span> 1;</c
138 + <div class="line"><a name="100040"></a><span class="lineno"> 41</span>&#160;    }</div>
139 + <div class="line"><a name="100041"></a><span class="lineno"> 42</span>&#160;    }</div>
140 + <div class="line"><a name="100042"></a><span class="lineno"> 43</span>&#160;    <span class="keywordflow">if</span> (!<a class="c
141 + <div class="line"><a name="100043"></a><span class="lineno"> 44</span>&#160;    {</div>
142 + <div class="line"><a name="100044"></a><span class="lineno"> 45</span>&#160;    <span class="keywordflow">if</span> (!<a class="c
143 + <div class="line"><a name="100045"></a><span class="lineno"> 46</span>&#160;    {</div>
144 + <div class="line"><a name="100046"></a><span class="lineno"> 47</span>&#160;        <a class="code" href="common_8cpp.html#acd459"  cerr &lt;&lt; <span class="stringLiteral">&qu
145 + <div class="line"><a name="100047"></a><span class="lineno"> 48</span>&#160;        <span class="keywordflow">return</span> 1;</c
146 + <div class="line"><a name="100048"></a><span class="lineno"> 49</span>&#160;    }</div>
147 + <div class="line"><a name="100049"></a><span class="lineno"> 50</span>&#160;{/>
148 + <div class="line"><a name="100050"></a><span class="lineno"> 51</span>&#160;    <span class="keywordflow">if</span> (!<a class="c
149 + <div class="line"><a name="100051"></a><span class="lineno"> 52</span>&#160;    {</div>
150 + <div class="line"><a name="100052"></a><span class="lineno"> 53</span>&#160;        <a class="code" href="common_8cpp.html#acd459"  cerr &lt;&lt; <span class="stringLiteral">&qu
151 + <div class="line"><a name="100053"></a><span class="lineno"> 54</span>&#160;        <span class="keywordflow">return</span> 1;</c
152 + <div class="line"><a name="100054"></a><span class="lineno"> 55</span>&#160;    }</div>
153 + <div class="line"><a name="100055"></a><span class="lineno"> 56</span>&#160;    }</div>
154 + <div class="line"><a name="100056"></a><span class="lineno"> 57</span>&#160;{/>
155 + <div class="line"><a name="100057"></a><span class="lineno"> 58</span>&#160;    kernel = clCreateKernel(program, <span class="str
156 + <div class="line"><a name="100058"></a><span class="lineno"> 59</span>&#160;    <span class="keywordflow">if</span> (!<a class="c
157 + <div class="line"><a name="100059"></a><span class="lineno"> 60</span>&#160;    {</div>
158 + <div class="line"><a name="100060"></a><span class="lineno"> 61</span>&#160;        <a class="code" href="common_8cpp.html#acd459"  cerr &lt;&lt; <span class="stringLiteral">&qu
159 + <div class="line"><a name="100061"></a><span class="lineno"> 62</span>&#160;        <span class="keywordflow">return</span> 1;</c
160 + <div class="line"><a name="100062"></a><span class="lineno"> 63</span>&#160;    }</div>
161 + <div class="line"><a name="100063"></a><span class="lineno"> 64</span>&#160;    }</div>
162 + <div class="line"><a name="100064"></a><span class="lineno"> 65</span>&#160;{/>
163 + <div class="line"><a name="100065"></a><span class="lineno"> 66</span>&#160;    <span class="comment">/* [Query preferred vector
164 + <div class="line"><a name="100066"></a><span class="lineno"> 67</span>&#160;    <span class="comment">*/</span></div>
165 + <div class="line"><a name="100067"></a><span class="lineno"> 68</span>&#160;    <span class="comment">* Query the device to fin
166 + <div class="line"><a name="100068"></a><span class="lineno"> 69</span>&#160;    <span class="comment">* Although we are only pri
167 + <div class="line"><a name="100069"></a><span class="lineno"> 70</span>&#160;    <span class="comment">* different versions of a
168 + <div class="line"><a name="100070"></a><span class="lineno"> 71</span>&#160;    <span class="comment">*/</span></div>
169 + <div class="line"><a name="100071"></a><span class="lineno"> 72</span>&#160;    cl_uint integerVectorWidth;</div>
170 + <div class="line"><a name="100072"></a><span class="lineno"> 73</span>&#160;    clGetDeviceInfo(device, CL_DEVICE_PREFERRED_VECT
171 + <div class="line"><a name="100073"></a><span class="lineno"> 74</span>&#160;    cout &lt;&lt; <span class="stringLiteral">&quot;P
172 + <div class="line"><a name="100074"></a><span class="lineno"> 75</span>&#160;    <span class="comment">/* [Query preferred vector
173 + <div class="line"><a name="100075"></a><span class="lineno"> 76</span>&#160;{/>
174 + <div class="line"><a name="100076"></a><span class="lineno"> 77</span>&#160;    <span class="comment">/* Number of elements in th
175 + <div class="line"><a name="100077"></a><span class="lineno"> 78</span>&#160;    cl_int arraySize = 1000000;</div>
176 + <div class="line"><a name="100078"></a><span class="lineno"> 79</span>&#160;{/>
177 + <div class="line"><a name="100079"></a><span class="lineno"> 80</span>&#160;    <span class="comment">* The buffers are the size
178 + <div class="line"><a name="100080"></a><span class="lineno"> 81</span>&#160;    <span class="keywordtype">size_t</span> bufferSize;
179 + <div class="line"><a name="100081"></a><span class="lineno"> 82</span>&#160;{/>
180 + <div class="line"><a name="100082"></a><span class="lineno"> 83</span>&#160;    <span class="comment">*/</span></div>
181 + <div class="line"><a name="100083"></a><span class="lineno"> 84</span>&#160;    <span class="comment">* Ask the OpenCL implement
182 + <div class="line"><a name="100084"></a><span class="lineno"> 85</span>&#160;    <span class="comment">* We ask the OpenCL implem
183 + <div class="line"><a name="100085"></a><span class="lineno"> 86</span>&#160;    <span class="comment">* it on the CPU to avoid h
184 + <div class="line"><a name="100086"></a><span class="lineno"> 87</span>&#160;    <span class="comment">* The read/write flags re
185 + <div class="line"><a name="100087"></a><span class="lineno"> 88</span>&#160;    <span class="comment">*/</span></div>
186 + <div class="line"><a name="100088"></a><span class="lineno"> 89</span>&#160;    <span class="keywordtype">bool</span> createMemor
187 + <div class="line"><a name="100089"></a><span class="lineno"> 90</span>&#160;    <span class="comment">*/</span> [Create buffer] */<span

```



```

327 + <div class="line"><a name="100229"></a><span class="lineno"> 229</span>&#160;</div>
328 + <div class="line"><a name="100230"></a><span class="lineno"> 230</span>&#160;    <span class="comment">/* Release OpenCL objects.
329 + <div class="line"><a name="100231"></a><span class="lineno"> 231</span>&#160;    <a class="code" href="common_8cpp.html#acd459e74c
330 + <div class="line"><a name="100232"></a><span class="lineno"> 232</span>&#160;}</div>
331 + </div><!-- fragment --></div><!-- contents -->
332 + </div><!-- doc-content -->
333 + <!-- start footer part -->
334 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
335 +   <ul>
336 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class=
337 +     <li class="footer">
338 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
339 +     </li>
340 +   </ul>
341 + </div>
342 + </body>
343 + </html>

```

◀ ▶

▼ 118 docs/html/hello_world_vector_8dox.html □

...	...	@@ -0,0 +1,118 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: tutorials/hello_world_vector.dox File Reference</title>
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);
		15 + </script>
		16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
		17 + <script type="text/javascript" src="search/search.js"></script>
		18 + <script type="text/javascript">
		19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });
		20 + </script>
		21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
		22 + </head>
		23 + <body>
		24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		25 + <div id="titlearea">
		26 + <table cellspacing="0" cellpadding="0">
		27 + <tbody>
		28 + <tr style="height: 56px;">
		29 + <td id="projectlogo"></td>
		30 + <td style="padding-left: 0.5em;">
		31 + <div id="projectname">Mali OpenCL SDK v1.1.0
		32 + </div>
		33 + </td>
		34 + </tr>
		35 + </tbody>
		36 + </table>
		37 + </div>
		38 + <!-- end header part -->
		39 + <!-- Generated by Doxygen 1.8.2 -->
		40 + <script type="text/javascript">
		41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
		42 + </script>
		43 + <div id="navrow1" class="tabs">
		44 + <ul class="tablist">
		45 + Home
		46 + Help and Tutorials
		47 + <li class="current">Files

```

48 +     <li>
49 +         <div id="MSearchBox" class="MSearchBoxInactive">
50 +             <span class="left">
51 +                 
55 +                 <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                     onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                     onblur="searchBox.OnSearchFieldFocus(false)"
58 +                     onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +             </span><span class="right">
60 +                 <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()"></a>
61 +             </span>
62 +         </div>
63 +     </li>
64 +   </ul>
65 + </div>
66 + <div id="navrow2" class="tabs2">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle"></div>
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('hello_world_vector_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +   </div>
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/hello_world_vector.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="hello_world_vector_8dox.html">hello_world_vector.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>

```

```
117 + </body>
118 + </html>
```

```
... ... @@ -0,0 +1,308 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: From C to OpenCL</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle"></div>
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('hello_world_open_c_l_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +           name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">From C to OpenCL </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>How to move from a C/C++ 'for loop' to an OpenCL kernel.</p>
101 +   <h1><a class="anchor" id="helloWorldOpenCLAlgorithm"></a>
102 +   The Algorithm</h1>
103 +   <p>In this tutorial we are going to look at a very simple algorithm. Adding two arrays of numbers together element-by-element and s
104 +   <p>C<sub>n</sub> = A<sub>n</sub> + B<sub>n</sub></p>
105 +   <p>Despite the simplistic nature of this algorithm, it can benefit from being implemented in OpenCL. Each element of the array can
106 +   <p>Unless otherwise noted, all code snippets below come from the OpenCL implementation in <a class="el" href="hello_world_openc
107 +   <h1><a class="anchor" id="helloWorldOpenCLImplementation"></a>
108 +   C/C++ Implementation</h1>
109 +   <p>If we assume that we have three arrays (<a class="el" href="hello_world_c_8cpp.html">hello_world_c.cpp</a>):</p>
110 +   <div class="fragment"><div class="line">    <span class="comment">/* Number of elements in the arrays of input and output data. */</span>
111 +   <div class="line">    <span class="keywordtype">int</span> arraySize = 1000000;</div>
112 +   <div class="line"></div>
113 +   <div class="line">    <span class="comment">/* Arrays to hold the input and output data. */</span></div>
114 +   <div class="line">    <span class="keywordtype">int</span>* inputA = <span class="keyword">new</span> <span class="keywordtype">int</span>;
115 +   <div class="line">    <span class="keywordtype">int</span>* inputB = <span class="keyword">new</span> <span class="keywordtype">int</span>;
116 +   <div class="line">    <span class="keywordtype">int</span>* output = <span class="keyword">new</span> <span class="keywordtype">int</span>;
117 +   </div><!-- fragment --><p> Then an implementation in C/C++ is trivial (<a class="el" href="hello_world_c_8cpp.html">hello_world_c_8cpp.html</a>):</p>
118 +   <div class="fragment"><div class="line">    <span class="keywordflow">for</span> (<span class="keywordtype">int</span> i = 0; i < arraySize; i++)
119 +   <div class="line">    {</div>
120 +   <div class="line">      output[i] = inputA[i] + inputB[i];</div>
121 +   <div class="line">    }</div>
122 +   </div><!-- fragment --><p> Discounting any compiler optimisations, this code will execute sequentially on a CPU. This means that each
123 +   <p>The runtime for this code is proportional to the size of the arrays.</p>
124 +   <h1><a class="anchor" id="helloWorldOpenCLImplementation"></a>
125 +   OpenCL Implementation</h1>
126 +   <h2><a class="anchor" id="helloWorldOpenCLBasics"></a>
127 +   The Basics</h2>
128 +   <ol type="1">
129 +     <li><p class="startli"><b>Move the parallelisable code into an OpenCL kernel</b></p>
130 +     <p class="startli">Take the parallel portion of the code (in our case, the for loop) and move it into an OpenCL kernel. For our co
131 +     <div class="fragment"><div class="line">__kernel void</span> <a class="code" href="hello_world_openc...</a>
```

```

132 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict inputB,</div>
133 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict output)</div>
134 + <div class="line">{</div>
135 + <div class="line">    <span class="comment"> /*</span></div>
136 + <div class="line"><span class="comment">      * Set i to be the ID of the kernel instance.</span></div>
137 + <div class="line"><span class="comment">      * If the global work size (set by clEnqueueNDRangeKernel) is n,</span></div>
138 + <div class="line"><span class="comment">      * then n kernels will be run and i will be in the range [0, n - 1].</span></div>
139 + <div class="line"><span class="comment">      */</span></div>
140 + <div class="line">    <span class="keywordtype">int</span> i = get_global_id(0);</div>
141 + <div class="line"></div>
142 + <div class="line">    <span class="comment"> /* Use i as an index into the three arrays. */</span></div>
143 + <div class="line">    output[i] = inputA[i] + inputB[i];</div>
144 + <div class="line">}</div>
145 + </div><!-- fragment --></li>
146 + <li><p class="startli"><b>Run multiple instances of the kernel</b></p>
147 + <p class="startli">There is no loop inside the kernel, so to make the code operate on all elements of the array, we must run several
148 + <div class="fragment"><div class="line">    <span class="comment"> /*</span></div>
149 + <div class="line"><span class="comment">      * Each instance of our OpenCL kernel operates on a single element of each array so the
150 + <div class="line"><span class="comment">      * instances needed is the number of elements in the array.</span></div>
151 + <div class="line"><span class="comment">      */</span></div>
152 + <div class="line">    <span class="keywordtype">size_t</span> globalWorksize[1] = {arraySize};</div>
153 + <div class="line">    <span class="comment"> /* Enqueue the kernel */</span></div>
154 + <div class="line">    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14562">
155 + <div class="line">        {</div>
156 + <div class="line">            <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objects
157 + <div class="line">                cerr &lt;&lt; <span class="stringliteral">"Failed enqueueing the kernel. "</span> &lt;&lt; __FILE__ &lt;&lt;
158 + <div class="line">                <span class="keywordflow">return</span> 1;</div>
159 + <div class="line">        }</div>
160 + </div><!-- fragment --><p> This submits arraySize number of kernel instances to the OpenCL device.</p>
161 + <p class="startli">Each instance is assigned a unique ID which we use to pick which element of the array each instance operates on
162 + <p class="startli">Because we've not specified any dependencies between kernels, the OpenCL device is free to run the instances of
163 + <p class="startli">The runtime for this code is proportional to the size of the arrays divided by the number of kernel instances th
164 + </li>
165 + </ol>
166 + <h2><a class="anchor" id="helloWorldOpenCLSetup"></a>
167 + OpenCL Setup</h2>
168 + <p>There is some OpenCL setup required before the code above can be run. Take a look at <a class="el" href="hello_world_opencl_8c.html#L11">
169 + <h2><a class="anchor" id="helloWorldOpenCLMemory"></a>
170 + Memory</h2>
171 + <p>Because operations are now happening on the GPU rather than the CPU, we need to understand the location of any data we use. It is
172 + <p>In a desktop system the GPU and CPU have their own memories which are separated by a relatively slow bus. This can mean that sha
173 + <p>On most embedded systems with a Mali-T600 series GPU, the CPU and GPU share a common memory. It is therefore possible to share m
174 + <p>Because of these system differences, OpenCL supports many ways to allocate and share memory between devices.</p>
175 + <p>Here is one way to share memory between devices which aims to eliminate copying memory from one device to another (in a shared m
176 + <ol type="1">
177 + <li><p class="startli"><b>Ask the OpenCL implementation to allocate some memory</b></p>
178 + <p class="startli">In this sample we need three blocks of memory (two inputs and the output).</p>
179 + <p class="startli">We use arrays in a C/C++ implementation. To allocate the arrays, we would do (<a class="el" href="hello_world_opencl_8c.html#L11">
180 + <div class="fragment"><div class="line">    <span class="comment"> /* Number of elements in the arrays of input and output data. */</span>
181 + <div class="line">    <span class="keywordtype">int</span> arraySize = 1000000;</div>
182 + <div class="line"></div>
183 + <div class="line">    <span class="comment"> /* Arrays to hold the input and output data. */</span></div>
184 + <div class="line">    <span class="keywordtype">int</span>* inputA = <span class="keyword">new</span> <span class="keywordtype">int</span>;
185 + <div class="line">    <span class="keywordtype">int</span>* inputB = <span class="keyword">new</span> <span class="keywordtype">int</span>;
186 + <div class="line">    <span class="keywordtype">int</span>* output = <span class="keyword">new</span> <span class="keywordtype">int</span>;
187 + </div><!-- fragment --><p> In OpenCL we use memory buffers which are just blocks of memory with a certain size. To allocate the bu
188 + <div class="fragment"><div class="line">    <span class="comment"> /* Number of elements in the arrays of input and output data. */</span>
189 + <div class="line">    cl_int arraySize = 1000000;</div>
190 + <div class="line"></div>
191 + <div class="line">    <span class="comment"> /* The buffers are the size of the arrays. */</span></div>
192 + <div class="line">    <span class="keywordtype">size_t</span> bufferSize = arraySize * <span class="keyword">sizeof</span>(cl_int);
193 + <div class="line"></div>
194 + <div class="line">    <span class="comment"> /*</span></div>
195 + <div class="line"><span class="comment">      * Ask the OpenCL implementation to allocate buffers for the data.</span></div>
196 + <div class="line"><span class="comment">      * We ask the OpenCL implemenation to allocate memory rather than allocating</span></div>
197 + <div class="line"><span class="comment">      * it on the CPU to avoid having to copy the data later.</span></div>
198 + <div class="line"><span class="comment">      * The read/write flags relate to accesses to the memory from within the kernel.</span>
199 + <div class="line"><span class="comment">      */</span></div>
200 + <div class="line">    <span class="keywordtype">bool</span> createMemoryObjectsSuccess = <span class="keyword">true</span>;</div>

```

```

201 + <div class="line"></div>
202 + <div class="line">    memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &memoryObjectsSuccess);
203 + <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">if</a> (!createMemoryObjectsSuccess) </div>
204 + <div class="line"></div>
205 + <div class="line">    memoryObjects[1] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &memoryObjectsSuccess);
206 + <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">if</a> (!createMemoryObjectsSuccess) </div>
207 + <div class="line"></div>
208 + <div class="line">    memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &memoryObjectsSuccess);
209 + <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">if</a> (!createMemoryObjectsSuccess) </div>
210 + <div class="line"></div>
211 + <div class="line">    <span class="keywordflow">if</span> (!createMemoryObjectsSuccess) </div>
212 + <div class="line">    {</div>
213 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object">cerr </a><span class="stringliteral">"Failed to create OpenCL buffer."</span> </div>
214 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
215 + <div class="line">    }</div>
216 + <div class="line"></div>
217 + </div><!-- fragment --><p> Although this looks much more complex, there are only three OpenCL API calls. The difference is that here we have to map the memory to local pointers.
218 + </li>
219 + <li><p class="startli"><b>Map the memory to a local pointer</b></p>
220 + <p class="startli">Now the memory has been allocated but only the OpenCL implementation knows where it is. To access the buffers or
221 + <div class="fragment"><div class="line">    <span class="comment">/* Map the memory buffers created by the OpenCL implementation to local pointers. */</span>
222 + <div class="line">    <span class="keywordtype">bool</span> mapMemoryObjectsSuccess = <span class="keyword">true</span>;</div>
223 + <div class="line"></div>
224 + <div class="line">    cl_int* inputA = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &mapMemoryObjectsSuccess);
225 + <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">if</a> (!mapMemoryObjectsSuccess) </div>
226 + <div class="line"></div>
227 + <div class="line">    cl_int* inputB = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &mapMemoryObjectsSuccess);
228 + <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">if</a> (!mapMemoryObjectsSuccess) </div>
229 + <div class="line"></div>
230 + <div class="line">    <span class="keywordflow">if</span> (!mapMemoryObjectsSuccess) </div>
231 + <div class="line">    {</div>
232 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object">cerr </a><span class="stringliteral">"Failed to map buffer."</span> </div>
233 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
234 + <div class="line">    }</div>
235 + <div class="line"></div>
236 + </div><!-- fragment --><p> These pointers can now be used as normal C/C++ pointers.</p>
237 + </li>
238 + <li><p class="startli"><b>Initialise the data on the CPU</b></p>
239 + <p class="startli">Because we have pointers to the memory, this step is the same as on the CPU:</p>
240 + <div class="fragment"><div class="line">    <span class="keywordflow">for</span> (<span class="keywordtype">int</span> i = 0; i < 100; i++)
241 + <div class="line">    {</div>
242 + <div class="line">        inputA[i] = i;</div>
243 + <div class="line">        inputB[i] = i;</div>
244 + <div class="line">    }</div>
245 + </div><!-- fragment --></li>
246 + <li><p class="startli"><b>Un-map the buffers</b></p>
247 + <p class="startli">To allow the OpenCL device to use the buffers we must un-map them from the CPU:</p>
248 + <div class="fragment"><div class="line">    <span class="comment">/* Unmap the memory objects as we have finished using them from the CPU side. */</span></div>
249 + <div class="line">    <span class="comment">* We unmap the memory because otherwise:</span></div>
250 + <div class="line">    <span class="comment">* - reads and writes to that memory from inside a kernel on the OpenCL side are undefined. </span></div>
251 + <div class="line">    <span class="comment">* - the OpenCL implementation cannot free the memory when it is finished. </span></div>
252 + <div class="line">    <span class="comment">*/</span></div>
253 + <div class="line">    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">clEnqueueUnmapBuffer</a>(commandQueue, memoryObjects[0], inputA, 0, bufferSize, &mapMemoryObjectsSuccess))
254 + <div class="line">    {</div>
255 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object">cerr </a><span class="stringliteral">"Unmapping memory objects failed "</span> </div>
256 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
257 + <div class="line">    }</div>
258 + <div class="line"></div>
259 + <div class="line">    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Release any OpenCL object">clEnqueueUnmapBuffer</a>(commandQueue, memoryObjects[1], inputB, 0, bufferSize, &mapMemoryObjectsSuccess))
260 + <div class="line">    {</div>
261 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object">cerr </a><span class="stringliteral">"Unmapping memory objects failed "</span> </div>
262 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
263 + <div class="line">    }</div>
264 + <div class="line"></div>
265 + <div class="line">    <span class="keywordflow">return</span> 1;</div>
266 + <div class="line"></div>
267 + </div><!-- fragment --></li>
268 + <li><p class="startli"><b>Map the data to the kernels</b></p>
269 + <p class="startli">We have to tell the kernels which data to use for its inputs before we schedule it to run.</p>
```

```

270 + <p class="startli">Here, we map the memory objects to the parameters of the OpenCL kernel:</p>
271 + <div class="fragment"><div class="line">    <span class="keywordtype">bool</span> setKernelArgumentsSuccess = <span class="keyword">true</span>;
272 + <div class="line">    setKernelArgumentsSuccess &amp;= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Set kernel arguments success">true</a>;
273 + <div class="line">    setKernelArgumentsSuccess &amp;= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Set kernel arguments success">true</a>;
274 + <div class="line">    setKernelArgumentsSuccess &amp;= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" title="Set kernel arguments success">true</a>;
275 + <div class="line"></div>
276 + <div class="line">    <span class="keywordflow">if</span> (!setKernelArgumentsSuccess)</div>
277 + <div class="line">    {</div>
278 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objects">cerr <span class="stringliteral"><">Failed setting OpenCL kernel arguments. <"></span> &lt;&lt;</a>
279 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
280 + <div class="line">    }</div>
281 + </div><!-- fragment --></li>
282 + <li><p class="startli"><b>Run the kernels</b></p>
283 + <p class="startli">For the kernel code and how to schedule it, see <a class="el" href="hello_world_open_c_l_tutorial.html#helloWorldOpenCLMoreInformation">here</a>
284 + </li>
285 + <li><p class="startli"><b>Get the results</b></p>
286 + <p class="startli">Once the calculations are complete we map the output buffer in the same way we mapped the input buffers. We can
287 + </li>
288 + </ol>
289 + <h1><a class="anchor" id="helloWorldOpenCLMoreInformation"></a>
290 + More Information</h1>
291 + <p>For more information have a look at the C/C++ code in <a class="el" href="hello_world_c_8cpp.html">hello_world_c.cpp</a> and the
292 + <p>Main Tutorial: <a class="el" href="hello_world_tutorial.html">Hello World</a>. </p>
293 + <p>Next section: <a class="el" href="hello_world_vector_tutorial.html">Vectorizing your OpenCL code</a>. </p>
294 + <p><a class="el" href="hello_world_running_tutorial.html">Running the Samples</a> </p>
295 + </div></div><!-- contents -->
296 + </div><!-- doc-content -->
297 + <!-- start footer part -->
298 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
299 +   <ul>
300 +     <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li><li class="navelem"><a class="el" href="hello_world_1.html">Hello World</a></li>
301 +     <li class="footer">
302 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
303 +     </li>
304 +   </ul>
305 + </div>
306 + </body>
307 + </html>

```

167 docs/html/hello_world_running_tutorial.html

...	...	@@ -0,0 +1,167 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: Running the Samples</title>
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);
		15 + </script>
		16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
		17 + <script type="text/javascript" src="search/search.js"></script>
		18 + <script type="text/javascript">
		19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });
		20 + </script>
		21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
		22 + </head>
		23 + <body>
		24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		25 + <div id="titlearea">

```

26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +               onfocus="searchBox.OnSearchFieldFocus(true)"
57 +               onblur="searchBox.OnSearchFieldFocus(false)"
58 +               onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +       </div>
76 +     </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('hello_world_running_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +       onmouseover="return searchBox.OnSearchSelectShow()"
84 +       onmouseout="return searchBox.OnSearchSelectHide()"
85 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +           name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +

```

```

95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Running the Samples </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>How to run the Hello World samples.</p>
101 +   <h1><a class="anchor" id="helloWorldRunningOutput"></a>
102 +   Enabling Output</h1>
103 +   <p>To see output from any of the samples in this section, uncomment the printing section:</p>
104 +   <div class="fragment"><div class="line">    <span class="comment">/* Uncomment the following block to print results. */</span></div>
105 +   <div class="line">    <span class="comment">*</span></div>
106 +   <div class="line"><span class="comment">    for (int i = 0; i < arraySize; i++)</span></div>
107 +   <div class="line"><span class="comment">      cout <&lt;&lt; i = " <&lt;&lt; i <&lt;&lt; ", output = " <&lt;&lt; ";
108 +   <div class="line"><span class="comment">    }</span></div>
109 +   <div class="line"><span class="comment">  *</span></div>
110 +   </div><!-- fragment --><p> <b>Warning:</b> This will cause the application to print out arraySize number of elements (default size
111 +   <h1><a class="anchor" id="helloWorldRunningC"></a>
112 +   C/C++ Implementation</h1>
113 +   <ol type="1">
114 +     <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
115 +     <div class="fragment"><div class="line">cd samples/hello_world_c</div>
116 +     </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
117 +     </div><!-- fragment --><p class="startli">This compiles the hello world C/C++ sample code and copies all the files it needs to run
118 +     </li>
119 +     <li>Copy this folder to the board.</li>
120 +     <li><p class="startli">Navigate to the folder on the board and run the hello world binary:</p>
121 +     <div class="fragment"><div class="line">./hello_world_c</div>
122 +     </div><!-- fragment --> </li>
123 +   </ol>
124 +   <h1><a class="anchor" id="helloWorldRunningOpenCL"></a>
125 +   OpenCL Implementation</h1>
126 +   <ol type="1">
127 +     <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
128 +     <div class="fragment"><div class="line">cd samples/<a class="code" href="hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1">hello_world_opencl_8cl.html</a></div>
129 +     </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
130 +     </div><!-- fragment --><p class="startli">This compiles the hello world OpenCL sample code and copies all the files it needs to run
131 +     </li>
132 +     <li>Copy this folder to the board.</li>
133 +     <li><p class="startli">Navigate to the folder on the board and run the hello world binary:</p>
134 +     <div class="fragment"><div class="line">./<a class="code" href="hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7">hello_world_opencl_8cl.html</a></div>
135 +     </div><!-- fragment --> </li>
136 +   </ol>
137 +   <h1><a class="anchor" id="helloWorldRunningVector"></a>
138 +   Vectorized OpenCL Implementation</h1>
139 +   <ol type="1">
140 +     <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
141 +     <div class="fragment"><div class="line">cd samples/<a class="code" href="hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53afcd57d89">hello_world_vector_8cl.html</a></div>
142 +     </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
143 +     </div><!-- fragment --><p class="startli">This compiles the vectorized hello world OpenCL sample code and copies all the files it needs to run
144 +     </li>
145 +     <li>Copy this folder to the board.</li>
146 +     <li><p class="startli">Navigate to the folder on the board and run the hello world binary:</p>
147 +     <div class="fragment"><div class="line">./<a class="code" href="hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53afcd57d89">hello_world_vector_8cl.html</a></div>
148 +     </div><!-- fragment --> </li>
149 +   </ol>
150 +   <h1><a class="anchor" id="helloWorldRunningMoreInformation"></a>
151 +   More Information</h1>
152 +   <p>Main Tutorial: <a class="el" href="hello_world_tutorial.html">Hello World</a>. </p>
153 +   <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>. </p>
154 +   </div></div><!-- contents -->
155 +   </div><!-- doc-content -->
156 +   <!-- start footer part -->
157 +   <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
158 +     <ul>
159 +       <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li><li class="navelem"><a class="el" href="hello_world_tutorials.html">Hello World Tutorials</a></li>
160 +       <li class="navelem"><a class="el" href="index.html">Index</a></li>
161 +       <li class="navelem"><a class="el" href="common_issues.html">Common Issues</a></li>
162 +       <li class="navelem"><a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
163 +     </ul>

```

```
164 +   </ul>
165 + </div>
166 + </body>
167 + </html>
```

126 docs/html/hello_world_tutorial.html

```
... ... @@ -0,0 +1,126 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Hello World</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
```

```
61 +         </span>
62 +     </div>
63 +   </li>
64 + </ul>
65 + </div>
66 + </div><!-- top -->
67 + <div id="side-nav" class="ui-resizable side-nav-resizable">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('hello_world_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +   name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Hello World </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>A basic introduction to OpenCL and Vectorization.</p>
101 + <p>This tutorial is split into the following sections:</p>
102 + <ol type="1">
103 + <li><p class="startli"><a class="el" href="hello_world_open_c_lTutorial.html">From C to OpenCL</a></p>
104 + <p class="startli">How to move from a C/C++ 'for loop' to an OpenCL kernel. </p>
105 + </li>
106 + <li><p class="startli"><a class="el" href="hello_world_vectorTutorial.html">Vectorizing your OpenCL code</a></p>
107 + <p class="startli">How to vectorize the hello world example to increase performance. </p>
108 + </li>
109 + </ol>
110 + <p>To run the samples in this section, see:</p>
111 + <ul>
112 + <li><a class="el" href="hello_world_runningTutorial.html">Running the Samples</a> </li>
113 + </ul>
114 + </div></div><!-- contents -->
115 + </div><!-- doc-content -->
116 + <!-- start footer part -->
117 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
118 + <ul>
119 +   <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
120 +   <li class="footer">
121 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
122 +   </li>
123 + </ul>
124 + </div>
125 + </body>
126 + </html>
```

v 29 docs/html/hello_world_tutorial.js

```

...
@@ -0,0 +1,29 @@
1 + var hello_worldTutorial =
2 +
3 + [ "From C to OpenCL", "hello_world_open_c_l_tutorial.html", [
4 +     [ "The Algorithm", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLAlgorithm", null ],
5 +     [ "C/C++ Implementation", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLImplementation", null ],
6 +     [ "OpenCL Implementation", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLImplementation", [
7 +         [ "The Basics", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLBasics", null ],
8 +         [ "OpenCL Setup", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLSetup", null ],
9 +         [ "Memory", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLMemory", null ]
10 +     ] ],
11 +     [ "More Information", "hello_world_open_c_l_tutorial.html#helloWorldOpenCLMoreInformation", null ]
12 + ],
13 + [ "Vectorizing your OpenCL code", "hello_world_vector_tutorial.html", [
14 +     [ "Vectorization Basics", "hello_world_vector_tutorial.html#helloWorldVectorTheory", [
15 +         [ "Performance Benefits", "hello_world_vector_tutorial.html#helloWorldVectorPerformance", null ],
16 +         [ "Querying for Hardware Support", "hello_world_vector_tutorial.html#helloWorldVectorQuery", null ],
17 +         [ "Mali Hardware Support", "hello_world_vector_tutorial.html#helloWorldVectorMali", null ]
18 +     ] ],
19 +     [ "Vectorizing The Code", "hello_world_vector_tutorial.html#helloWorldVectorVectorizing", null ],
20 +     [ "More Information", "hello_world_vector_tutorial.html#helloWorldVectorMoreInformation", null ]
21 + ],
22 + [ "Running the Samples", "hello_world_running_tutorial.html", [
23 +     [ "Enabling Output", "hello_world_running_tutorial.html#helloWorldRunningOutput", null ],
24 +     [ "C/C++ Implementation", "hello_world_running_tutorial.html#helloWorldRunningC", null ],
25 +     [ "OpenCL Implementation", "hello_world_running_tutorial.html#helloWorldRunningOpenCL", null ],
26 +     [ "Vectorized OpenCL Implementation", "hello_world_running_tutorial.html#helloWorldRunningVector", null ],
27 +     [ "More Information", "hello_world_running_tutorial.html#helloWorldRunningMoreInformation", null ]
28 + ] ]
29 + ]; ⚡

```

v 212 docs/html/hello_world_vector_tutorial.html

```

...
@@ -0,0 +1,212 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Vectorizing your OpenCL code</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>

```

```
33 +   </td>
34 +   </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('hello_world_vector_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Vectorizing your OpenCL code </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>How to vectorize the hello world example to increase performance.</p>
101 +   <h1><a class="anchor" id="helloWorldVectorTheory"></a>
```

```

102 + Vectorization Basics</h1>
103 + <h2><a class="anchor" id="helloWorldVectorPerformance"></a>
104 + Performance Benefits</h2>
105 + <p>If there is hardware support for vectors on your device, multiple arithmetic operations can happen simultaneously. For example,
106 + <p>Often, OpenCL kernels do the same operations on multiple pieces of data. In those cases the code can usually be vectorized such
107 + <h2><a class="anchor" id="helloWorldVectorQuery"></a>
108 + Querying for Hardware Support</h2>
109 + <p>OpenCL devices can advertise their preferred vector widths for the different OpenCL data types. You can use this information to
110 + <p>For example, one device may only have hardware support for scalar integers while another could have hardware support for integer
111 + <p>Here is an example of querying for the preferred integer vector width on a particular device (taken from <a class="el" href="#helloWorldVectorQuery"></a>)
112 + <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
113 + <div class="line"><span class="comment"> * Query the device to find out it's preferred integer vector width.</span></div>
114 + <div class="line"><span class="comment"> * Although we are only printing the value here, it can be used to select between</span></div>
115 + <div class="line"><span class="comment"> * different versions of a kernel.</span></div>
116 + <div class="line"><span class="comment"> */</span></div>
117 + <div class="line">    cl_uint integerVectorWidth;</div>
118 + <div class="line">    clGetDeviceInfo(device, CL_DEVICE_PREFERRED_VECTOR_WIDTH_INT, <span class="keyword">sizeof</span>(cl_uint), &
119 + <div class="line">        cout <lt; <span class="stringliteral">"Prefered vector width for integers: "</span> <lt; integerVectorWidth <lt; endl;
120 + </div><!-- fragment --><p> The same is possible for the other OpenCL data types.</p>
121 + <h2><a class="anchor" id="helloWorldVectorMali"></a>
122 + Mali Hardware Support</h2>
123 + <p>Each Mali-T600 series GPU core has a minimum of two 128-bit wide ALUs (Arithmetic logic units), which are vector capable.</p>
124 + <p>Most operations in the ALUs (e.g. floating point add, floating point multiply, integer addition, integer multiply), can operate
125 + <p>Use the querying method above to determine the correct vector size to use for your data type.</p>
126 + <p><b>We recommend the use of vectors wherever possible when using a Mali-T600 series GPU.</b></p>
127 + <h1><a class="anchor" id="helloWorldVectorVectorizing"></a>
128 + Vectorizing The Code</h1>
129 + <p>Other than the following changes in this tutorial, the code for the vector and non-vector code is exactly the same.</p>
130 + <ol type="1">
131 + <li><p class="startli"><b>Modify the kernel to use vectors</b></p>
132 + <p class="startli">Our basic hello world example looked like this (<a class="el" href="hello_world_opencl_8cpp.html">hello_world_opencl_8.cpp</a>)
133 + <div class="fragment"><div class="line">__kernel <span class="keywordtype">void</span> <a class="code" href="hello_world_opencl_8.cpp">add</a>
134 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict inputB,</div>
135 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict output)</div>
136 + <div class="line">{</div>
137 + <div class="line">    <span class="comment">/*</span></div>
138 + <div class="line">    <span class="comment"> * Set i to be the ID of the kernel instance.</span></div>
139 + <div class="line">    <span class="comment"> * If the global work size (set by clEnqueueNDRangeKernel) is n,</span></div>
140 + <div class="line">    <span class="comment"> * then n kernels will be run and i will be in the range [0, n - 1].</span></div>
141 + <div class="line">    <span class="comment"> */</span></div>
142 + <div class="line">    <span class="keywordtype">int</span> i = get_global_id(0);</div>
143 + <div class="line"></div>
144 + <div class="line">    <span class="comment"> /* Use i as an index into the three arrays. */</span></div>
145 + <div class="line">    output[i] = inputA[i] + inputB[i];</div>
146 + <div class="line">}</div>
147 + </div><!-- fragment --><p> Each instance of this kernel does a single integer addition in one operation. We can vectorise this code
148 + <p class="startli">Because of the vector hardware capabilities of Mali-T600 series GPUs, these vector operations can be executed in parallel
149 + <p class="startli">We can vectorise like so (<a class="el" href="hello_world_vector_8cl.html">hello_world_vector.cl</a>):</p>
150 + <div class="fragment"><div class="line">__kernel <span class="keywordtype">void</span> <a class="code" href="hello_world_vector_8cl.cl">add</a>
151 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict inputB,</div>
152 + <div class="line">                                __global <span class="keywordtype">int</span>* restrict output)</div>
153 + <div class="line">{</div>
154 + <div class="line">    <span class="comment">/*</span></div>
155 + <div class="line">    <span class="comment"> * We have reduced the global work size (n) by a factor of 4 compared to the hello_world_opencl_8.cpp code.
156 + <div class="line">    <span class="comment"> * Therefore, i will now be in the range [0, (n / 4) - 1].</span></div>
157 + <div class="line">    <span class="comment"> */</span></div>
158 + <div class="line">    <span class="keywordtype">int</span> i = get_global_id(0);</div>
159 + <div class="line"></div>
160 + <div class="line">    <span class="comment">/*</span></div>
161 + <div class="line">    <span class="comment"> * Load 4 integers into a.</span></div>
162 + <div class="line">    <span class="comment"> * The offset calculation is implicit from the size of the vector load.</span></div>
163 + <div class="line">    <span class="comment"> * For vloadN(i, p), the address of the first data loaded would be p + i * N.</span></div>
164 + <div class="line">    <span class="comment"> * Load from the data from the address: inputA + i * 4.</span></div>
165 + <div class="line">    <span class="comment"> */</span></div>
166 + <div class="line">    int4 a = vload4(i, inputA);</div>
167 + <div class="line">    <span class="comment"> /* Do the same for inputB */</span></div>
168 + <div class="line">    int4 b = vload4(i, inputB);</div>
169 + <div class="line"></div>
170 + <div class="line">    <span class="comment">/*</span></div>
```

```

171 + <div class="line"><span class="comment"> * Do the vector addition.</span></div>
172 + <div class="line"><span class="comment"> * Store the result at the address: output + i * 4.</span></div>
173 + <div class="line"><span class="comment"> *</span></div>
174 + <div class="line"> vstore4(a + b, i, output);</div>
175 + <div class="line">}</div>
176 + </div><!-- fragment --></li>
177 + <li><p class="startli"><b>Reduce the number of kernel instances</b></p>
178 + <p class="startli">Because each kernel instance is now doing multiple additions, we must reduce the number of kernel instances acco
179 + <div class="fragment"><div class="line"> <span class="comment">*</span></div>
180 + <div class="line"><span class="comment"> * Each instance of our OpenCL kernel now operates on 4 elements of each array so the r
181 + <div class="line"><span class="comment"> * instances needed is the number of elements in the array divided by 4.</span></div>
182 + <div class="line"><span class="comment"> */</span></div>
183 + <div class="line"> <span class="keywordtype">size_t</span> globalWorksize[1] = {arraySize / 4};</div>
184 + <div class="line"> <span class="comment"> /* Enqueue the kernel */</span></div>
185 + <div class="line"> <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14564" title="Release any OpenCL object">clEnqueueKernel(clCommandQueue, kernel, 0, 0, 0, 0, 0)</a>)
186 + <div class="line"> {</div>
187 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object">clReleaseKernel(kernel)</a>
188 + <div class="line"> cerr &lt;&lt; <span class="stringliteral">"Failed enqueueing the kernel. "</span> &lt;&lt; __FILE__ &lt;&lt; endl;
189 + <div class="line"> <span class="keywordflow">return</span> 1;</div>
190 + <div class="line"> }</div>
191 + </div><!-- fragment --><p> The reduction factor is based on the width of the vectors. For example, if we'd used int8's in the kerne
192 + </li>
193 + </ol>
194 + <h1><a class="anchor" id="helloWorldVectorMoreInformation"></a>
195 + More Information</h1>
196 + <p>For more information have a look at the basic OpenCL code in <a class="el" href="hello_world_opencl_8cpp.html">hello_world_o
197 + <p>Main Tutorial: <a class="el" href="hello_worldTutorial.html">Hello World</a>.</p>
198 + <p>Previous section: <a class="el" href="hello_world_open_c_lTutorial.html">From C to OpenCL</a>.</p>
199 + <p><a class="el" href="hello_world_runningTutorial.html">Running the Samples</a> </p>
200 + </div></div><!-- contents -->
201 + </div><!-- doc-content -->
202 + <!-- start footer part -->
203 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
204 + <ul>
205 + <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li><li class="navelem"><a class="el" href="hello_world_t
206 + <li class="footer">
207 + <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
208 + </li>
209 + </ul>
210 + </div>
211 + </body>
212 + </html>

```

438 docs/html/image_8cpp.html

...	...	@@ -0,0 +1,438 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.cpp File Reference</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> 17 + <script type="text/javascript" src="search/search.js"></script> 18 + <script type="text/javascript"> 19 + \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + </script> 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" /> 22 + </head> </pre>

```

23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('image_8cpp.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 +   onmouseover="return searchBox.OnSearchSelectShow()"
91 +   onmouseout="return searchBox.OnSearchSelectHide()"
92 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
```

```

92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +     name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">image.cpp File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +   <div class="textblock"><code>#include "<a class="el" href="image_8h_source.html">image.h</a>"</code><br/>
109 +   <code>#include <fstream></code><br/>
110 +   <code>#include <iostream></code><br/>
111 +   </div>
112 +   <p><a href="image_8cpp_source.html">Go to the source code of this file.</a></p>
113 +   <table class="memberdecls">
114 +     <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
115 +       Functions</h2></td></tr>
116 +     <tr class="memitem:ad7fed8ed5795a8ddd3e86265cc5a4d31"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
117 +       <tr class="separator:ad7fed8ed5795a8ddd3e86265cc5a4d31"><td class="memSeparator" colspan="2">&#160;</td></tr>
118 +       <tr class="memitem:a24ebc43a2f3d72aff84912a1a69f2c39"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
119 +       <tr class="separator:a24ebc43a2f3d72aff84912a1a69f2c39"><td class="memSeparator" colspan="2">&#160;</td></tr>
120 +       <tr class="memitem:a9390e4ddc634d83452a15e93017ab979"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
121 +       <tr class="memdesc:a9390e4ddc634d83452a15e93017ab979"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert 8-bits per pi
122 +       <tr class="separator:a9390e4ddc634d83452a15e93017ab979"><td class="memSeparator" colspan="2">&#160;</td></tr>
123 +       <tr class="memitem:a75fa143dcc45f3d5dc030884ca09cc9"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
124 +       <tr class="memdesc:a75fa143dcc45f3d5dc030884ca09cc9"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert 24-bits per pi
125 +       <tr class="separator:a75fa143dcc45f3d5dc030884ca09cc9"><td class="memSeparator" colspan="2">&#160;</td></tr>
126 +       <tr class="memitem:a83b7aea3d44c26db222227c0dc5d19a"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
127 +       <tr class="memdesc:a83b7aea3d44c26db222227c0dc5d19a"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert 24-bits per pi
128 +       <tr class="separator:a83b7aea3d44c26db222227c0dc5d19a"><td class="memSeparator" colspan="2">&#160;</td></tr>
129 +       <tr class="memitem:a872cec0732df69b80796a61acea716f0"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class='
130 +       <tr class="memdesc:a872cec0732df69b80796a61acea716f0"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert 32-bits per pi
131 +       <tr class="separator:a872cec0732df69b80796a61acea716f0"><td class="memSeparator" colspan="2">&#160;</td></tr>
132 +     </table>
133 +     <h2 class="groupheader">Function Documentation</h2>
134 +     <a class="anchor" id="a24ebc43a2f3d72aff84912a1a69f2c39"></a>
135 +     <div class="memitem">
136 +       <div class="memproto">
137 +         <table class="memname">
138 +           <tr>
139 +             <td class="memname">bool loadFromBitmap </td>
140 +             <td>(</td>
141 +               <td class="paramtype">const string&#160;</td>
142 +               <td class="paramname"><em>filename</em>, </td>
143 +             </tr>
144 +             <tr>
145 +               <td class="paramkey"></td>
146 +               <td></td>
147 +               <td class="paramtype">int *const&#160;</td>
148 +               <td class="paramname"><em>width</em>, </td>
149 +             </tr>
150 +             <tr>
151 +               <td class="paramkey"></td>
152 +               <td></td>
153 +               <td class="paramtype">int *const&#160;</td>
154 +               <td class="paramname"><em>height</em>, </td>
155 +             </tr>
156 +             <tr>
157 +               <td class="paramkey"></td>
158 +               <td></td>
159 +               <td class="paramtype">unsigned char **&#160;</td>
160 +               <td class="paramname"><em>imageData</em>&#160;</td>

```

```

161 +         </tr>
162 +         <tr>
163 +             <td></td>
164 +             <td>)</td>
165 +             <td></td><td></td>
166 +         </tr>
167 +     </table>
168 + </div><div class="memdoc">
169 +
170 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00115">l115</a> of file <a class="el" href="image_8cpp_source.html"
171 +
172 + </div>
173 + </div>
174 + <a class="anchor" id="a9390e4ddc634d83452a15e93017ab979"></a>
175 + <div class="memitem">
176 + <div class="memproto">
177 +     <table class="memname">
178 +         <tr>
179 +             <td class="memname">bool luminanceToRGB </td>
180 +             <td>(</td>
181 +             <td class="paramtype">const unsigned char *;</td>
182 +             <td class="paramname"><em>luminanceData</em>, </td>
183 +         </tr>
184 +         <tr>
185 +             <td class="paramkey"></td>
186 +             <td></td>
187 +             <td class="paramtype">unsigned char *;</td>
188 +             <td class="paramname"><em>rgbData</em>, </td>
189 +         </tr>
190 +         <tr>
191 +             <td class="paramkey"></td>
192 +             <td></td>
193 +             <td class="paramtype">int;</td>
194 +             <td class="paramname"><em>width</em>, </td>
195 +         </tr>
196 +         <tr>
197 +             <td class="paramkey"></td>
198 +             <td></td>
199 +             <td class="paramtype">int;</td>
200 +             <td class="paramname"><em>height</em>,</td>
201 +         </tr>
202 +         <tr>
203 +             <td></td>
204 +             <td>)</td>
205 +             <td></td><td></td>
206 +         </tr>
207 +     </table>
208 + </div><div class="memdoc">
209 +
210 + <p>Convert 8-bits per pixel luminance data to 24-bits per pixel RGB data. </p>
211 + <p>Each RGB pixel is created using the luminance value for each component. For example, a pixel with luminance of 125 will convert
212 + <dl class="params"><dt>Parameters</dt><dd>
213 +   <table class="params">
214 +     <tr><td class="paramdir">[in]</td><td class="paramname">luminanceData</td><td>Pointer to a block of 8-bits per pixel luminance
215 +     <tr><td class="paramdir">[out]</td><td class="paramname">rgbData</td><td>Pointer to a data block containing the 24-bits per pi>
216 +     <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
217 +     <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
218 +   </table>
219 + </dd>
220 + </dl>
221 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
222 +
223 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00243">l243</a> of file <a class="el" href="image_8cpp_source.html"
224 +
225 + </div>
226 + </div>
227 + <a class="anchor" id="a872cec0732df69b80796a61acea716f0"></a>
228 + <div class="memitem">
229 + <div class="memproto">
```

```

230+     <table class="memname">
231+         <tr>
232+             <td class="memname">bool RGBAToRGB </td>
233+             <td>(</td>
234+                 <td class="paramtype">const unsigned char *;</td>
235+                 <td class="paramname"><em>rgbaData</em>, </td>
236+             </tr>
237+             <tr>
238+                 <td class="paramkey"></td>
239+                 <td></td>
240+                 <td class="paramtype">unsigned char *;</td>
241+                 <td class="paramname"><em>rgbData</em>, </td>
242+             </tr>
243+             <tr>
244+                 <td class="paramkey"></td>
245+                 <td></td>
246+                 <td class="paramtype">int;</td>
247+                 <td class="paramname"><em>width</em>, </td>
248+             </tr>
249+             <tr>
250+                 <td class="paramkey"></td>
251+                 <td></td>
252+                 <td class="paramtype">int;</td>
253+                 <td class="paramname"><em>height</em>;</td>
254+             </tr>
255+             <tr>
256+                 <td></td>
257+                 <td>)</td>
258+                 <td></td><td></td>
259+             </tr>
260+         </table>
261+     </div><div class="memdoc">
262+
263+     <p>Convert 32-bits per pixel RGBA data to 24-bits per pixel RGB data. </p>
264+     <p>The alpha values are discarded. </p>
265+     <dl class="params"><dt>Parameters</dt><dd>
266+         <table class="params">
267+             <tr><td class="paramdir">[in]</td><td class="paramname">rgbaData</td><td>Pointer to a block of 32-bits per pixel RGBA data. Must be aligned to a 4 byte boundary. </td>
268+             <tr><td class="paramdir">[out]</td><td class="paramname">rgbData</td><td>Pointer to a data block containing the 24-bits per pixel RGB data. Must be aligned to a 4 byte boundary. </td>
269+             <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
270+             <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
271+         </table>
272+     </dd>
273+   </dl>
274+   <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
275+
276+   <p>Definition at line <a class="el" href="image_8cpp_source.html#l00318">318</a> of file <a class="el" href="image_8cpp_source.html#l00318">image_8.cpp</a>.
277+
278+ </div>
279+ </div>
280+ <a class="anchor" id="a75fa143dccc45f3d5dc030884ca09cc9"></a>
281+ <div class="memitem">
282+     <div class="memproto">
283+         <table class="memname">
284+             <tr>
285+                 <td class="memname">bool RGBAToLuminance </td>
286+                 <td>(</td>
287+                     <td class="paramtype">const unsigned char *;</td>
288+                     <td class="paramname"><em>rgbData</em>, </td>
289+                 </tr>
290+                 <tr>
291+                     <td class="paramkey"></td>
292+                     <td></td>
293+                     <td class="paramtype">unsigned char *;</td>
294+                     <td class="paramname"><em>luminanceData</em>, </td>
295+                 </tr>
296+                 <tr>
297+                     <td class="paramkey"></td>
298+                     <td></td>

```

```

299 +         <td class="paramtype">int&#160;</td>
300 +         <td class="paramname"><em>width</em>, </td>
301 +     </tr>
302 +     <tr>
303 +         <td class="paramkey"></td>
304 +         <td class="paramtype">int&#160;</td>
305 +         <td class="paramname"><em>height</em>&#160;</td>
306 +     </tr>
307 +     <tr>
308 +         <td></td>
309 +         <td></td>
310 +         <td></td><td></td>
311 +     </tr>
312 +     </table>
313 +   </div><div class="memdoc">
314 +
315 +
316 + <p>Convert 24-bits per pixel RGB data to 8-bits per pixel luminance data. </p>
317 + <p>Each luminance pixel is created using a weighted sum of the RGB values. The weightings are 0.2126R, 0.7152G, and 0.0722B. </p>
318 + <dl class="params"><dt>Parameters</dt><dd>
319 +   <table class="params">
320 +     <tr><td class="paramdir">[in]</td><td class="paramname">rgbData</td><td>Pointer to a block of 24-bits per pixel RGB data. Must
321 +     <tr><td class="paramdir">[out]</td><td class="paramname">luminanceData</td><td>Pointer to a data block containing the 8-bits pe
322 +     <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
323 +     <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
324 +   </table>
325 +   </dd>
326 + </dl>
327 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
328 +
329 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00267">267</a> of file <a class="el" href="image_8cpp_source.html
330 +
331 + </div>
332 + </div>
333 + <a class="anchor" id="a83b7aea3d44c26db222227c0dc5d19a"></a>
334 + <div class="memitem">
335 + <div class="memproto">
336 +   <table class="memname">
337 +     <tr>
338 +       <td class="memname">bool RGBToRGBA </td>
339 +       <td>(</td>
340 +         <td class="paramtype">const unsigned char *&#160;</td>
341 +         <td class="paramname"><em>rgbData</em>, </td>
342 +       </tr>
343 +       <tr>
344 +         <td class="paramkey"></td>
345 +         <td></td>
346 +         <td class="paramtype">unsigned char *&#160;</td>
347 +         <td class="paramname"><em>rgbaData</em>, </td>
348 +       </tr>
349 +       <tr>
350 +         <td class="paramkey"></td>
351 +         <td></td>
352 +         <td class="paramtype">int&#160;</td>
353 +         <td class="paramname"><em>width</em>, </td>
354 +       </tr>
355 +       <tr>
356 +         <td class="paramkey"></td>
357 +         <td></td>
358 +         <td class="paramtype">int&#160;</td>
359 +         <td class="paramname"><em>height</em>&#160;</td>
360 +       </tr>
361 +       <tr>
362 +         <td></td>
363 +         <td></td>
364 +         <td></td><td></td>
365 +       </tr>
366 +     </table>
367 + </div><div class="memdoc">
```

```

368 +
369 + <p>Convert 24-bits per pixel RGB data to 32-bits per pixel RGBA data. </p>
370 + <p>The alpha values are all set to 255. </p>
371 + <dl class="params"><dt>Parameters</dt><dd>
372 +   <table class="params">
373 +     <tr><td class="paramdir">[in]</td><td class="paramname">rgbData</td><td>Pointer to a block of 24-bits per pixel RGB data. Must
374 +       <tr><td class="paramdir">[out]</td><td class="paramname">rgbaData</td><td>Pointer to a data block containing the 32-bits per pi
375 +         <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
376 +         <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
377 +   </table>
378 + </dd>
379 + </dl>
380 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
381 +
382 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00291">291</a> of file <a class="el" href="image_8cpp_source.html"
383 +
384 + </div>
385 + </div>
386 + <a class="anchor" id="ad7fed8ed5795a8ddd3e86265cc5a4d31"></a>
387 + <div class="memitem">
388 +   <div class="memproto">
389 +     <table class="memname">
390 +       <tr>
391 +         <td class="memname">bool saveToBitmap </td>
392 +         <td>(</td>
393 +           <td class="paramtype">string&#160;;</td>
394 +           <td class="paramname"><em>filename</em>, </td>
395 +         </tr>
396 +         <tr>
397 +           <td class="paramkey"></td>
398 +           <td></td>
399 +           <td class="paramtype">int&#160;;</td>
400 +           <td class="paramname"><em>width</em>, </td>
401 +         </tr>
402 +         <tr>
403 +           <td class="paramkey"></td>
404 +           <td></td>
405 +           <td class="paramtype">int&#160;;</td>
406 +           <td class="paramname"><em>height</em>, </td>
407 +         </tr>
408 +         <tr>
409 +           <td class="paramkey"></td>
410 +           <td></td>
411 +           <td class="paramtype">const unsigned char *;&#160;;</td>
412 +           <td class="paramname"><em>imageData</em>&#160;;</td>
413 +         </tr>
414 +         <tr>
415 +           <td></td>
416 +           <td></td>
417 +           <td></td><td></td>
418 +         </tr>
419 +       </table>
420 +     </div><div class="memdoc">
421 +
422 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00017">17</a> of file <a class="el" href="image_8cpp_source.html"
423 +
424 + </div>
425 + </div>
426 + </div><!-- contents -->
427 + </div><!-- doc-content -->
428 + <!-- start footer part -->
429 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
430 +   <ul>
431 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efdfc6973a4f.html">common</a></li><li class="navelem"><a class=
432 +       <li class="footer">
433 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
434 +       </li>
435 +     </ul>
436 +   </div>

```

```
437 + </body>
438 + </html>
```

9 docs/html/image_8cpp.js

```
... ... @@ -0,0 +1,9 @@
1 + var image_8cpp =
2 + [
3 +     [ "loadFromBitmap", "image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39", null ],
4 +     [ "luminanceToRGB", "image_8cpp.html#a9390e4ddc634d83452a15e93017ab979", null ],
5 +     [ "RGBAToRGB", "image_8cpp.html#a872cec0732df69b80796a61acea716f0", null ],
6 +     [ "RGBToLuminance", "image_8cpp.html#a75fa143dccc45f3d5dc030884ca09cc9", null ],
7 +     [ "RGBToRGBA", "image_8cpp.html#a83b7aea3d44c26db222227c0dc5d19a", null ],
8 +     [ "saveToBitmap", "image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31", null ]
9 + ]; -
```

458 docs/html/image_8cpp_source.html

```
... ... @@ -0,0 +1,458 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.cpp Source File</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + <li><a href="index.html"><span>Home</span></a></li>
46 + <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 + <li class="current"><a href="files.html"><span>Files</span></a></li>
48 + <li>
49 + <div id="MSearchBox" class="MSearchBoxInactive">
```

```

50 +         <span class="left">
51 +             
55 +             <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61 +         </span>
62 +     </div>
63 +   </li>
64 + </ul>
65 + </div>
66 + <div id="navrow2" class="tabs2">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle"></div>
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image_8cpp_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +           name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">image.cpp</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 +   <a href="image_8cpp.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"></a><span class="comment"> * This confidential and propri
107 +   <div class="line"><a name="100002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108 +   <div class="line"><a name="100003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109 +   <div class="line"><a name="100004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Lim
110 +   <div class="line"><a name="100005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> *      ALL RIGHTS RESERVED</s
111 +   <div class="line"><a name="100006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112 +   <div class="line"><a name="100007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113 +   <div class="line"><a name="100008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114 +   <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 +   <div class="line"><a name="100010"></a><span class="lineno">10</span>&#160;</div>
116 +   <div class="line"><a name="100011"></a><span class="lineno">11</span>&#160;<span class="preprocessor">#include "<a class="c
117 +   <div class="line"><a name="100012"></a><span class="lineno">12</span>&#160;<span class="preprocessor">#include <fstream></
118 +   <div class="line"><a name="100013"></a><span class="lineno">13</span>&#160;<span class="preprocessor">#include <iostream></

```

```
119 + <div class="line"><a name="100014"></a><span class="lineno"> 14</span>#160;</div>
120 + <div class="line"><a name="100015"></a><span class="lineno"> 15</span>#160;<span class="keyword">using namespace std;</span>
121 + <div class="line"><a name="100016"></a><span class="lineno"> 16</span>#160;</div>
122 + <div class="line"><a name="100017"></a><span class="lineno"><a class="code" href="image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31" 18</span>#160;{</div>
123 + <div class="line"><a name="100018"></a><span class="lineno"> 19</span>#160;    <span class="comment">/* Try and open the file fo
124 + <div class="line"><a name="100019"></a><span class="lineno"> 20</span>#160;    fstream imageFile(filename.c_str(), ios::out);</c
125 + <div class="line"><a name="100020"></a><span class="lineno"> 21</span>#160;    <span class="keywordflow">if(</span>(!imageFile.is
126 + <div class="line"><a name="100021"></a><span class="lineno"> 22</span>#160;    {</div>
127 + <div class="line"><a name="100022"></a><span class="lineno"> 23</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
128 + <div class="line"><a name="100023"></a><span class="lineno"> 24</span>#160;        <span class="keywordflow">return</span> <span
129 + <div class="line"><a name="100024"></a><span class="lineno"> 25</span>#160;    }</div>
130 + <div class="line"><a name="100025"></a><span class="lineno"> 26</span>#160;</div>
131 + <div class="line"><a name="100026"></a><span class="lineno"> 27</span>#160;    <span class="comment">/* Magic header bits come f
132 + <div class="line"><a name="100027"></a><span class="lineno"> 28</span>#160;    <span class="keyword">const</span> <span class="k
133 + <div class="line"><a name="100028"></a><span class="lineno"> 29</span>#160;    <span class="keyword">struct </span><a class="co
134 + <div class="line"><a name="100029"></a><span class="lineno"> 30</span>#160;    <span class="keyword">struct </span><a class="co
135 + <div class="line"><a name="100030"></a><span class="lineno"> 31</span>#160;</div>
136 + <div class="line"><a name="100031"></a><span class="lineno"> 32</span>#160;    <span class="comment">/*</span></div>
137 + <div class="line"><a name="100032"></a><span class="lineno"> 33</span>#160;<span class="comment">      * Each row of the data mus
138 + <div class="line"><a name="100033"></a><span class="lineno"> 34</span>#160;<span class="comment">      * This method uses three b
139 + <div class="line"><a name="100034"></a><span class="lineno"> 35</span>#160;<span class="comment">      * Then we increase the pac
140 + <div class="line"><a name="100035"></a><span class="lineno"> 36</span>#160;<span class="comment">      */</span></div>
141 + <div class="line"><a name="100036"></a><span class="lineno"> 37</span>#160;    <span class="keywordtype">int</span> paddedWidth
142 + <div class="line"><a name="100037"></a><span class="lineno"> 38</span>#160;    <span class="keywordflow">while(</span>((paddedWi
143 + <div class="line"><a name="100038"></a><span class="lineno"> 39</span>#160;    {</div>
144 + <div class="line"><a name="100039"></a><span class="lineno"> 40</span>#160;    paddedWidth++;</div>
145 + <div class="line"><a name="100040"></a><span class="lineno"> 41</span>#160;    }</div>
146 + <div class="line"><a name="100041"></a><span class="lineno"> 42</span>#160;</div>
147 + <div class="line"><a name="100042"></a><span class="lineno"> 43</span>#160;    <span class="comment">/* Setup the bitmap header.
148 + <div class="line"><a name="100043"></a><span class="lineno"> 44</span>#160;    header.<a class="code" href="structbitmap_header.h
149 + <div class="line"><a name="100044"></a><span class="lineno"> 45</span>#160;    header.<a class="code" href="structbitmap_header.h
150 + <div class="line"><a name="100045"></a><span class="lineno"> 46</span>#160;    header.<a class="code" href="structbitmap_header.h
151 + <div class="line"><a name="100046"></a><span class="lineno"> 47</span>#160;    header.<a class="code" href="structbitmap_header.h
152 + <div class="line"><a name="100047"></a><span class="lineno"> 48</span>#160;</div>
153 + <div class="line"><a name="100048"></a><span class="lineno"> 49</span>#160;    <span class="comment">/* Setup the bitmap informa
154 + <div class="line"><a name="100049"></a><span class="lineno"> 50</span>#160;    informationHeader.<a class="code" href="structbit
155 + <div class="line"><a name="100050"></a><span class="lineno"> 51</span>#160;    informationHeader.<a class="code" href="structbit
156 + <div class="line"><a name="100051"></a><span class="lineno"> 52</span>#160;    informationHeader.<a class="code" href="structbit
157 + <div class="line"><a name="100052"></a><span class="lineno"> 53</span>#160;    informationHeader.<a class="code" href="structbit
158 + <div class="line"><a name="100053"></a><span class="lineno"> 54</span>#160;    informationHeader.<a class="code" href="structbit
159 + <div class="line"><a name="100054"></a><span class="lineno"> 55</span>#160;    informationHeader.<a class="code" href="structbit
160 + <div class="line"><a name="100055"></a><span class="lineno"> 56</span>#160;    informationHeader.<a class="code" href="structbit
161 + <div class="line"><a name="100056"></a><span class="lineno"> 57</span>#160;    informationHeader.<a class="code" href="structbit
162 + <div class="line"><a name="100057"></a><span class="lineno"> 58</span>#160;    informationHeader.<a class="code" href="structbit
163 + <div class="line"><a name="100058"></a><span class="lineno"> 59</span>#160;    informationHeader.<a class="code" href="structbit
164 + <div class="line"><a name="100059"></a><span class="lineno"> 60</span>#160;    informationHeader.<a class="code" href="structbit
165 + <div class="line"><a name="100060"></a><span class="lineno"> 61</span>#160;    informationHeader.<a class="code" href="structbit
166 + <div class="line"><a name="100061"></a><span class="lineno"> 62</span>#160;</div>
167 + <div class="line"><a name="100062"></a><span class="lineno"> 63</span>#160;    <span class="comment">/* Try to write the header
168 + <div class="line"><a name="100063"></a><span class="lineno"> 64</span>#160;    <span class="keywordflow">if(</span>(imageFile.wri
169 + <div class="line"><a name="100064"></a><span class="lineno"> 65</span>#160;        imageFile.write((<span class="keywordtype">char</span>
170 + <div class="line"><a name="100065"></a><span class="lineno"> 66</span>#160;        imageFile.write((<span class="keywordtype">char</span>
171 + <div class="line"><a name="100066"></a><span class="lineno"> 67</span>#160;    {</div>
172 + <div class="line"><a name="100067"></a><span class="lineno"> 68</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
173 + <div class="line"><a name="100068"></a><span class="lineno"> 69</span>#160;        <span class="keywordflow">if(</span> (imageFil
174 + <div class="line"><a name="100069"></a><span class="lineno"> 70</span>#160;    {</div>
175 + <div class="line"><a name="100070"></a><span class="lineno"> 71</span>#160;        imageFile.close();</div>
176 + <div class="line"><a name="100071"></a><span class="lineno"> 72</span>#160;    }</div>
177 + <div class="line"><a name="100072"></a><span class="lineno"> 73</span>#160;    <span class="keywordflow">return</span> <span
178 + <div class="line"><a name="100073"></a><span class="lineno"> 74</span>#160;    }</div>
179 + <div class="line"><a name="100074"></a><span class="lineno"> 75</span>#160;</div>
180 + <div class="line"><a name="100075"></a><span class="lineno"> 76</span>#160;    <span class="keywordflow">for(</span> (<span class=
181 + <div class="line"><a name="100076"></a><span class="lineno"> 77</span>#160;    {</div>
182 + <div class="line"><a name="100077"></a><span class="lineno"> 78</span>#160;    <span class="keywordflow">for(</span> (<span class=
183 + <div class="line"><a name="100078"></a><span class="lineno"> 79</span>#160;    {</div>
184 + <div class="line"><a name="100079"></a><span class="lineno"> 80</span>#160;        <span class="comment">/* The pixels lie i
185 + <div class="line"><a name="100080"></a><span class="lineno"> 81</span>#160;        <span class="keywordtype">unsigned</span>
186 + <div class="line"><a name="100081"></a><span class="lineno"> 82</span>#160;        rgb[2] = imageData[3 * (y * informationHe
```

```
188 + <div class="line"><a name="100083"></a><span class="lineno"> 83</span>#160;           rgb[0] = imageData[3 * (y * informationHe
189 + <div class="line"><a name="100084"></a><span class="lineno"> 84</span>#160;</div>
190 + <div class="line"><a name="100085"></a><span class="lineno"> 85</span>#160;           <span class="keywordflow">if</span>(image
191 + <div class="line"><a name="100086"></a><span class="lineno"> 86</span>#160;           file != NULL)
192 + <div class="line"><a name="100087"></a><span class="lineno"> 87</span>#160;           {</div>
193 + <div class="line"><a name="100088"></a><span class="lineno"> 88</span>#160;           <span class="keywordflow">if</span> (im
194 + <div class="line"><a name="100089"></a><span class="lineno"> 89</span>#160;           ageFile.close());</div>
195 + <div class="line"><a name="100090"></a><span class="lineno"> 90</span>#160;           }</div>
196 + <div class="line"><a name="100091"></a><span class="lineno"> 91</span>#160;           <span class="keywordflow">return</span>
197 + <div class="line"><a name="100092"></a><span class="lineno"> 92</span>#160;           }</div>
198 + <div class="line"><a name="100093"></a><span class="lineno"> 93</span>#160;           }</div>
199 + <div class="line"><a name="100094"></a><span class="lineno"> 94</span>#160;           <span class="comment">/*</span></div>
200 + <div class="line"><a name="100095"></a><span class="lineno"> 95</span>#160;<span class="comment"> * At the end of the ro
201 + <div class="line"><a name="100096"></a><span class="lineno"> 96</span>#160;<span class="comment"> * a multiple of 4 byte
202 + <div class="line"><a name="100097"></a><span class="lineno"> 97</span>#160;<span class="comment"> */</span></div>
203 + <div class="line"><a name="100098"></a><span class="lineno"> 98</span>#160;           <span class="keywordflow">for</span> (<span c
204 + <div class="line"><a name="100099"></a><span class="lineno"> 99</span>#160;           {</div>
205 + <div class="line"><a name="100100"></a><span class="lineno"> 100</span>#160;           <span class="keywordtype">char</span> b =
206 + <div class="line"><a name="100101"></a><span class="lineno"> 101</span>#160;           <span class="keywordflow">if</span>(image
207 + <div class="line"><a name="100102"></a><span class="lineno"> 102</span>#160;           file == NULL)
208 + <div class="line"><a name="100103"></a><span class="lineno"> 103</span>#160;           {</div>
209 + <div class="line"><a name="100104"></a><span class="lineno"> 104</span>#160;           <span class="keywordflow">if</span> (im
210 + <div class="line"><a name="100105"></a><span class="lineno"> 105</span>#160;           ageFile.close());</div>
211 + <div class="line"><a name="100106"></a><span class="lineno"> 106</span>#160;           }</div>
212 + <div class="line"><a name="100107"></a><span class="lineno"> 107</span>#160;           <span class="keywordflow">return</span>
213 + <div class="line"><a name="100108"></a><span class="lineno"> 108</span>#160;           }</div>
214 + <div class="line"><a name="100109"></a><span class="lineno"> 109</span>#160;           }</div>
215 + <div class="line"><a name="100110"></a><span class="lineno"> 110</span>#160;           }</div>
216 + <div class="line"><a name="100111"></a><span class="lineno"> 111</span>#160;</div>
217 + <div class="line"><a name="100112"></a><span class="lineno"> 112</span>#160;           <span class="keywordflow">return</span> <span cla
218 + <div class="line"><a name="100113"></a><span class="lineno"> 113</span>#160;}</div>
219 + <div class="line"><a name="100114"></a><span class="lineno"> 114</span>#160;</div>
220 + <div class="line"><a name="100115"></a><span class="lineno"><a class="code" href="image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39
221 + <div class="line"><a name="100116"></a><span class="lineno"> 116</span>#160;}{</div>
222 + <div class="line"><a name="100117"></a><span class="lineno"> 117</span>#160;           <span class="comment">/* Try and open the file t
223 + <div class="line"><a name="100118"></a><span class="lineno"> 118</span>#160;           ifstream imageFile(filename.c_str(), ios::in);</c
224 + <div class="line"><a name="100119"></a><span class="lineno"> 119</span>#160;           <span class="keywordflow">if</span> (!imageFile.is
225 + <div class="line"><a name="100120"></a><span class="lineno"> 120</span>#160;           {</div>
226 + <div class="line"><a name="100121"></a><span class="lineno"> 121</span>#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
227 + <div class="line"><a name="100122"></a><span class="lineno"> 122</span>#160;           <span class="keywordflow">return</span> <span
228 + <div class="line"><a name="100123"></a><span class="lineno"> 123</span>#160;           }</div>
229 + <div class="line"><a name="100124"></a><span class="lineno"> 124</span>#160;</div>
230 + <div class="line"><a name="100125"></a><span class="lineno"> 125</span>#160;           <span class="comment">/*</span></div>
231 + <div class="line"><a name="100126"></a><span class="lineno"> 126</span>#160;<span class="comment"> * Read and check the header
232 + <div class="line"><a name="100127"></a><span class="lineno"> 127</span>#160;<span class="comment"> */</span></div>
233 + <div class="line"><a name="100128"></a><span class="lineno"> 128</span>#160;           <span class="keyword">struct </span><a class="co
234 + <div class="line"><a name="100129"></a><span class="lineno"> 129</span>#160;           <span class="keyword">struct </span><a class="co
235 + <div class="line"><a name="100130"></a><span class="lineno"> 130</span>#160;           <span class="keyword">struct </span><a class="co
236 + <div class="line"><a name="100131"></a><span class="lineno"> 131</span>#160;</div>
237 + <div class="line"><a name="100132"></a><span class="lineno"> 132</span>#160;           <span class="keywordflow">if</span> (imageFile.re
238 + <div class="line"><a name="100133"></a><span class="lineno"> 133</span>#160;           {</div>
239 + <div class="line"><a name="100134"></a><span class="lineno"> 134</span>#160;           <span class="comment">/* Not a valid BMP file
240 + <div class="line"><a name="100135"></a><span class="lineno"> 135</span>#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
241 + <div class="line"><a name="100136"></a><span class="lineno"> 136</span>#160;           <span class="keywordflow">if</span> (imageFi
242 + <div class="line"><a name="100137"></a><span class="lineno"> 137</span>#160;           {</div>
243 + <div class="line"><a name="100138"></a><span class="lineno"> 138</span>#160;           imageFile.close();</div>
244 + <div class="line"><a name="100139"></a><span class="lineno"> 139</span>#160;           }</div>
245 + <div class="line"><a name="100140"></a><span class="lineno"> 140</span>#160;           <span class="keywordflow">return</span> <span
246 + <div class="line"><a name="100141"></a><span class="lineno"> 141</span>#160;           }</div>
247 + <div class="line"><a name="100142"></a><span class="lineno"> 142</span>#160;</div>
248 + <div class="line"><a name="100143"></a><span class="lineno"> 143</span>#160;           <span class="comment">/* 54 is the standard size
249 + <div class="line"><a name="100144"></a><span class="lineno"> 144</span>#160;           <span class="keywordflow">if</span> (imageFile.re
250 + <div class="line"><a name="100145"></a><span class="lineno"> 145</span>#160;           {</div>
251 + <div class="line"><a name="100146"></a><span class="lineno"> 146</span>#160;           <span class="comment">/* Not a supported BMP
252 + <div class="line"><a name="100147"></a><span class="lineno"> 147</span>#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
253 + <div class="line"><a name="100148"></a><span class="lineno"> 148</span>#160;           <span class="keywordflow">if</span> (imageFi
254 + <div class="line"><a name="100149"></a><span class="lineno"> 149</span>#160;           {</div>
255 + <div class="line"><a name="100150"></a><span class="lineno"> 150</span>#160;           imageFile.close();</div>
256 + <div class="line"><a name="100151"></a><span class="lineno"> 151</span>#160;           }</div>
```



```

395 + <div class="line"><a name="100290"></a><span class="lineno"> 290</span>&#160;</div>
396 + <div class="line"><a name="100291"></a><span class="lineno"><a class="code" href="image_8h.html#a189e940abcfb40459918c86ab01a1121">
397 + <div class="line"><a name="100292"></a><span class="lineno"> 292</span>&#160;</div>
398 + <div class="line"><a name="100293"></a><span class="lineno"> 293</span>&#160;    <span class="keywordflow">if</span> (rgbData == N
399 + <div class="line"><a name="100294"></a><span class="lineno"> 294</span>&#160;    {</div>
400 + <div class="line"><a name="100295"></a><span class="lineno"> 295</span>&#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
401 + <div class="line"><a name="100296"></a><span class="lineno"> 296</span>&#160;        <span class="keywordflow">return</span> <span
402 + <div class="line"><a name="100297"></a><span class="lineno"> 297</span>&#160;    }</div>
403 + <div class="line"><a name="100298"></a><span class="lineno"> 298</span>&#160;</div>
404 + <div class="line"><a name="100299"></a><span class="lineno"> 299</span>&#160;    <span class="keywordflow">if</span> (rgbaData ==
405 + <div class="line"><a name="100300"></a><span class="lineno"> 300</span>&#160;    {</div>
406 + <div class="line"><a name="100301"></a><span class="lineno"> 301</span>&#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
407 + <div class="line"><a name="100302"></a><span class="lineno"> 302</span>&#160;        <span class="keywordflow">return</span> <span
408 + <div class="line"><a name="100303"></a><span class="lineno"> 303</span>&#160;    }</div>
409 + <div class="line"><a name="100304"></a><span class="lineno"> 304</span>&#160;</div>
410 + <div class="line"><a name="100305"></a><span class="lineno"> 305</span>&#160;    <span class="keywordflow">for</span> (<span class=
411 + <div class="line"><a name="100306"></a><span class="lineno"> 306</span>&#160;    {</div>
412 + <div class="line"><a name="100307"></a><span class="lineno"> 307</span>&#160;        <span class="comment">/* Copy the RGB compone
413 + <div class="line"><a name="100308"></a><span class="lineno"> 308</span>&#160;        rgbaData[4 * n + 0] = rgbData[3 * n + 0];</d
414 + <div class="line"><a name="100309"></a><span class="lineno"> 309</span>&#160;        rgbaData[4 * n + 1] = rgbData[3 * n + 1];</d
415 + <div class="line"><a name="100310"></a><span class="lineno"> 310</span>&#160;        rgbaData[4 * n + 2] = rgbData[3 * n + 2];</d
416 + <div class="line"><a name="100311"></a><span class="lineno"> 311</span>&#160;</div>
417 + <div class="line"><a name="100312"></a><span class="lineno"> 312</span>&#160;        <span class="comment">/* Set the alpha channel
418 + <div class="line"><a name="100313"></a><span class="lineno"> 313</span>&#160;        rgbaData[4 * n + 3] = (<span class="keywordt
419 + <div class="line"><a name="100314"></a><span class="lineno"> 314</span>&#160;    }</div>
420 + <div class="line"><a name="100315"></a><span class="lineno"> 315</span>&#160;    <span class="keywordflow">return</span> <span clas
421 + <div class="line"><a name="100316"></a><span class="lineno"> 316</span>&#160;}</div>
422 + <div class="line"><a name="100317"></a><span class="lineno"> 317</span>&#160;</div>
423 + <div class="line"><a name="100318"></a><span class="lineno"><a class="code" href="image_8h.html#a3d566da55411efac7e49e2f33bf6c155">
424 + <div class="line"><a name="100319"></a><span class="lineno"> 319</span>&#160;{</div>
425 + <div class="line"><a name="100320"></a><span class="lineno"> 320</span>&#160;    <span class="keywordflow">if</span> (rgbaData ==
426 + <div class="line"><a name="100321"></a><span class="lineno"> 321</span>&#160;    {</div>
427 + <div class="line"><a name="100322"></a><span class="lineno"> 322</span>&#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
428 + <div class="line"><a name="100323"></a><span class="lineno"> 323</span>&#160;        <span class="keywordflow">return</span> <span
429 + <div class="line"><a name="100324"></a><span class="lineno"> 324</span>&#160;    }</div>
430 + <div class="line"><a name="100325"></a><span class="lineno"> 325</span>&#160;</div>
431 + <div class="line"><a name="100326"></a><span class="lineno"> 326</span>&#160;    <span class="keywordflow">if</span> (rgbData == N
432 + <div class="line"><a name="100327"></a><span class="lineno"> 327</span>&#160;    {</div>
433 + <div class="line"><a name="100328"></a><span class="lineno"> 328</span>&#160;        cerr &lt;&lt; <span class="stringliteral">&quot;
434 + <div class="line"><a name="100329"></a><span class="lineno"> 329</span>&#160;        <span class="keywordflow">return</span> <span
435 + <div class="line"><a name="100330"></a><span class="lineno"> 330</span>&#160;    }</div>
436 + <div class="line"><a name="100331"></a><span class="lineno"> 331</span>&#160;</div>
437 + <div class="line"><a name="100332"></a><span class="lineno"> 332</span>&#160;    <span class="keywordflow">for</span> (<span class=
438 + <div class="line"><a name="100333"></a><span class="lineno"> 333</span>&#160;    {</div>
439 + <div class="line"><a name="100334"></a><span class="lineno"> 334</span>&#160;        <span class="comment">/* Copy the RGB compone
440 + <div class="line"><a name="100335"></a><span class="lineno"> 335</span>&#160;        rgbaData[3 * n + 0] = rgbData[4 * n + 0];</d
441 + <div class="line"><a name="100336"></a><span class="lineno"> 336</span>&#160;        rgbaData[3 * n + 1] = rgbData[4 * n + 1];</d
442 + <div class="line"><a name="100337"></a><span class="lineno"> 337</span>&#160;        rgbaData[3 * n + 2] = rgbData[4 * n + 2];</d
443 + <div class="line"><a name="100338"></a><span class="lineno"> 338</span>&#160;    }</div>
444 + <div class="line"><a name="100339"></a><span class="lineno"> 339</span>&#160;    <span class="keywordflow">return</span> <span clas
445 + <div class="line"><a name="100340"></a><span class="lineno"> 340</span>&#160;}</div>
446 + </div><!-- fragment --></div><!-- contents -->
447 + </div><!-- doc-content -->
448 + <!-- start footer part -->
449 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
450 +   <ul>
451 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efd6973a4f.html">common</a></li><li class="navelem"><a class=
452 +       <li class="footer">
453 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
454 +       </li>
455 +     </ul>
456 +   </div>
457 + </body>
458 + </html>

```

```

1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.h File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()"></a>
61 +         </span>
62 +       </div>
63 +     </li>
64 +   </ul>
65 + </div>
66 + <div id="navrow2" class="tabs2">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>

```

```

70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image_8h.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#nested-classes">Classes</a> &#124;
104 +     <a href="#func-members">Functions</a>  </div>
105 +   <div class="headertitle">
106 +     <div class="title">image.h File Reference</div>  </div>
107 +   </div><!--header-->
108 + <div class="contents">
109 +
110 + <p>Functions for working with bitmap images.
111 + <a href="#details">More...</a></p>
112 + <div class="textblock"><code>#include <lt;CL/cl.h>;</code><br/>
113 + <code>#include <lt;string>;</code><br/>
114 + </div>
115 + <p><a href="image_8h_source.html">Go to the source code of this file.</a></p>
116 + <table class="memberdecls">
117 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="nested-classes"></a>
118 + Classes</h2></td></tr>
119 + <tr class="memitem:><td class="memItemLeft" align="right" valign="top">struct &#160;</td><td class="memItemRight" valign="bottom">
120 + <tr class="memdesc:><td class="mdescLeft">&#160;</td><td class="mdescRight">Bitmap magic file header numbers.  <a href="structbitmap_header.html#data">
121 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
122 + <tr class="memitem:><td class="memItemLeft" align="right" valign="top">struct &#160;</td><td class="memItemRight" valign="bottom">
123 + <tr class="memdesc:><td class="mdescLeft">&#160;</td><td class="mdescRight">Bitmap header.  <a href="structbitmap_header.html#data">
124 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
125 + <tr class="memitem:><td class="memItemLeft" align="right" valign="top">struct &#160;</td><td class="memItemRight" valign="bottom">
126 + <tr class="memdesc:><td class="mdescLeft">&#160;</td><td class="mdescRight">Bitmap information header.  <a href="structbitmap_info.html#data">
127 + <tr class="separator:><td class="memSeparator" colspan="2">&#160;</td></tr>
128 + </table><table class="memberdecls">
129 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
130 + Functions</h2></td></tr>
131 + <tr class="memitem:ab9744225ef92254ada77ddaeaddad25d"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class="memItemRight" valign="bottom">
132 + <tr class="memdesc:ab9744225ef92254ada77ddaeaddad25d"><td class="mdescLeft">&#160;</td><td class="mdescRight">Save data as a bitmap.
133 + <tr class="separator:ab9744225ef92254ada77ddaeaddad25d"><td class="memSeparator" colspan="2">&#160;</td></tr>
134 + <tr class="memitem:ae8afb226cfa212cce225a77a0ff79121"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class="memItemRight" valign="bottom">
135 + <tr class="memdesc:ae8afb226cfa212cce225a77a0ff79121"><td class="mdescLeft">&#160;</td><td class="mdescRight">Load data from a bitmap.
136 + <tr class="separator:ae8afb226cfa212cce225a77a0ff79121"><td class="memSeparator" colspan="2">&#160;</td></tr>
137 + <tr class="memitem:a9390e4ddc634d83452a15e93017ab979"><td class="memItemLeft" align="right" valign="top">bool&#160;</td><td class="memItemRight" valign="bottom">
138 + <tr class="memdesc:a9390e4ddc634d83452a15e93017ab979"><td class="mdescLeft">&#160;</td><td class="mdescRight">Convert 8-bits per pixel to a 32-bit integer.

```

```

139 + <tr class="separator:a9390e4ddc634d83452a15e93017ab979"><td class="memSeparator" colspan="2" style="border-top: 1px solid black; border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
140 + <tr class="memitem:a95b53cb5341aa2660b74a5f3a40228de"><td class="memItemLeft" align="right" style="border-bottom: 1px solid black; vertical-align: top;">bool&#160;</td><td class="memItemRight" style="border-bottom: 1px solid black; text-align: left; vertical-align: top;">Convert 24-bits per pixel to 32-bits per pixel</td></tr>
141 + <tr class="memdesc:a95b53cb5341aa2660b74a5f3a40228de"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
142 + <tr class="separator:a95b53cb5341aa2660b74a5f3a40228de"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
143 + <tr class="memitem:a189e940abcfb40459918c86ab01a1121"><td class="memItemLeft" align="right" style="border-bottom: 1px solid black; vertical-align: top;">bool&#160;</td><td class="memItemRight" style="border-bottom: 1px solid black; text-align: left; vertical-align: top;">Convert 24-bits per pixel to 32-bits per pixel</td></tr>
144 + <tr class="memdesc:a189e940abcfb40459918c86ab01a1121"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
145 + <tr class="separator:a189e940abcfb40459918c86ab01a1121"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
146 + <tr class="memitem:a3d566da55411efac7e49e2f33bf6c155"><td class="memItemLeft" align="right" style="border-bottom: 1px solid black; vertical-align: top;">bool&#160;</td><td class="memItemRight" style="border-bottom: 1px solid black; text-align: left; vertical-align: top;">Convert 32-bits per pixel to 24-bits per pixel</td></tr>
147 + <tr class="memdesc:a3d566da55411efac7e49e2f33bf6c155"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
148 + <tr class="separator:a3d566da55411efac7e49e2f33bf6c155"><td class="memSeparator" colspan="2" style="border-bottom: 1px solid black; text-align: center;">&#160;</td></tr>
149 + </table>
150 + <a name="details" id="details"></a><h2 class="groupheader">Detailed Description</h2>
151 + <div class="textblock"><p>Functions for working with bitmap images. </p>
152 +
153 + <p>Definition in file <a class="el" href="image_8h_source.html">image.h</a>. </p>
154 + </div><h2 class="groupheader">Function Documentation</h2>
155 + <a class="anchor" id="ae8afb226cfa212cce225a77a0ff79121"></a>
156 + <div class="memitem">
157 + <div class="memproto">
158 +     <table class="memname">
159 +         <tr>
160 +             <td class="memname">bool loadFromBitmap </td>
161 +             <td>(</td>
162 +                 <td class="paramtype">std::string&#160;</td>
163 +                 <td class="paramname"><em>filename</em>, </td>
164 +             </tr>
165 +             <tr>
166 +                 <td class="paramkey"></td>
167 +                 <td></td>
168 +                 <td class="paramtype">int *&#160;</td>
169 +                 <td class="paramname"><em>width</em>, </td>
170 +             </tr>
171 +             <tr>
172 +                 <td class="paramkey"></td>
173 +                 <td></td>
174 +                 <td class="paramtype">int *&#160;</td>
175 +                 <td class="paramname"><em>height</em>, </td>
176 +             </tr>
177 +             <tr>
178 +                 <td class="paramkey"></td>
179 +                 <td></td>
180 +                 <td class="paramtype">unsigned char **&#160;</td>
181 +                 <td class="paramname"><em>imageData</em>&#160;</td>
182 +             </tr>
183 +             <tr>
184 +                 <td></td>
185 +                 <td>)</td>
186 +                 <td></td><td></td>
187 +             </tr>
188 +         </table>
189 +     </div><div class="memdoc">
190 +
191 + <p>Load data from a bitmap image. </p>
192 + <p>Load a block of 24-bits per pixel RGB image data from a bitmap image. Only supports uncompressed bitmaps. </p>
193 + <dl class="params"><dt>Parameters</dt><dd>
194 +     <table class="params">
195 +         <tr><td class="paramdir">[in]</td><td class="paramname">filename</td><td>The filename of the bitmap to load. </td></tr>
196 +         <tr><td class="paramdir">[out]</td><td class="paramname">width</td><td>Pointer to where the width of the image (in pixels) will be stored. </td></tr>
197 +         <tr><td class="paramdir">[out]</td><td class="paramname">height</td><td>Pointer to where the height of the image (in pixels) will be stored. </td></tr>
198 +         <tr><td class="paramdir">[out]</td><td class="paramname">imageData</td><td>Pointer to the data block loaded. Data is loaded as a contiguous block of memory. </td></tr>
199 +     </table>
200 +   </dd>
201 + </dl>
202 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
203 +
204 + </div>
205 + </div>
206 + <a class="anchor" id="a9390e4ddc634d83452a15e93017ab979"></a>
207 + <div class="memitem">
```

```

208 + <div class="memproto">
209 +     <table class="memname">
210 +         <tr>
211 +             <td class="memname">bool luminanceToRGB </td>
212 +             <td>(</td>
213 +             <td class="paramtype">const unsigned char *;</td>
214 +             <td class="paramname"><em>luminanceData</em>, </td>
215 +             </tr>
216 +             <tr>
217 +                 <td class="paramkey"></td>
218 +                 <td></td>
219 +                 <td class="paramtype">unsigned char *</td>
220 +                 <td class="paramname"><em>rgbData</em>, </td>
221 +                 </tr>
222 +                 <tr>
223 +                     <td class="paramkey"></td>
224 +                     <td></td>
225 +                     <td class="paramtype">int</td>
226 +                     <td class="paramname"><em>width</em>, </td>
227 +                     </tr>
228 +                     <tr>
229 +                         <td class="paramkey"></td>
230 +                         <td></td>
231 +                         <td class="paramtype">int</td>
232 +                         <td class="paramname"><em>height</em>&#160;</td>
233 +                         </tr>
234 +                         <tr>
235 +                             <td></td>
236 +                             <td>)</td>
237 +                             <td></td><td></td>
238 +                             </tr>
239 +                         </table>
240 + </div><div class="memdoc">
241 +
242 + <p>Convert 8-bits per pixel luminance data to 24-bits per pixel RGB data. </p>
243 + <p>Each RGB pixel is created using the luminance value for each component. For example, a pixel with luminance of 125 will convert
244 + <dl class="params"><dt>Parameters</dt><dd>
245 +     <table class="params">
246 +         <tr><td class="paramdir">[in]</td><td class="paramname">luminanceData</td><td>Pointer to a block of 8-bits per pixel luminance
247 +         <tr><td class="paramdir">[out]</td><td class="paramname">rgbData</td><td>Pointer to a data block containing the 24-bits per pi>
248 +         <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
249 +         <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
250 +     </table>
251 +     </dd>
252 + </dl>
253 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
254 +
255 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00243">243</a> of file <a class="el" href="image_8cpp_source.htm]>
256 +
257 + </div>
258 + </div>
259 + <a class="anchor" id="a3d566da55411efac7e49e2f33bf6c155"></a>
260 + <div class="memitem">
261 + <div class="memproto">
262 +     <table class="memname">
263 +         <tr>
264 +             <td class="memname">bool RGBAToRGB </td>
265 +             <td>(</td>
266 +             <td class="paramtype">const unsigned char *</td>
267 +             <td class="paramname"><em>rgbaData</em>, </td>
268 +             </tr>
269 +             <tr>
270 +                 <td class="paramkey"></td>
271 +                 <td></td>
272 +                 <td class="paramtype">unsigned char *</td>
273 +                 <td class="paramname"><em>rgbData</em>, </td>
274 +                 </tr>
275 +                 <tr>
276 +                     <td class="paramkey"></td>

```

```

277 +         <td></td>
278 +         <td class="paramtype">int&#160;</td>
279 +         <td class="paramname"><em>width</em>, </td>
280 +     </tr>
281 +     <tr>
282 +         <td class="paramkey"></td>
283 +         <td></td>
284 +         <td class="paramtype">int&#160;</td>
285 +         <td class="paramname"><em>height</em>&#160;</td>
286 +     </tr>
287 +     <tr>
288 +         <td></td>
289 +         <td>)</td>
290 +         <td></td><td></td>
291 +     </tr>
292 +   </table>
293 + </div><div class="memdoc">
294 +
295 + <p>Convert 32-bits per pixel RGBA data to 24-bits per pixel RGB data. </p>
296 + <p>The alpha values are discarded. </p>
297 + <dl class="params"><dt>Parameters</dt><dd>
298 +   <table class="params">
299 +     <tr><td class="paramdir">[in]</td><td class="paramname">rgbaData</td><td>Pointer to a block of 32-bits per pixel RGBA data. Must
300 +     <tr><td class="paramdir">[out]</td><td class="paramname">rgbData</td><td>Pointer to a data block containing the 24-bits per pi>
301 +     <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
302 +     <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
303 +   </table>
304 + </dd>
305 + </dl>
306 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
307 +
308 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00318">318</a> of file <a class="el" href="image_8cpp_source.html
309 +
310 + </div>
311 + </div>
312 + <a class="anchor" id="a95b53cb5341aa2660b74a5f3a40228de"></a>
313 + <div class="memitem">
314 +   <div class="memproto">
315 +     <table class="memname">
316 +       <tr>
317 +         <td class="memname">bool RGBToLuminance </td>
318 +         <td>(</td>
319 +         <td class="paramtype">const unsigned char *&#160;</td>
320 +         <td class="paramname"><em>rgbData</em>, </td>
321 +       </tr>
322 +       <tr>
323 +         <td class="paramkey"></td>
324 +         <td></td>
325 +         <td class="paramtype">unsigned char *&#160;</td>
326 +         <td class="paramname"><em>luminanceData</em>, </td>
327 +       </tr>
328 +       <tr>
329 +         <td class="paramkey"></td>
330 +         <td></td>
331 +         <td class="paramtype">int&#160;</td>
332 +         <td class="paramname"><em>width</em>, </td>
333 +       </tr>
334 +       <tr>
335 +         <td class="paramkey"></td>
336 +         <td></td>
337 +         <td class="paramtype">int&#160;</td>
338 +         <td class="paramname"><em>height</em>&#160;</td>
339 +       </tr>
340 +       <tr>
341 +         <td></td>
342 +         <td>)</td>
343 +         <td></td><td></td>
344 +       </tr>
345 +     </table>

```

```

346 + </div><div class="memdoc">
347 +
348 + <p>Convert 24-bits per pixel RGB data to 8-bits per pixel luminance data. </p>
349 + <p>Each luminance pixel is created using a weighted sum of the RGB values. The weightings are 0.2126R, 0.7152G, and 0.0722B. </p>
350 + <dl class="params"><dt>Parameters</dt><dd>
351 +   <table class="params">
352 +     <tr><td class="paramdir">[in]</td><td class="paramname">rgbData</td><td>Pointer to a block of 24-bits per pixel RGB data. Must
353 +       <tr><td class="paramdir">[out]</td><td class="paramname">luminanceData</td><td>Pointer to a data block containing the 8-bits pe
354 +         <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
355 +         <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
356 +       </table>
357 +     </dd>
358 +   </dl>
359 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
360 +
361 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00267">267</a> of file <a class="el" href="image_8cpp_source.html
362 +
363 + </div>
364 + </div>
365 + <a class="anchor" id="a189e940abcfb40459918c86ab01a1121"></a>
366 + <div class="memitem">
367 + <div class="memproto">
368 +   <table class="memname">
369 +     <tr>
370 +       <td class="memname">bool RGBToRGBA </td>
371 +       <td>(</td>
372 +         <td class="paramtype">const unsigned char *;</td>
373 +         <td class="paramname"><em>rgbData</em>, </td>
374 +       </tr>
375 +       <tr>
376 +         <td class="paramkey"></td>
377 +         <td></td>
378 +         <td class="paramtype">unsigned char *;</td>
379 +         <td class="paramname"><em>rgbaData</em>, </td>
380 +       </tr>
381 +       <tr>
382 +         <td class="paramkey"></td>
383 +         <td></td>
384 +         <td class="paramtype">int;</td>
385 +         <td class="paramname"><em>width</em>, </td>
386 +       </tr>
387 +       <tr>
388 +         <td class="paramkey"></td>
389 +         <td></td>
390 +         <td class="paramtype">int;</td>
391 +         <td class="paramname"><em>height</em>;</td>
392 +       </tr>
393 +       <tr>
394 +         <td></td>
395 +         <td>)</td>
396 +         <td></td><td></td>
397 +       </tr>
398 +     </table>
399 + </div><div class="memdoc">
400 +
401 + <p>Convert 24-bits per pixel RGB data to 32-bits per pixel RGBA data. </p>
402 + <p>The alpha values are all set to 255. </p>
403 + <dl class="params"><dt>Parameters</dt><dd>
404 +   <table class="params">
405 +     <tr><td class="paramdir">[in]</td><td class="paramname">rgbData</td><td>Pointer to a block of 24-bits per pixel RGB data. Must
406 +       <tr><td class="paramdir">[out]</td><td class="paramname">rgbaData</td><td>Pointer to a data block containing the 32-bits per pi
407 +         <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image. </td></tr>
408 +         <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image. </td></tr>
409 +       </table>
410 +     </dd>
411 +   </dl>
412 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
413 +
414 + <p>Definition at line <a class="el" href="image_8cpp_source.html#l00291">291</a> of file <a class="el" href="image_8cpp_source.htm

```

```

415 +
416 + </div>
417 + </div>
418 + <a class="anchor" id="ab9744225ef92254ada77ddaeaddad25d"></a>
419 + <div class="memitem">
420 + <div class="memproto">
421 +     <table class="memname">
422 +         <tr>
423 +             <td class="memname">bool saveToBitmap </td>
424 +             <td>(</td>
425 +             <td class="paramtype">std::string&#160;;</td>
426 +             <td class="paramname"><em>filename</em>, </td>
427 +         </tr>
428 +         <tr>
429 +             <td class="paramkey"></td>
430 +             <td></td>
431 +             <td class="paramtype">int&#160;;</td>
432 +             <td class="paramname"><em>width</em>, </td>
433 +         </tr>
434 +         <tr>
435 +             <td class="paramkey"></td>
436 +             <td></td>
437 +             <td class="paramtype">int&#160;;</td>
438 +             <td class="paramname"><em>height</em>, </td>
439 +         </tr>
440 +         <tr>
441 +             <td class="paramkey"></td>
442 +             <td></td>
443 +             <td class="paramtype">const unsigned char *amp;;</td>
444 +             <td class="paramname"><em>imageData</em>&#160;;</td>
445 +         </tr>
446 +         <tr>
447 +             <td></td>
448 +             <td>)</td>
449 +             <td></td><td></td>
450 +         </tr>
451 +     </table>
452 + </div><div class="memdoc">
453 +
454 + <p>Save data as a bitmap image. </p>
455 + <p>Save a block of 24-bits per pixel RGB image data out as a bitmap image. Output bitmap is uncompressed. </p>
456 + <dl class="params"><dt>Parameters</dt><dd>
457 +   <table class="params">
458 +     <tr><td class="paramdir">[in]</td><td class="paramname">filename</td><td>The filename to use for the bitmap (should typically be a .bmp file).</td>
459 +     <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>The width of the image to save (in pixels). </td></tr>
460 +     <tr><td class="paramdir">[in]</td><td class="paramname">height</td><td>The height of the image to save (in pixels). </td></tr>
461 +     <tr><td class="paramdir">[in]</td><td class="paramname">imageData</td><td>Pointer to the data block to save. Data must be 8-bit integer values (0-255).</td>
462 +   </table>
463 +   </dd>
464 + </dl>
465 + <dl class="section return"><dt>Returns</dt><dd>False if an error occurred, true otherwise. </dd></dl>
466 +
467 + </div>
468 + </div>
469 + </div><!-- contents -->
470 + </div><!-- doc-content -->
471 + <!-- start footer part -->
472 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
473 +   <ul>
474 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efd6973a4f.html">common</a></li><li class="navelem"><a class="el" href="group_1.html">Groups</a></li>
475 +     <li class="footer">
476 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
477 +     </li>
478 +   </ul>
479 + </div>
480 + </body>
481 + </html>

```

12 docs/html/image_8h.js

```
...     ... @@ -0,0 +1,12 @@  
1     + var image_8h =  
2     + [  
3     +   [ "bitmapMagic", "structbitmap_magic.html", "structbitmap_magic" ],  
4     +   [ "bitmapHeader", "structbitmap_header.html", "structbitmap_header" ],  
5     +   [ "bitmapInformationHeader", "structbitmap_information_header.html", "structbitmap_information_header" ],  
6     +   [ "loadFromBitmap", "image_8h.html#ae8afb226cf212cce225a77a0ff79121", null ],  
7     +   [ "luminanceToRGB", "image_8h.html#a9390e4ddc634d83452a15e93017ab979", null ],  
8     +   [ "RGBAToRGB", "image_8h.html#a3d566da55411efac7e49e2f33bf6c155", null ],  
9     +   [ "RGBToLuminance", "image_8h.html#a95b53cb5341aa2660b74a5f3a40228de", null ],  
10    +   [ "RGBToRGBA", "image_8h.html#a189e940abcfb40459918c86ab01a1121", null ],  
11    +   [ "saveToBitmap", "image_8h.html#ab9744225ef92254ada77ddaeaddad25d", null ]  
12    + ]; -
```

176 docs/html/image_8h_source.html

```
.. @@ -0,0 +1,176 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.h Source File</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
```

```

50 +         <span class="left">
51 +             
55 +             <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
61 +         </span>
62 +     </div>
63 +   </li>
64 + </ul>
65 + </div>
66 + <div id="navrow2" class="tabs2">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle"></div>
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image_8h_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +           name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">image.h</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 +   <a href="image_8h.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="l00001"></a><span class="comment"> * This confidential and propri
107 +   <div class="line"><a name="l00002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108 +   <div class="line"><a name="l00003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109 +   <div class="line"><a name="l00004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Lim
110 +   <div class="line"><a name="l00005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> *      ALL RIGHTS RESERVED</s
111 +   <div class="line"><a name="l00006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112 +   <div class="line"><a name="l00007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113 +   <div class="line"><a name="l00008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114 +   <div class="line"><a name="l00009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115 +   <div class="line"><a name="l00010"></a><span class="lineno">10</span>&#160;</div>
116 +   <div class="line"><a name="l00011"></a><span class="lineno">11</span>&#160;<span class="preprocessor">#ifndef IMAGE_H</span></d
117 +   <div class="line"><a name="l00012"></a><span class="lineno">12</span>&#160;<span class="preprocessor"></span><span class="prepro
118 +   <div class="line"><a name="l00013"></a><span class="lineno">13</span>&#160;<span class="preprocessor"></span></div>

```

```

119 + <div class="line"><a name="100014"></a><span class="lineno"> 14</span>&#160;<span class="preprocessor">#include <CL/cl.h>;</span>
120 + <div class="line"><a name="100015"></a><span class="lineno"> 15</span>&#160;<span class="preprocessor">#include <lt;string>;</span>
121 + <div class="line"><a name="100016"></a><span class="lineno"> 16</span>&#160;</div>
122 + <div class="line"><a name="100026"></a><span class="lineno"><a class="code" href="structbitmap_magic.html"> 26</a></span>&#160;</div>
123 + <div class="line"><a name="100027"></a><span class="lineno"> 27</span>&#160;</div>
124 + <div class="line"><a name="100028"></a><span class="lineno"><a class="code" href="structbitmap_magic.html#a477646205ecad50196136261"> 28</a></span>&#160;</div>
125 + <div class="line"><a name="100029"></a><span class="lineno"> 29</span>&#160;</div>
126 + <div class="line"><a name="100030"></a><span class="lineno"> 30</span>&#160;</div>
127 + <div class="line"><a name="100035"></a><span class="lineno"><a class="code" href="structbitmap_header.html"> 35</a></span>&#160;</div>
128 + <div class="line"><a name="100036"></a><span class="lineno"> 36</span>&#160;</div>
129 + <div class="line"><a name="100037"></a><span class="lineno"><a class="code" href="structbitmap_header.html#ad06f4dbac80aa4d85163d385"> 37</a></span>&#160;</div>
130 + <div class="line"><a name="100038"></a><span class="lineno"><a class="code" href="structbitmap_header.html#ad1281577a12cb4314cf869"> 38</a></span>&#160;</div>
131 + <div class="line"><a name="100039"></a><span class="lineno"><a class="code" href="structbitmap_header.html#aaefafe00204ad8448ab9cd9"> 39</a></span>&#160;</div>
132 + <div class="line"><a name="100040"></a><span class="lineno"><a class="code" href="structbitmap_header.html#a5e74a0bfe6340ad581369b2"> 40</a></span>&#160;</div>
133 + <div class="line"><a name="100041"></a><span class="lineno"> 41</span>&#160;</div>
134 + <div class="line"><a name="100042"></a><span class="lineno"> 42</span>&#160;</div>
135 + <div class="line"><a name="100047"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html"> 47</a></span>&#160;</div>
136 + <div class="line"><a name="100048"></a><span class="lineno"> 48</span>&#160;</div>
137 + <div class="line"><a name="100049"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#afd30cb52462"> 49</a></span>&#160;</div>
138 + <div class="line"><a name="100050"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#abb2a108b489"> 50</a></span>&#160;</div>
139 + <div class="line"><a name="100051"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#a5c5209b3858"> 51</a></span>&#160;</div>
140 + <div class="line"><a name="100052"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#a92ce2fb0495"> 52</a></span>&#160;</div>
141 + <div class="line"><a name="100053"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#ae25aecd64837"> 53</a></span>&#160;</div>
142 + <div class="line"><a name="100054"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 54</a></span>&#160;</div>
143 + <div class="line"><a name="100055"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#abd9001c6c1e"> 55</a></span>&#160;</div>
144 + <div class="line"><a name="100056"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#a39272c25c46"> 56</a></span>&#160;</div>
145 + <div class="line"><a name="100057"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#a9596ce63329"> 57</a></span>&#160;</div>
146 + <div class="line"><a name="100058"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#ab8a3e77e6b6"> 58</a></span>&#160;</div>
147 + <div class="line"><a name="100059"></a><span class="lineno"><a class="code" href="structbitmap_information_header.html#aa6296b037ba"> 59</a></span>&#160;</div>
148 + <div class="line"><a name="100060"></a><span class="lineno"> 60</span>&#160;</div>
149 + <div class="line"><a name="100061"></a><span class="lineno"> 61</span>&#160;</div>
150 + <div class="line"><a name="100073"></a><span class="lineno"> 73</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 74</a></span>&#160;</div>
151 + <div class="line"><a name="100074"></a><span class="lineno"> 74</span>&#160;</div>
152 + <div class="line"><a name="100086"></a><span class="lineno"> 86</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 87</a></span>&#160;</div>
153 + <div class="line"><a name="100087"></a><span class="lineno"> 87</span>&#160;</div>
154 + <div class="line"><a name="100099"></a><span class="lineno"> 99</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 100</a></span>&#160;</div>
155 + <div class="line"><a name="100100"></a><span class="lineno"> 100</span>&#160;</div>
156 + <div class="line"><a name="100112"></a><span class="lineno"> 112</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 113</a></span>&#160;</div>
157 + <div class="line"><a name="100113"></a><span class="lineno"> 113</span>&#160;</div>
158 + <div class="line"><a name="100114"></a><span class="lineno"> 114</span>&#160;</div>
159 + <div class="line"><a name="100125"></a><span class="lineno"> 125</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 126</a></span>&#160;</div>
160 + <div class="line"><a name="100126"></a><span class="lineno"> 126</span>&#160;</div>
161 + <div class="line"><a name="100137"></a><span class="lineno"> 137</span>&#160;<span class="keywordtype">bool</span> <a class="code" href="structbitmap_information_header.html#a1a6659ee798"> 138</a></span>&#160;</div>
162 + <div class="line"><a name="100138"></a><span class="lineno"> 138</span>&#160;</div>
163 + <div class="line"><a name="100139"></a><span class="lineno"> 139</span>&#160;<span class="preprocessor">#endif</span></div>
164 + </div><!-- fragment --></div><!-- contents -->
165 + </div><!-- doc-content -->
166 + <!-- start footer part -->
167 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
168 +   <ul>
169 +     <li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efd6c6973a4f.html">common</a></li><li class="navelem"><a class="el" href="dir_bdd9a5d540de89e9fe90efd6c6973a4f.html">common</a></li>
170 +     <li class="footer">
171 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
172 +     </li>
173 +   </ul>
174 + </div>
175 + </body>
176 + </html>

```

118 docs/html/image_objects_8dox.html

...	...	@@ -0,0 +1,118 @@
1	+	<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2	+	<html xmlns="http://www.w3.org/1999/xhtml">
3	+	<head>
4	+	<meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5	+	<meta http-equiv="X-UA-Compatible" content="IE=9"/>
6	+	<title>Mali OpenCL SDK v1.1.0: tutorials/image_objects.dox File Reference</title>

```

7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
```

```

76     +     <div id="nav-sync" class="sync"></div>
77     +   </div>
78   + </div>
79   + <div id="splitbar" style="-moz-user-select:none;" 
80   +     class="ui-resizable-handle">
81   +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image__objects_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/image_objects.dox File Reference</div>  </div>
104 +   </div><!-- header-->
105 + <div class="contents">
106 +   </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="image__objects_8dox.html">image_objects.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

202 docs/html/image__scaling_8cl.html

...	...	@@ -0,0 +1,202 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling/assets/images/mali_cl_1.1.0.html</title>	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	
14	+ \$(document).ready(initResizable);	
15	+ </script>	
16	+ <link href="search/search.css" rel="stylesheet" type="text/css"/>	
17	+ <script type="text/javascript" src="search/search.js"></script>	
18	+ <script type="text/javascript">	
19	+ \$(document).ready(function() { searchBox.OnSelectItem(0); });	
20	+ </script>	
21	+ <link href="doxygen.css" rel="stylesheet" type="text/css" />	

```

22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   <script type="text/javascript">
84 +     $(document).ready(function(){initNavTree('image__scaling_8cl.html','');});
85 +   </script>
86 +   <div id="doc-content">
87 +     <!-- window showing the filter options -->
88 +     <div id="MSearchSelectWindow"
89 +       onmouseover="return searchBox.OnSearchSelectShow()"
90 +       onmouseout="return searchBox.OnSearchSelectHide()"

```

```

91 +     onkeydown="return searchBar.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +         name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a> &#124;
104 +     <a href="#var-members">Variables</a> </div>
105 +   <div class="headertitle">
106 +     <div class="title">image_scaling.cl File Reference</div> </div>
107 +   </div><!--header-->
108 + <div class="contents">
109 +
110 + <p><a href="image_scaling_8cl_source.html">Go to the source code of this file.</a></p>
111 + <table class="memberdecls">
112 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
113 +   Functions</h2></td></tr>
114 + <tr class="memitem:a2f2c7656161bcd4a3956c362d0052b26"><td class="memItemLeft" align="right" valign="top">__kernel void&#160;</td><
115 + <tr class="memdesc:a2f2c7656161bcd4a3956c362d0052b26"><td class="mdescLeft">&#160;</td><td class="mdescRight">Image scaling kernel
116 + <tr class="separator:a2f2c7656161bcd4a3956c362d0052b26"><td class="memSeparator" colspan="2">&#160;</td></tr>
117 + </table><table class="memberdecls">
118 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="var-members"></a>
119 +   Variables</h2></td></tr>
120 + <tr class="memitem:a9165c6046146d2d28cc268394d585f17"><td class="memItemLeft" align="right" valign="top">const sampler_t&#160;</td>
121 + <tr class="separator:a9165c6046146d2d28cc268394d585f17"><td class="memSeparator" colspan="2">&#160;</td></tr>
122 + </table>
123 + <h2 class="groupheader">Function Documentation</h2>
124 + <a class="anchor" id="a2f2c7656161bcd4a3956c362d0052b26"></a>
125 + <div class="memitem">
126 +   <div class="memproto">
127 +     <table class="memname">
128 +       <tr>
129 +         <td class="memname">__kernel void image_scaling </td>
130 +         <td>(</td>
131 +           <td class="paramtype">__read_only image2d_t&#160;</td>
132 +           <td class="paramname"><em>sourceImage</em>, </td>
133 +         </tr>
134 +       <tr>
135 +         <td class="paramkey"></td>
136 +         <td></td>
137 +         <td class="paramtype">__write_only image2d_t&#160;</td>
138 +         <td class="paramname"><em>destinationImage</em>, </td>
139 +       </tr>
140 +       <tr>
141 +         <td class="paramkey"></td>
142 +         <td></td>
143 +         <td class="paramtype">const float&#160;</td>
144 +         <td class="paramname"><em>widthNormalizationFactor</em>, </td>
145 +       </tr>
146 +       <tr>
147 +         <td class="paramkey"></td>
148 +         <td></td>
149 +         <td class="paramtype">const float&#160;</td>
150 +         <td class="paramname"><em>heightNormalizationFactor</em>&#160;</td>
151 +       </tr>
152 +       <tr>
153 +         <td></td>
154 +         <td></td>
155 +         <td></td><td></td></td>
156 +       </tr>
157 +     </table>
158 +   </div><div class="memdoc">
159 +

```

```

160 + <p>Image scaling kernel function. </p>
161 + <dl class="params"><dt>Parameters</dt><dd>
162 +   <table class="params">
163 +     <tr><td class="paramdir">[in]</td><td class="paramname">sourceImage</td><td>Input image object. </td></tr>
164 +     <tr><td class="paramdir">[out]</td><td class="paramname">destinationImage</td><td>Re-sized output image object. </td></tr>
165 +     <tr><td class="paramdir">[in]</td><td class="paramname">widthNormalizationFactor</td><td>1 / destinationImage width. </td></tr>
166 +     <tr><td class="paramdir">[in]</td><td class="paramname">heightNormalizationFactor</td><td>1 / destinationImage height. </td></tr>
167 +   </table>
168 + </dd>
169 + </dl>
170 +
171 + <p>Definition at line <a class="el" href="image_scaling_8cl_source.html#l00022">22</a> of file <a class="el" href="image_scaling_8cl_source.html#l00012">12</a>.
172 +
173 + </div>
174 + </div>
175 + <h2 class="groupheader">Variable Documentation</h2>
176 + <a class="anchor" id="a9165c6046146d2d28cc268394d585f17"></a>
177 + <div class="memitem">
178 +   <div class="memproto">
179 +     <table class="memname">
180 +       <tr>
181 +         <td class="memname">const sampler_t sampler = CLK_NORMALIZED_COORDS_TRUE | CLK_ADDRESS_CLAMP | CLK_FILTER_LINEAR</td>
182 +       </tr>
183 +     </table>
184 +   </div><div class="memdoc">
185 +
186 + <p>Definition at line <a class="el" href="image_scaling_8cl_source.html#l00012">12</a> of file <a class="el" href="image_scaling_8cl_source.html#l00022">22</a>.
187 +
188 + </div>
189 + </div>
190 + </div><!-- contents -->
191 + </div><!-- doc-content -->
192 + <!-- start footer part -->
193 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
194 +   <ul>
195 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="index.html">Documentation</a></li>
196 +     <li class="footer">
197 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
198 +     </li>
199 +   </ul>
200 + </div>
201 + </body>
202 + </html>

```

◀ ▶

▼ 5 docs/html/image_scaling_8cl.js

...	...	@@ -0,0 +1,5 @@
	1	+ var image_scaling_8cl =
	2	+ [
	3	+ ["image_scaling", "image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26", null],
	4	+ ["sampler", "image_scaling_8cl.html#a9165c6046146d2d28cc268394d585f17", null]
	5	+]; -

▼ 177 docs/html/image_scaling_8cl_source.html

...	...	@@ -0,0 +1,177 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling/assets/images</title>
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>

```
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <class="ui-resizable-handle">
81 +   </div>
```

```

82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image_scaling_8cl_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +         name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">image_scaling.cl</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + <a href="image_scaling_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"> 2</span>&#160;<span class="comment"> * This confidential and propri
107 + <div class="line"><a name="100002"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
108 + <div class="line"><a name="100003"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
109 + <div class="line"><a name="100004"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
110 + <div class="line"><a name="100005"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
111 + <div class="line"><a name="100006"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
112 + <div class="line"><a name="100007"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
113 + <div class="line"><a name="100008"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
114 + <div class="line"><a name="100009"></a><span class="lineno"> 10</span>&#160;</div>
115 + <div class="line"><a name="100010"></a><span class="lineno"> 11</span>&#160;<span class="comment"> /* [Define a sampler] */</span>
116 + <div class="line"><a name="100011"></a><span class="lineno"> 12</span>&#160;<span class="comment"> /* [Define a sampler] */</span>
117 + <div class="line"><a name="100012"></a><span class="lineno"> 13</span>&#160;<span class="comment"> /* [Define a sampler] */</span>
118 + <div class="line"><a name="100013"></a><span class="lineno"> 14</span>&#160;</div>
119 + <div class="line"><a name="100014"></a><span class="lineno"> 15</span>&#160;<span class="comment"> /* [Define a sampler] */</span>
120 + <div class="line"><a name="100022"></a><span class="lineno"> 16</span>&#160;<span class="comment"> /* [Define a sampler] */</span>
121 + <div class="line"><a name="100023"></a><span class="lineno"> 17</span>&#160;          __write_only image2d_t de
122 + <div class="line"><a name="100024"></a><span class="lineno"> 18</span>&#160;          <span class="keyword">cor
123 + <div class="line"><a name="100025"></a><span class="lineno"> 19</span>&#160;          <span class="keyword">cor
124 + <div class="line"><a name="100026"></a><span class="lineno"> 20</span>&#160;{</div>
125 + <div class="line"><a name="100027"></a><span class="lineno"> 21</span>&#160;      <span class="comment"> /*</span></div>
126 + <div class="line"><a name="100028"></a><span class="lineno"> 22</span>&#160;      <span class="comment"> * It is possible to get th
127 + <div class="line"><a name="100029"></a><span class="lineno"> 23</span>&#160;      <span class="comment"> * You could use this to ca
128 + <div class="line"><a name="100030"></a><span class="lineno"> 24</span>&#160;      <span class="comment"> * In this case, because th
129 + <div class="line"><a name="100031"></a><span class="lineno"> 25</span>&#160;      <span class="comment"> * it is better to pass no
130 + <div class="line"><a name="100032"></a><span class="lineno"> 26</span>&#160;      <span class="comment"> * This way we do the calcu
131 + <div class="line"><a name="100033"></a><span class="lineno"> 27</span>&#160;      <span class="comment"> */</span></div>
132 + <div class="line"><a name="100034"></a><span class="lineno"> 28</span>&#160;      <span class="comment"> /* [Calculate the coordinat
133 + <div class="line"><a name="100035"></a><span class="lineno"> 29</span>&#160;      <span class="comment"> */</span></div>
134 + <div class="line"><a name="100036"></a><span class="lineno"> 30</span>&#160;      <span class="comment"> /*</span></div>
135 + <div class="line"><a name="100037"></a><span class="lineno"> 31</span>&#160;      <span class="comment"> * There is one kernel inst
136 + <div class="line"><a name="100038"></a><span class="lineno"> 32</span>&#160;      <span class="comment"> * The global id of this ke
137 + <div class="line"><a name="100039"></a><span class="lineno"> 33</span>&#160;      <span class="comment"> */</span></div>
138 + <div class="line"><a name="100040"></a><span class="lineno"> 34</span>&#160;      int2 coordinate = (int2)(get_global_id(0), get_g
139 + <div class="line"><a name="100041"></a><span class="lineno"> 35</span>&#160;      <span class="comment"> /*</span></div>
140 + <div class="line"><a name="100042"></a><span class="lineno"> 36</span>&#160;      <span class="comment"> */</span></div>
141 + <div class="line"><a name="100043"></a><span class="lineno"> 37</span>&#160;      <span class="comment"> * That coordinate is only
142 + <div class="line"><a name="100044"></a><span class="lineno"> 38</span>&#160;      <span class="comment"> * If we normalize the coor
143 + <div class="line"><a name="100045"></a><span class="lineno"> 39</span>&#160;      <span class="comment"> * we can use them as coord
144 + <div class="line"><a name="100046"></a><span class="lineno"> 40</span>&#160;      <span class="comment"> */</span></div>
145 + <div class="line"><a name="100047"></a><span class="lineno"> 41</span>&#160;      float2 normalizedCoordinate = convert_float2(coo
146 + <div class="line"><a name="100048"></a><span class="lineno"> 42</span>&#160;      <span class="comment"> /* [Calculate the coordinat
147 + <div class="line"><a name="100049"></a><span class="lineno"> 43</span>&#160;      <span class="comment"> */</span></div>
148 + <div class="line"><a name="100050"></a><span class="lineno"> 44</span>&#160;      <span class="comment"> /* [Read from the source in
149 + <div class="line"><a name="100051"></a><span class="lineno"> 45</span>&#160;      <span class="comment"> */</span></div>
150 + <div class="line"><a name="100052"></a><span class="lineno"> 46</span>&#160;      <span class="comment"> * Read colours from the so

```

```

151 + <div class="line"><a name="100053"></a><span class="lineno"> 53</span>&#160;<span class="comment"> * The sampler determines h
152 + <div class="line"><a name="100054"></a><span class="lineno"> 54</span>&#160;<span class="comment"> * Because bilinear filteri
153 + <div class="line"><a name="100055"></a><span class="lineno"> 55</span>&#160;<span class="comment"> */</span></div>
154 + <div class="line"><a name="100056"></a><span class="lineno"> 56</span>&#160; float4 colour = read_imagef(sourceImage, <a class=
155 + <div class="line"><a name="100057"></a><span class="lineno"> 57</span>&#160; <span class="comment"> /* [Read from the source im
156 + <div class="line"><a name="100058"></a><span class="lineno"> 58</span>&#160;</div>
157 + <div class="line"><a name="100059"></a><span class="lineno"> 59</span>&#160; <span class="comment"> /* [Write to the destinatio
158 + <div class="line"><a name="100060"></a><span class="lineno"> 60</span>&#160; <span class="comment"> */</span></div>
159 + <div class="line"><a name="100061"></a><span class="lineno"> 61</span>&#160;<span class="comment"> * Write the colour to the
160 + <div class="line"><a name="100062"></a><span class="lineno"> 62</span>&#160;<span class="comment"> * No sampler is used here
161 + <div class="line"><a name="100063"></a><span class="lineno"> 63</span>&#160;<span class="comment"> */</span></div>
162 + <div class="line"><a name="100064"></a><span class="lineno"> 64</span>&#160; write_imagef(destinationImage, coordinate, colour
163 + <div class="line"><a name="100065"></a><span class="lineno"> 65</span>&#160; <span class="comment"> /* [Write to the destinatio
164 + <div class="line"><a name="100066"></a><span class="lineno"> 66</span>&#160;}</div>
165 + </div><!-- fragment --></div><!-- contents -->
166 + </div><!-- doc-content -->
167 + <!-- start footer part -->
168 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
169 +   <ul>
170 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class=
171 +     <li class="footer">
172 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
173 +     </li>
174 +   </ul>
175 + </div>
176 + </body>
177 + </html>

```

156 docs/html/image_scaling_8cpp.html

...	...	@@ -0,0 +1,156 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling/image_scaling_8cpp.html</title>
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);
		15 + </script>
		16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
		17 + <script type="text/javascript" src="search/search.js"></script>
		18 + <script type="text/javascript">
		19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });
		20 + </script>
		21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
		22 + </head>
		23 + <body>
		24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		25 + <div id="titlearea">
		26 + <table cellspacing="0" cellpadding="0">
		27 + <tbody>
		28 + <tr style="height: 56px;">
		29 + <td id="projectlogo"></td>
		30 + <td style="padding-left: 0.5em;">
		31 + <div id="projectname">Mali OpenCL SDK v1.1.0
		32 + </div>
		33 + </td>
		34 + </tr>
		35 + </tbody>
		36 + </table>
		37 + </div>

```

38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +     </div>
83 +   </div>
84 +   <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('image_scaling_8cpp.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 +   onmouseover="return searchBox.OnSearchSelectShow()"
91 +   onmouseout="return searchBox.OnSearchSelectHide()"
92 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
93 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">image_scaling.cpp File Reference</div>  </div>
106 + </div><!--header-->
```

```

107 + <div class="contents">
108 + <div class="textblock"><code>#include "<a class="el" href="common_8h_source.html">common.h</a>";</code><br/>
109 + <code>#include "<a class="el" href="image_8h_source.html">image.h</a>";</code><br/>
110 + <code>#include <CL/cl.h>;</code><br/>
111 + <code>#include <iostream>;</code><br/>
112 + </div>
113 + <p><a href="image_scaling_8cpp_source.html">Go to the source code of this file.</a></p>
114 + <table class="memberdecls">
115 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
116 + Functions</h2></td></tr>
117 + <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;</td><td class="r
118 + <tr class="memdesc:a840291bc02cba5474a4cb46a9b9566fe"><td class="mdescLeft">&#160;</td><td class="mdescRight">OpenCL image object s
119 + <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2">&#160;</td></tr>
120 + </table>
121 + <h2 class="groupheader">Function Documentation</h2>
122 + <a class="anchor" id="a840291bc02cba5474a4cb46a9b9566fe"></a>
123 + <div class="memitem">
124 + <div class="memproto">
125 +     <table class="memname">
126 +         <tr>
127 +             <td class="memname">int main </td>
128 +             <td>(</td>
129 +             <td class="paramtype">void&#160;</td>
130 +             <td class="paramname"></td><td>)</td>
131 +             <td></td>
132 +         </tr>
133 +     </table>
134 + </div><div class="memdoc">
135 +
136 + <p>OpenCL image object sample code. </p>
137 + <p>Demonstration of how to use OpenCL image objects to resize an image. </p>
138 + <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
139 +
140 + <p>Definition at line <a class="el" href="image_scaling_8cpp_source.html#l00024">24</a> of file <a class="el" href="image_scaling_8
141 +
142 + </div>
143 + </div>
144 + </div><!-- contents -->
145 + </div><!-- doc-content -->
146 + <!-- start footer part -->
147 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
148 +     <ul>
149 +         <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class
150 +         <li class="footer">
151 +             <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
152 +         </li>
153 +     </ul>
154 + </div>
155 + </body>
156 + </html>

```

4 docs/html/image_scaling_8cpp.js

```
... @@ -0,0 +1,4 @@
1 + var image__scaling_8cpp =
2 + [
3 +     [ "main", "image__scaling_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ]
4 + ];
```

342 docs/html/image scaling 8cpp source.html

```
... @@ -0,0 +1,342 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali_OpenCL_SDK_v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/image_scaling/image scali
```

```

7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
```

```

76     +     <div id="nav-sync" class="sync"></div>
77     +   </div>
78     + </div>
79     + <div id="splitbar" style="-moz-user-select:none;">
80     +   class="ui-resizable-handle">
81     + </div>
82   + </div>
83   + <script type="text/javascript">
84   + $(document).ready(function(){initNavTree('image_scaling_8cpp_source.html','');});
85   + </script>
86   + <div id="doc-content">
87   + <!-- window showing the filter options -->
88   + <div id="MSearchSelectWindow"
89   +   onmouseover="return searchBox.OnSearchSelectShow()"
90   +   onmouseout="return searchBox.OnSearchSelectHide()"
91   +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92   + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93   +
94   + <!-- iframe showing the search results (closed by default) -->
95   + <div id="MSearchResultsWindow">
96   + <iframe src="javascript:void(0)" frameborder="0"
97   +   name="MSearchResults" id="MSearchResults">
98   + </iframe>
99   + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">image_scaling.cpp</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + <a href="image_scaling_8cpp.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"> 2</span>&#160;<span class="comment"> * This confidential and propri
107 + <div class="line"><a name="100002"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
108 + <div class="line"><a name="100003"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
109 + <div class="line"><a name="100004"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
110 + <div class="line"><a name="100005"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
111 + <div class="line"><a name="100006"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
112 + <div class="line"><a name="100007"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
113 + <div class="line"><a name="100008"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
114 + <div class="line"><a name="100009"></a><span class="lineno"> 10</span>&#160;</div>
115 + <div class="line"><a name="100010"></a><span class="lineno"> 11</span>&#160;<span class="preprocessor">#include "<a class="c
116 + <div class="line"><a name="100011"></a><span class="lineno"> 12</span>&#160;<span class="preprocessor">#include "<a class="c
117 + <div class="line"><a name="100012"></a><span class="lineno"> 13</span>&#160;</div>
118 + <div class="line"><a name="100013"></a><span class="lineno"> 14</span>&#160;<span class="preprocessor">#include <CL/cl.h>;
119 + <div class="line"><a name="100014"></a><span class="lineno"> 15</span>&#160;<span class="preprocessor">#include <iostream>;
120 + <div class="line"><a name="100015"></a><span class="lineno"> 16</span>&#160;</div>
121 + <div class="line"><a name="100016"></a><span class="lineno"> 17</span>&#160;<span class="keyword">using namespace </span>std;</d
122 + <div class="line"><a name="100017"></a><span class="lineno"> 18</span>&#160;</div>
123 + <div class="line"><a name="100018"></a><span class="lineno"> 19</span>&#160;<span class="code" href="image_scaling_8cpp.html#a840291bc02cba5474a4cb46
124 + <div class="line"><a name="100024"></a><span class="lineno"> 20</span>&#160;<span class="code" href="image_scaling_8cpp.html#a840291bc02cba5474a4cb46
125 + <div class="line"><a name="100025"></a><span class="lineno"> 21</span>&#160; cl_context context = 0;</div>
126 + <div class="line"><a name="100026"></a><span class="lineno"> 22</span>&#160; cl_command_queue commandQueue = 0;</div>
127 + <div class="line"><a name="100027"></a><span class="lineno"> 23</span>&#160; cl_program program = 0;</div>
128 + <div class="line"><a name="100028"></a><span class="lineno"> 24</span>&#160; cl_device_id device = 0;</div>
129 + <div class="line"><a name="100029"></a><span class="lineno"> 25</span>&#160; cl_kernel kernel = 0;</div>
130 + <div class="line"><a name="100030"></a><span class="lineno"> 26</span>&#160; <span class="keyword">const</span> <span class="b
131 + <div class="line"><a name="100031"></a><span class="lineno"> 27</span>&#160; cl_mem memoryObjects[numMemoryObjects] = {0, 0};<
132 + <div class="line"><a name="100032"></a><span class="lineno"> 28</span>&#160; cl_int errorNumber;</div>
133 + <div class="line"><a name="100033"></a><span class="lineno"> 29</span>&#160; 30</span>&#160; <span class="comment"> /* Set up OpenCL environment
134 + <div class="line"><a name="100034"></a><span class="lineno"> 31</span>&#160; <span class="comment"> */</span>
135 + <div class="line"><a name="100035"></a><span class="lineno"> 32</span>&#160; <span class="comment"> /* Set up OpenCL environment
136 + <div class="line"><a name="100036"></a><span class="lineno"> 33</span>&#160; <span class="comment"> */</span>
137 + <div class="line"><a name="100037"></a><span class="lineno"> 34</span>&#160; <span class="comment"> /* Set up OpenCL environment
138 + <div class="line"><a name="100038"></a><span class="lineno"> 35</span>&#160; <span class="comment"> */</span>
139 + <div class="line"><a name="100039"></a><span class="lineno"> 36</span>&#160; <span class="comment"> /* Set up OpenCL environment
140 + <div class="line"><a name="100040"></a><span class="lineno"> 37</span>&#160; <span class="comment"> */</span>
141 + <div class="line"><a name="100041"></a><span class="lineno"> 38</span>&#160; <span class="comment"> */</span>
142 + <div class="line"><a name="100042"></a><span class="lineno"> 39</span>&#160; <span class="comment"> */</span>
143 + <div class="line"><a name="100043"></a><span class="lineno"> 40</span>&#160; <span class="comment"> */</span>
144 + <div class="line"><a name="100044"></a><span class="lineno"> 41</span>&#160; <span class="comment"> */</span>

```

```

145 + <div class="line"><a name="100045"></a><span class="lineno"> 45</span>&#160;           <a class="code" href="common_8cpp.html#acd459"
146 + <div class="line"><a name="100046"></a><span class="lineno"> 46</span>&#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
147 + <div class="line"><a name="100047"></a><span class="lineno"> 47</span>&#160;           <span class="keywordflow">return</span> 1;</c
148 + <div class="line"><a name="100048"></a><span class="lineno"> 48</span>&#160;       }</div>
149 + <div class="line"><a name="100049"></a><span class="lineno"> 49</span>&#160;       <span class="keywordflow">if</span> (!<a class="c
150 + <div class="line"><a name="100050"></a><span class="lineno"> 50</span>&#160;           <a class="code" href="common_8cpp.html#acd459
151 + <div class="line"><a name="100051"></a><span class="lineno"> 51</span>&#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
152 + <div class="line"><a name="100052"></a><span class="lineno"> 52</span>&#160;           <span class="keywordflow">return</span> 1;</c
153 + <div class="line"><a name="100053"></a><span class="lineno"> 53</span>&#160;       }</div>
154 + <div class="line"><a name="100054"></a><span class="lineno"> 54</span>&#160;       <span class="comment">/*
155 + <div class="line"><a name="100055"></a><span class="lineno"> 55</span>&#160;       */</span>
156 + <div class="line"><a name="100056"></a><span class="lineno"> 56</span>&#160;       <span class="code" href="common_8cpp.html#acd459
157 + <div class="line"><a name="100057"></a><span class="lineno"> 57</span>&#160;           kernel = clCreateKernel(program, <span class="str
158 + <div class="line"><a name="100058"></a><span class="lineno"> 58</span>&#160;           <span class="keywordflow">if</span> (!<a class="c
159 + <div class="line"><a name="100059"></a><span class="lineno"> 59</span>&#160;           {</div>
160 + <div class="line"><a name="100060"></a><span class="lineno"> 60</span>&#160;           <a class="code" href="common_8cpp.html#acd459
161 + <div class="line"><a name="100061"></a><span class="lineno"> 61</span>&#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
162 + <div class="line"><a name="100062"></a><span class="lineno"> 62</span>&#160;           <span class="keywordflow">return</span> 1;</c
163 + <div class="line"><a name="100063"></a><span class="lineno"> 63</span>&#160;       }</div>
164 + <div class="line"><a name="100064"></a><span class="lineno"> 64</span>&#160;       <span class="comment">/*
165 + <div class="line"><a name="100065"></a><span class="lineno"> 65</span>&#160;           */</span> Print the image formats
166 + <div class="line"><a name="100066"></a><span class="lineno"> 66</span>&#160;           cout &lt;&lt; endl;</div>
167 + <div class="line"><a name="100067"></a><span class="lineno"> 67</span>&#160;           <a class="code" href="common_8cpp.html#a736045ae"
168 + <div class="line"><a name="100068"></a><span class="lineno"> 68</span>&#160;           cout &lt;&lt; endl;</div>
169 + <div class="line"><a name="100069"></a><span class="lineno"> 69</span>&#160;       <span class="comment">/*
170 + <div class="line"><a name="100070"></a><span class="lineno"> 70</span>&#160;           */</span> The scaling factor to us
171 + <div class="line"><a name="100071"></a><span class="lineno"> 71</span>&#160;           <span class="keyword">const</span> <span class="b
172 + <div class="line"><a name="100072"></a><span class="lineno"> 72</span>&#160;       <span class="comment">/*
173 + <div class="line"><a name="100073"></a><span class="lineno"> 73</span>&#160;           */</span> Load the input image dat
174 + <div class="line"><a name="100074"></a><span class="lineno"> 74</span>&#160;           <span class="keywordtype">unsigned</span> <span c
175 + <div class="line"><a name="100075"></a><span class="lineno"> 75</span>&#160;           <span class="keywordtype">int</span> width, heig
176 + <div class="line"><a name="100076"></a><span class="lineno"> 76</span>&#160;           <a class="code" href="image_8cpp.html#a24ebc43a21
177 + <div class="line"><a name="100077"></a><span class="lineno"> 77</span>&#160;       <span class="comment">/*
178 + <div class="line"><a name="100078"></a><span class="lineno"> 78</span>&#160;           */</span></div>
179 + <div class="line"><a name="100079"></a><span class="lineno"> 79</span>&#160;           <span class="comment">* Calculate the width and
180 + <div class="line"><a name="100080"></a><span class="lineno"> 80</span>&#160;           * Used to allocate the cor
181 + <div class="line"><a name="100081"></a><span class="lineno"> 81</span>&#160;           <span class="comment">*/</span></div>
182 + <div class="line"><a name="100082"></a><span class="lineno"> 82</span>&#160;           <span class="keywordtype">int</span> newWidth = w
183 + <div class="line"><a name="100083"></a><span class="lineno"> 83</span>&#160;           <span class="keywordtype">int</span> newHeight = h
184 + <div class="line"><a name="100084"></a><span class="lineno"> 84</span>&#160;       <span class="comment">/*
185 + <div class="line"><a name="100085"></a><span class="lineno"> 85</span>&#160;           */</span> [Allocate image objects]
186 + <div class="line"><a name="100086"></a><span class="lineno"> 86</span>&#160;           <span class="comment">*/</span></div>
187 + <div class="line"><a name="100087"></a><span class="lineno"> 87</span>&#160;           <span class="comment">* Specify the format of th
188 + <div class="line"><a name="100088"></a><span class="lineno"> 88</span>&#160;           <span class="comment">* The bitmap image we are
189 + <div class="line"><a name="100089"></a><span class="lineno"> 89</span>&#160;           <span class="comment">* We will use RGBA8888 and
190 + <div class="line"><a name="100090"></a><span class="lineno"> 90</span>&#160;           <span class="comment">*/</span></div>
191 + <div class="line"><a name="100091"></a><span class="lineno"> 91</span>&#160;           cl_image_format format;</div>
192 + <div class="line"><a name="100092"></a><span class="lineno"> 92</span>&#160;           format.image_channel_data_type = CL_UNORM_INT8;</
193 + <div class="line"><a name="100093"></a><span class="lineno"> 93</span>&#160;           format.image_channel_order = CL_RGBA;</div>
194 + <div class="line"><a name="100094"></a><span class="lineno"> 94</span>&#160;       <span class="comment">/*
195 + <div class="line"><a name="100095"></a><span class="lineno"> 95</span>&#160;           */</span> Allocate memory for the
196 + <div class="line"><a name="100096"></a><span class="lineno"> 96</span>&#160;           <span class="keywordtype">bool</span> createMemor
197 + <div class="line"><a name="100097"></a><span class="lineno"> 97</span>&#160;       <span class="comment">/*
198 + <div class="line"><a name="100098"></a><span class="lineno"> 98</span>&#160;           memoryObjects[0] = clCreateImage2D(context, CL_ME
199 + <div class="line"><a name="100099"></a><span class="lineno"> 99</span>&#160;           createMemoryObjectsSuccess &= <a class="code'>
200 + <div class="line"><a name="100100"></a><span class="lineno"> 100</span>&#160;       <span class="comment">/*
201 + <div class="line"><a name="100101"></a><span class="lineno"> 101</span>&#160;           memoryObjects[1] = clCreateImage2D(context, CL_ME
202 + <div class="line"><a name="100102"></a><span class="lineno"> 102</span>&#160;           createMemoryObjectsSuccess &= <a class="code'>
203 + <div class="line"><a name="100103"></a><span class="lineno"> 103</span>&#160;       <span class="comment">/*
204 + <div class="line"><a name="100104"></a><span class="lineno"> 104</span>&#160;           <span class="keywordflow">if</span> (!createMemor
205 + <div class="line"><a name="100105"></a><span class="lineno"> 105</span>&#160;       <span class="comment">/*
206 + <div class="line"><a name="100106"></a><span class="lineno"> 106</span>&#160;           <span class="code" href="common_8cpp.html#acd459
207 + <div class="line"><a name="100107"></a><span class="lineno"> 107</span>&#160;           cerr &lt;&lt; <span class="stringLiteral">&qu
208 + <div class="line"><a name="100108"></a><span class="lineno"> 108</span>&#160;           <span class="keywordflow">return</span> 1;</c
209 + <div class="line"><a name="100109"></a><span class="lineno"> 109</span>&#160;       }</div>
210 + <div class="line"><a name="100110"></a><span class="lineno"> 110</span>&#160;           <span class="comment">/*
211 + <div class="line"><a name="100111"></a><span class="lineno"> 111</span>&#160;       <span class="comment">/*
212 + <div class="line"><a name="100112"></a><span class="lineno"> 112</span>&#160;           <span class="comment">/*
213 + <div class="line"><a name="100113"></a><span class="lineno"> 113</span>&#160;           <span class="comment">/*

```

```

214 + <div class="line"><a name="l00114"></a><span class="lineno"> 114</span>&#160;<span class="comment"> * Like with memory buffers
215 + <div class="line"><a name="l00115"></a><span class="lineno"> 115</span>&#160;<span class="comment"> * Unlike buffers, we must
216 + <div class="line"><a name="l00116"></a><span class="lineno"> 116</span>&#160;<span class="comment"> */</span></div>
217 + <div class="line"><a name="l00117"></a><span class="lineno"> 117</span>&#160; <span class="keywordtype">size_t</span> origin[3]
218 + <div class="line"><a name="l00118"></a><span class="lineno"> 118</span>&#160; <span class="keywordtype">size_t</span> region[3]
219 + <div class="line"><a name="l00119"></a><span class="lineno"> 119</span>&#160;</div>
220 + <div class="line"><a name="l00120"></a><span class="lineno"> 120</span>&#160; <span class="comment"> /*</span></div>
221 + <div class="line"><a name="l00121"></a><span class="lineno"> 121</span>&#160;<span class="comment"> * clEnqueueMapImage also r
222 + <div class="line"><a name="l00122"></a><span class="lineno"> 122</span>&#160;<span class="comment"> * If the image format is r
223 + <div class="line"><a name="l00123"></a><span class="lineno"> 123</span>&#160;<span class="comment"> * The number of bytes per
224 + <div class="line"><a name="l00124"></a><span class="lineno"> 124</span>&#160;<span class="comment"> * this affects the offset
225 + <div class="line"><a name="l00125"></a><span class="lineno"> 125</span>&#160;<span class="comment"> * In our case the image fo
226 + <div class="line"><a name="l00126"></a><span class="lineno"> 126</span>&#160;<span class="comment"> */</span></div>
227 + <div class="line"><a name="l00127"></a><span class="lineno"> 127</span>&#160; <span class="keywordtype">size_t</span> rowPitch
228 + <div class="line"><a name="l00128"></a><span class="lineno"> 128</span>&#160;</div>
229 + <div class="line"><a name="l00129"></a><span class="lineno"> 129</span>&#160; <span class="keywordtype">unsigned</span> <span c
230 + <div class="line"><a name="l00130"></a><span class="lineno"> 130</span>&#160; <span class="keywordflow">if</span> (!<a class="c
231 + <div class="line"><a name="l00131"></a><span class="lineno"> 131</span>&#160; {</div>
232 + <div class="line"><a name="l00132"></a><span class="lineno"> 132</span>&#160; <a class="code" href="common_8cpp.html#acd459
233 + <div class="line"><a name="l00133"></a><span class="lineno"> 133</span>&#160; cerr &lt;&lt; <span class="stringLiteral">>&qu
234 + <div class="line"><a name="l00134"></a><span class="lineno"> 134</span>&#160; <span class="keywordflow">return</span> 1;</c
235 + <div class="line"><a name="l00135"></a><span class="lineno"> 135</span>&#160; }</div>
236 + <div class="line"><a name="l00136"></a><span class="lineno"> 136</span>&#160; <span class="comment"> /* [Map image objects to ho
237 + <div class="line"><a name="l00137"></a><span class="lineno"> 137</span>&#160;</div>
238 + <div class="line"><a name="l00138"></a><span class="lineno"> 138</span>&#160; <span class="comment"> /* Convert the input data t
239 + <div class="line"><a name="l00139"></a><span class="lineno"> 139</span>&#160; <a class="code" href="image_8cpp.html#a83b7aea3d4
240 + <div class="line"><a name="l00140"></a><span class="lineno"> 140</span>&#160; <span class="keyword">delete</span>[] inputImage;
241 + <div class="line"><a name="l00141"></a><span class="lineno"> 141</span>&#160;</div>
242 + <div class="line"><a name="l00142"></a><span class="lineno"> 142</span>&#160; <span class="comment"> /* Unmap the image from the
243 + <div class="line"><a name="l00143"></a><span class="lineno"> 143</span>&#160; <span class="keywordflow">if</span> (!<a class="c
244 + <div class="line"><a name="l00144"></a><span class="lineno"> 144</span>&#160; {</div>
245 + <div class="line"><a name="l00145"></a><span class="lineno"> 145</span>&#160; <a class="code" href="common_8cpp.html#acd459
246 + <div class="line"><a name="l00146"></a><span class="lineno"> 146</span>&#160; cerr &lt;&lt; <span class="stringLiteral">>&qu
247 + <div class="line"><a name="l00147"></a><span class="lineno"> 147</span>&#160; <span class="keywordflow">return</span> 1;</c
248 + <div class="line"><a name="l00148"></a><span class="lineno"> 148</span>&#160; }</div>
249 + <div class="line"><a name="l00149"></a><span class="lineno"> 149</span>&#160;</div>
250 + <div class="line"><a name="l00150"></a><span class="lineno"> 150</span>&#160; <span class="comment"> /*</span></div>
251 + <div class="line"><a name="l00151"></a><span class="lineno"> 151</span>&#160;<span class="comment"> * Calculate the normalizat
252 + <div class="line"><a name="l00152"></a><span class="lineno"> 152</span>&#160;<span class="comment"> * By using normalized coor
253 + <div class="line"><a name="l00153"></a><span class="lineno"> 153</span>&#160;<span class="comment"> */</span></div>
254 + <div class="line"><a name="l00154"></a><span class="lineno"> 154</span>&#160; cl_float widthNormalizationFactor = 1.0f / newWi
255 + <div class="line"><a name="l00155"></a><span class="lineno"> 155</span>&#160; cl_float heightNormalizationFactor = 1.0f / newHe
256 + <div class="line"><a name="l00156"></a><span class="lineno"> 156</span>&#160;</div>
257 + <div class="line"><a name="l00157"></a><span class="lineno"> 157</span>&#160; <span class="comment"> /* Setup the kernel argumen
258 + <div class="line"><a name="l00158"></a><span class="lineno"> 158</span>&#160; <span class="keywordtype">bool</span> setKernelAr
259 + <div class="line"><a name="l00159"></a><span class="lineno"> 159</span>&#160; setKernelArgumentsSuccess &amp;= <a class="code"
260 + <div class="line"><a name="l00160"></a><span class="lineno"> 160</span>&#160; setKernelArgumentsSuccess &amp;= <a class="code"
261 + <div class="line"><a name="l00161"></a><span class="lineno"> 161</span>&#160; setKernelArgumentsSuccess &amp;= <a class="code"
262 + <div class="line"><a name="l00162"></a><span class="lineno"> 162</span>&#160; setKernelArgumentsSuccess &amp;= <a class="code"
263 + <div class="line"><a name="l00163"></a><span class="lineno"> 163</span>&#160; <span class="keywordflow">if</span> (!setKernelAr
264 + <div class="line"><a name="l00164"></a><span class="lineno"> 164</span>&#160; {</div>
265 + <div class="line"><a name="l00165"></a><span class="lineno"> 165</span>&#160; <a class="code" href="common_8cpp.html#acd459
266 + <div class="line"><a name="l00166"></a><span class="lineno"> 166</span>&#160; cerr &lt;&lt; <span class="stringLiteral">>&qu
267 + <div class="line"><a name="l00167"></a><span class="lineno"> 167</span>&#160; <span class="keywordflow">return</span> 1;</c
268 + <div class="line"><a name="l00168"></a><span class="lineno"> 168</span>&#160; }</div>
269 + <div class="line"><a name="l00169"></a><span class="lineno"> 169</span>&#160;</div>
270 + <div class="line"><a name="l00170"></a><span class="lineno"> 170</span>&#160; <span class="comment"> /*</span></div>
271 + <div class="line"><a name="l00171"></a><span class="lineno"> 171</span>&#160;<span class="comment"> * Set the kernel work size
272 + <div class="line"><a name="l00172"></a><span class="lineno"> 172</span>&#160;<span class="comment"> * Therefore, we need newWi
273 + <div class="line"><a name="l00173"></a><span class="lineno"> 173</span>&#160;<span class="comment"> * We are using two work di
274 + <div class="line"><a name="l00174"></a><span class="lineno"> 174</span>&#160;<span class="comment"> * With one dimension we wo
275 + <div class="line"><a name="l00175"></a><span class="lineno"> 175</span>&#160;<span class="comment"> */</span></div>
276 + <div class="line"><a name="l00176"></a><span class="lineno"> 176</span>&#160; <span class="keyword">const</span> <span class="k
277 + <div class="line"><a name="l00177"></a><span class="lineno"> 177</span>&#160; <span class="keywordtype">size_t</span> globalWo
278 + <div class="line"><a name="l00178"></a><span class="lineno"> 178</span>&#160;</div>
279 + <div class="line"><a name="l00179"></a><span class="lineno"> 179</span>&#160; <span class="comment"> /* An event to associate wi
280 + <div class="line"><a name="l00180"></a><span class="lineno"> 180</span>&#160; cl_event <span class="keyword">event</span> = 0;<
281 + <div class="line"><a name="l00181"></a><span class="lineno"> 181</span>&#160;</div>
282 + <div class="line"><a name="l00182"></a><span class="lineno"> 182</span>&#160; <span class="comment"> /* Enqueue the kernel *</span></div>

```

```

283 + <div class="line"><a name="100183"></a><span class="lineno"> 183</span>&#160;
284 + <div class="line"><a name="100184"></a><span class="lineno"> 184</span>&#160;
285 + <div class="line"><a name="100185"></a><span class="lineno"> 185</span>&#160;
286 + <div class="line"><a name="100186"></a><span class="lineno"> 186</span>&#160;
287 + <div class="line"><a name="100187"></a><span class="lineno"> 187</span>&#160;
288 + <div class="line"><a name="100188"></a><span class="lineno"> 188</span>&#160;
289 + <div class="line"><a name="100189"></a><span class="lineno"> 189</span>&#160;</div>
290 + <div class="line"><a name="100190"></a><span class="lineno"> 190</span>&#160;
291 + <div class="line"><a name="100191"></a><span class="lineno"> 191</span>&#160;
292 + <div class="line"><a name="100192"></a><span class="lineno"> 192</span>&#160;
293 + <div class="line"><a name="100193"></a><span class="lineno"> 193</span>&#160;
294 + <div class="line"><a name="100194"></a><span class="lineno"> 194</span>&#160;
295 + <div class="line"><a name="100195"></a><span class="lineno"> 195</span>&#160;
296 + <div class="line"><a name="100196"></a><span class="lineno"> 196</span>&#160;
297 + <div class="line"><a name="100197"></a><span class="lineno"> 197</span>&#160;</div>
298 + <div class="line"><a name="100198"></a><span class="lineno"> 198</span>&#160;
299 + <div class="line"><a name="100199"></a><span class="lineno"> 199</span>&#160;
300 + <div class="line"><a name="100200"></a><span class="lineno"> 200</span>&#160;
301 + <div class="line"><a name="100201"></a><span class="lineno"> 201</span>&#160;
302 + <div class="line"><a name="100202"></a><span class="lineno"> 202</span>&#160;
303 + <div class="line"><a name="100203"></a><span class="lineno"> 203</span>&#160;
304 + <div class="line"><a name="100204"></a><span class="lineno"> 204</span>&#160;
305 + <div class="line"><a name="100205"></a><span class="lineno"> 205</span>&#160;
306 + <div class="line"><a name="100206"></a><span class="lineno"> 206</span>&#160;    }</div>
307 + <div class="line"><a name="100207"></a><span class="lineno"> 207</span>&#160;</div>
308 + <div class="line"><a name="100208"></a><span class="lineno"> 208</span>&#160;    <span class="keywordtype">size_t</span> newRegion
309 + <div class="line"><a name="100209"></a><span class="lineno"> 209</span>&#160;</div>    <span class="keywordtype">unsigned</span> <span class="comment"> // number of regions
310 + <div class="line"><a name="100210"></a><span class="lineno"> 210</span>&#160;    <span class="keywordflow">if</span> (<a class="code" href="common_8cpp.html#acd459e74c33ff00135">newRegion <span class="comment"> <!--
311 + <div class="line"><a name="100211"></a><span class="lineno"> 211</span>&#160;    <span class="comment"> Release the event object -->
312 + <div class="line"><a name="100212"></a><span class="lineno"> 212</span>&#160;    <span class="keywordflow">if</span> (<a class="code" href="common_8cpp.html#acd459e74c33ff00135">newRegion <span class="comment"> <!--
313 + <div class="line"><a name="100213"></a><span class="lineno"> 213</span>&#160;    <span class="comment"> Release the event object -->
314 + <div class="line"><a name="100214"></a><span class="lineno"> 214</span>&#160;    <span class="comment"> Release the event object -->
315 + <div class="line"><a name="100215"></a><span class="lineno"> 215</span>&#160;    <span class="keywordflow">return</span> 1;</div>
316 + <div class="line"><a name="100216"></a><span class="lineno"> 216</span>&#160;    }</div>
317 + <div class="line"><a name="100217"></a><span class="lineno"> 217</span>&#160;</div>
318 + <div class="line"><a name="100218"></a><span class="lineno"> 218</span>&#160;    <span class="keywordtype">unsigned</span> <span class="comment"> // number of regions
319 + <div class="line"><a name="100219"></a><span class="lineno"> 219</span>&#160;    <a class="code" href="image_8cpp.html#a872cec0732">image->GetImageCount();
320 + <div class="line"><a name="100220"></a><span class="lineno"> 220</span>&#160;</div>
321 + <div class="line"><a name="100221"></a><span class="lineno"> 221</span>&#160;    <a class="code" href="image_8cpp.html#ad7fed8ed57">image->GetImageCount();
322 + <div class="line"><a name="100222"></a><span class="lineno"> 222</span>&#160;</div>
323 + <div class="line"><a name="100223"></a><span class="lineno"> 223</span>&#160;    <span class="keyword">delete</span>[] outputImage;
324 + <div class="line"><a name="100224"></a><span class="lineno"> 224</span>&#160;</div>
325 + <div class="line"><a name="100225"></a><span class="lineno"> 225</span>&#160;    <a class="code" href="common_8cpp.html#acd459e74c33ff00135">newRegion
326 + <div class="line"><a name="100226"></a><span class="lineno"> 226</span>&#160;</div>
327 + <div class="line"><a name="100227"></a><span class="lineno"> 227</span>&#160;</div>
328 + <div class="line"><a name="100228"></a><span class="lineno"> 228</span>&#160;    <span class="keywordflow">return</span> 0;</div>
329 + <div class="line"><a name="100229"></a><span class="lineno"> 229</span>&#160;}</div>
330 + </div><!-- fragment --></div><!-- contents -->
331 + </div><!-- doc-content -->
332 + <!-- start footer part -->
333 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
334 +   <ul>
335 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
336 +     <li class="footer">
337 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
338 +     </li>
339 +   </ul>
340 + </div>
341 + </body>
342 + </html>

```

118 docs/html/image_scaling_8dox.html

...	...	@@ -0,0 +1,118 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	

```

5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/image_scaling.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
```

```

74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;" 
80 +     class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('image_scaling_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/image_scaling.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + <div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="image_scaling_8dox.html">image_scaling.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

▼ 161 ■■■■■ docs/html/image_objects_tutorial.html □

...	...	@@ -0,0 +1,161 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: Image Objects</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> 17 + <script type="text/javascript" src="search/search.js"></script> 18 + <script type="text/javascript"> 19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });

```

20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('image_objects_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +       onmouseover="return searchBox.OnSearchSelectShow()"
84 +       onmouseout="return searchBox.OnSearchSelectHide()"
85 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +       <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +     </div>
88 + <!-- iframe showing the search results (closed by default) -->

```

```

89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Image Objects </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>An overview of OpenCL image objects including sample code.</p>
101 +   <h1><a class="anchor" id="imageObjectsIntroduction"></a>
102 +   Introduction</h1>
103 +   <p>Textures (images) are a huge part of modern graphics applications. As such, graphics hardware has developed to allow high performance.
104 +   <p>To make use of this specialised hardware, OpenCL includes an optional image data type. These 'image objects' are supported on all platforms.
105 +   <p>Images represent large grids of data which can be processed in parallel. As such, image data and image operations are usually a lot faster than using buffers.
106 +   <p>Images data can be stored/manipulated by OpenCL in two ways; buffers and images.</p>
107 +   <h2><a class="anchor" id="imageObjectsBuffers"></a>
108 +   Memory Buffers</h2>
109 +   <p>Memory buffers are just plain arrays of data.</p>
110 +   <p>Because they are suitable for all forms of data (e.g. images, grids, linear arrays, etc.), various image operations are difficult to implement.
111 +   <ul>
112 +     <li>To access image data at given coordinates, you must calculate the correct offset into the data.</li>
113 +     <li>You must use exact coordinates to access your data, or implement your own access methods for normalised (or other) coordinates.</li>
114 +     <li>You must also handle the case where the coordinates are outside of the image area.</li>
115 +     <li>Any algorithms or optimisations are usually fixed to the image format being used e.g. RGB888 (if you then change the image format, you will need to change the algorithm).</li>
116 +     <li>Image filtering (e.g. bilinear filtering) must be done manually.</li>
117 +   </ul>
118 +   <h2><a class="anchor" id="imageObjectsImageObjects"></a>
119 +   Image Objects</h2>
120 +   <p>Image objects are a specialist memory type which makes it easier to work with image data. Image objects:</p>
121 +   <ul>
122 +     <li>support access by coordinates directly</li>
123 +     <li>support normalized coordinates</li>
124 +     <li>handle out-of-range coordinates (you can choose from various handling schemes)</li>
125 +     <li>provide an abstract image format (accessing RGB888 images is the same as accessing RGB565 images)</li>
126 +     <li>support bilinear filtering (accelerated by hardware)</li>
127 +   </ul>
128 +   <h1><a class="anchor" id="imageObjectsRecommendations"></a>
129 +   Recommendations</h1>
130 +   <p>Whether to use image objects or not depends on the application. You should take the following considerations into account:</p>
131 +   <ul>
132 +     <li>Using image objects for image data simplifies the code needed to access and manipulate the data (see <a class="el" href="image_objects.html">Image Objects</a>).
133 +     <li><p class="startli">When using image objects, only 1 pixel can be processed per cycle. Using buffers, if your image format is less than 32-bits per channel, you can process multiple pixels per cycle. For example, if the image format is RGBA8888 (each pixel is 32-bits), using buffers, you can vectorize the algorithm to process multiple pixels per cycle. If the format is 32-bits per channel or greater, this advantage of image objects is lost because only one pixel can be processed per cycle. For more information about vectorization, see <a class="el" href="hello_world_vector_tutorial.html">Vectorizing image processing</a>).
134 +     <li><p class="startli">In more complex cases, maximum performance comes from balancing load across the system. On Mali-T600 series GPUs, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes. For example, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes.
135 +     <li><p class="startli">For example, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes.
136 +     <li><p class="startli">For more information about vectorization, see <a class="el" href="hello_world_vector_tutorial.html">Vectorizing image processing</a>).
137 +   </li>
138 +   <li><p class="startli">In more complex cases, maximum performance comes from balancing load across the system. On Mali-T600 series GPUs, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes. For example, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes.
139 +   <li><p class="startli">For example, loading input images with image objects and then loading the data to alter the images in memory buffers is slower than loading the images directly into memory buffers and then applying the changes.
140 +   </li>
141 +   </ul>
142 +   <h1><a class="anchor" id="imageObjectsSample"></a>
143 +   Sample Code</h1>
144 +   <ul>
145 +     <li><p class="startli"><a class="el" href="image_scaling_tutorial.html">Image Scaling</a></p>
146 +     <li>How to resize an image using OpenCL image objects. </li>
147 +   </ul>
148 + </div></div><!-- contents -->
149 + </div><!-- doc-content -->
150 + <!-- start footer part -->
151 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
152 +   <ul>
153 +     <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
154 +     <li class="footer">
155 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
156 +     </li>
157 +   </ul>

```

```
158 +     </ul>
159 + </div>
160 + </body>
161 + </html>
```

```
... @@ -0,0 +1,17 @@
1 + var image_objects_tutorial =
2 + [
3 +     [ "Introduction", "image_objects_tutorial.html#imageObjectsIntroduction", [
4 +         [ "Memory Buffers", "image_objects_tutorial.html#imageObjectsBuffers", null ],
5 +         [ "Image Objects", "image_objects_tutorial.html#imageObjectsImageObjects", null ]
6 +     ] ],
7 +     [ "Recommendations", "image_objects_tutorial.html#imageObjectsRecommendations", null ],
8 +     [ "Sample Code", "image_objects_tutorial.html#imageObjectsSample", null ],
9 +     [ "Image Scaling", "image_scaling_tutorial.html", [
10 +         [ "Bilinear Filtering", "image_scaling_tutorial.html#imageScalingIntroduction", null ],
11 +         [ "Image Object and Memory Buffer Differences", "image_scaling_tutorial.html#imageScalingDifferences", null ],
12 +         [ "Samplers", "image_scaling_tutorial.html#imageScalingSamplers", null ],
13 +         [ "Resizing images with bilinear filtering", "image_scaling_tutorial.html#imageScalingCode", null ],
14 +         [ "Running the Sample", "image_scaling_tutorial.html#imageScalingRunning", null ],
15 +         [ "More Information", "image_scaling_tutorial.html#imageScalingMoreInformation", null ]
16 +     ] ]
17 + ];
```

◀ BIN docs/html/image scaling bilinear filtering.png ⌂

Unable to render code block

311 docs/html/image scaling tutorial.html

```
... @@ -0,0 +1,311 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Image Scaling</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
```

```
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('image_scaling_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +       onmouseover="return searchBox.OnSearchSelectShow()"
84 +       onmouseout="return searchBox.OnSearchSelectHide()"
85 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +           name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Image Scaling </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>How to resize an image using OpenCL image objects.</p>
101 + <h1><a class="anchor" id="imageScalingIntroduction"></a>
102 + Bilinear Filtering</h1>
```

```

103 + <p>One of the particular benefits of OpenCL image objects is the built-in bilinear filtering.</p>
104 + <p>When you read from an OpenCL image object, instead of picking the nearest pixel to the coordinates given, it can take an average
105 + <p>What this means is that the quality of scaled images can be much higher for minimal performance cost.</p>
106 + <p>We will use this example to provide a walkthrough of how to use OpenCL image objects.</p>
107 + <p>Example:</p>
108 + <div class="image">
109 + 
110 + <div class="caption">
111 + An example of nearest pixel (left) and bilinear filtering (right).</div></div>
112 + <h1><a class="anchor" id="imageScalingDifferences"></a>
113 + Image Object and Memory Buffer Differences</h1>
114 + <p>The tutorial assumes knowledge of OpenCL memory buffers. See <a class="el" href="memory_buffers_tutorial.html">Memory Buffers</a>
115 + <p>OpenCL image objects are used almost identically to OpenCL buffers:</p>
116 + <ul>
117 + <li>They both have the type cl_mem.</li>
118 + <li>For allocation, clCreateBuffer becomes clCreateImage2D (or clCreateImage3D).</li>
119 + <li>For mapping, clEnqueueMapBuffer becomes clEnqueueMapImage.</li>
120 + <li>For unmapping, clEnqueueUnmapBuffer works for both memory types.</li>
121 + </ul>
122 + <p>The biggest differences when using image objects are:</p>
123 + <ul>
124 + <li>Image objects require a 'sampler' in order to read from them (see <a class="el" href="image_scaling_tutorial.html#imageScalingSamplers">Image Scaling Samplers</a>)
125 + <li>A kernel cannot read and write to the same image (image parameters must be marked in the kernel definition with <em>__read_only</em>)
126 + <li>Images have a defined data format.</li>
127 + </ul>
128 + <h1><a class="anchor" id="imageScalingSamplers"></a>
129 + Samplers</h1>
130 + <p>As mentioned, in order to be able to read from an image object you require a sampler.</p>
131 + <p>A sampler defines:</p>
132 + <ul>
133 + <li>whether the coordinates you are using are normalized<ul>
134 + <li>normalized (in the range [0,1])</li>
135 + <li>non-normalized</li>
136 + </ul>
137 + </li>
138 + <li>what strategy to use when the coordinates are outside the bounds of the image<ul>
139 + <li>none (you guarantee that the coordinates are inside the bounds)</li>
140 + <li>clamp to edge (returns the color of the closest valid pixel)</li>
141 + <li>clamp (returns a border color defined by the image format)</li>
142 + <li>repeat (acts as if there are infinite copies of the image tiled next to each other)</li>
143 + <li>mirrored repeat (the same as repeat except coordinates are flipped at every edge)</li>
144 + </ul>
145 + </li>
146 + <li>which filtering strategy to use<ul>
147 + <li>nearest</li>
148 + <li>bilinear</li>
149 + </ul>
150 + </li>
151 + </ul>
152 + <p>Certain combinations of these options are restricted.</p>
153 + <p>Samplers can be defined on the host side using clCreateSampler() and passed in the kernel as an argument or directly inside the
154 + <h1><a class="anchor" id="imageScalingCode"></a>
155 + Resizing images with bilinear filtering</h1>
156 + <p>Unless otherwise noted, all code snippets come from <a class="el" href="image_scaling_8cpp.html">image_scaling.cpp</a>.</p>
157 + <p>In the sample code we will resize an input image using OpenCL. The image is scaled up by a factor of 8 (adjustable in the code)
158 + <ol type="1">
159 + <li><p class="startli"><b>Allocate memory for your images</b></p>
160 + <p class="startli">Image objects are allocated in almost the same way as buffers. The main difference is having to specify the data
161 + <p class="startli">You can list the available image formats on your platform using the <a class="el" href="common_8h.html#a736045ae">
162 + <div class="fragment"><div class="line">    <span class="comment"> /*</span></div>
163 + <div class="line">    <span class="comment"> * Specify the format of the image.</span></div>
164 + <div class="line">    <span class="comment"> * The bitmap image we are using is RGB888, which is not a supported OpenCL image format.</span></div>
165 + <div class="line">    <span class="comment"> * We will use RGBA8888 and add an empty alpha channel.</span></div>
166 + <div class="line">    <span class="comment"> */</span></div>
167 + <div class="line">    cl_image_format format;</div>
168 + <div class="line">    format.image_channel_data_type = CL_UNORM_INT8;</div>
169 + <div class="line">    format.image_channel_order = CL_RGBA;</div>
170 + <div class="line"></div>
171 + <div class="line">    <span class="comment"> /* Allocate memory for the input image that can be accessed by the CPU and GPU. */</span>

```

```

172 + <div class="line">    <span class="keywordtype">bool</span> createMemoryObjectsSuccess = <span class="keyword">true</span>;</div>
173 + <div class="line"></div>
174 + <div class="line">    memoryObjects[0] = clCreateImage2D(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, &format, width, hei
175 + <div class="line">    createMemoryObjectsSuccess &amp;= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" 1
176 + <div class="line"></div>
177 + <div class="line">    memoryObjects[1] = clCreateImage2D(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, &format, newWidth,
178 + <div class="line">    createMemoryObjectsSuccess &amp;= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" 1
179 + <div class="line"></div>
180 + <div class="line">    <span class="keywordflow">if</span> (!createMemoryObjectsSuccess)</div>
181 + <div class="line">    {</div>
182 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objec
183 + <div class="line">            cerr &lt;&lt; <span class="stringliteral">"Failed creating the image. "</span> &lt;&lt; __FILE_
184 + <div class="line">            <span class="keywordflow">return</span> 1;</div>
185 + <div class="line">        }</div>
186 + </div><!-- fragment --></li>
187 + <li><p class="startli"><b>Map the memory to a host pointer</b></p>
188 + <p class="startli">Again, this step is very similar to mapping a buffer:</p>
189 + <div class="fragment"><div class="line">    <span class="comment">/*
190 + <div class="line">    <span class="comment"> * Like with memory buffers, we now map the allocated memory to a host side pointer.</span>
191 + <div class="line">    <span class="comment"> * Unlike buffers, we must specify origin coordinates, width and height for the region
192 + <div class="line">    <span class="comment"> */</span></div>
193 + <div class="line">    <span class="keywordtype">size_t</span> origin[3] = {0, 0, 0};</div>
194 + <div class="line">    <span class="keywordtype">size_t</span> region[3] = {width, height, 1};</div>
195 + <div class="line"></div>
196 + <div class="line">    <span class="comment">/*
197 + <div class="line">    <span class="comment"> * clEnqueueMapImage also returns the rowPitch; the width of the mapped region in bytes
198 + <div class="line">    <span class="comment"> * If the image format is not known, this is required information when accessing the im
199 + <div class="line">    <span class="comment"> * The number of bytes per pixel can vary with the image format being used,</span></div>
200 + <div class="line">    <span class="comment"> * this affects the offset into the array for a given coordinate.</span></div>
201 + <div class="line">    <span class="comment"> * In our case the image format is fixed as RGBA8888 so we don't need to worry abou
202 + <div class="line">    <span class="comment"> */
203 + <div class="line">    <span class="keywordtype">size_t</span> rowPitch;</div>
204 + <div class="line"></div>
205 + <div class="line">    <span class="keywordtype">unsigned</span> <span class="keywordtype">char</span>* inputImageRGBA = (<span clas
206 + <div class="line">    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644" 1
207 + <div class="line">    {</div>
208 + <div class="line">        <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objec
209 + <div class="line">            cerr &lt;&lt; <span class="stringliteral">"Failed mapping the input image. "</span> &lt;&lt; __FILE_
210 + <div class="line">            <span class="keywordflow">return</span> 1;</div>
211 + <div class="line">        }</div>
212 + </div><!-- fragment --></li>
213 + <li><p class="startli"><b>Initialize the memory</b></p>
214 + <p class="startli">Use the pointer on the host side to fill the image with data.</p>
215 + </li>
216 + <li><p class="startli"><b>Unmap the memory</b></p>
217 + <p class="startli">Unmap the pointer on the host side (using clEnqueueUnmapBuffer just like with buffers) so that the data can be u
218 + </li>
219 + <li><p class="startli"><b>Pass the image to the kernel</b></p>
220 + <p class="startli">Pass the images to the kernel as arguments in the same way as buffers.</p>
221 + </li>
222 + <li><p class="startli"><b>Use the image inside the kernel</b></p>
223 + <p class="startli">Code snippets in this section are from <a class="el" href="image_scaling_8cl.html">image_scaling.cl</a>.</p>
224 + <ol type="a">
225 + <li><p class="startli"><b>Define a sampler</b></p>
226 + <p class="startli">See <a class="el" href="image_scaling_tutorial.html#imageScalingSamplers">Samplers</a> for more information.</p>
227 + <p class="startli">In this walkthrough we define the sample in the kernel source:</p>
228 + <div class="fragment"><div class="line"><span class="keyword">const</span> sampler_t <a class="code" href="image_scaling_8cl.html#imageScalingSamplers">imageScalingSamplers</a>;
229 + </div><!-- fragment --></li>
230 + <li><b>Calculate the coordinates</b> <div class="fragment"><div class="line">    <span class="comment">/*
231 + <div class="line">    <span class="comment"> * There is one kernel instance per pixel in the destination image.</span></div>
232 + <div class="line">    <span class="comment"> * The global id of this kernel instance is therefore a coordinate in the destination i
233 + <div class="line">    <span class="comment"> */</span></div>
234 + <div class="line">    int2 coordinate = (int2)(get_global_id(0), get_global_id(1));</div>
235 + <div class="line"></div>
236 + <div class="line">    <span class="comment">/*
237 + <div class="line">    <span class="comment"> * That coordinate is only valid for the destination image.</span></div>
238 + <div class="line">    <span class="comment"> * If we normalize the coordinates to the range [0.0, 1.0] (using the height and width
239 + <div class="line">    <span class="comment"> * we can use them as coordinates in the sourceImage.</span></div>
240 + <div class="line">    <span class="comment"> */

```

```

241 + <div class="line">    float2 normalizedCoordinate = convert_float2(coordinate) * (float2)(widthNormalizationFactor, heightNormaliza
242 + </div><!-- fragment --></li>
243 + <li><b>Read the source image</b> <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
244 + <div class="line"><span class="comment">      * Read colours from the source image.</span></div>
245 + <div class="line"><span class="comment">      * The sampler determines how the coordinates are interpreted.</span></div>
246 + <div class="line"><span class="comment">      * Because bilinear filtering is enabled, the value of colour will be the average of th
247 + <div class="line"><span class="comment">      */</span></div>
248 + <div class="line">    float4 colour = read_imagef(sourceImage, sampler, normalizedCoordinate);</div>
249 + </div><!-- fragment --></li>
250 + <li><b>Write the destination image</b> <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
251 + <div class="line"><span class="comment">      * Write the colour to the destination image.</span></div>
252 + <div class="line"><span class="comment">      * No sampler is used here as all writes must specify an exact valid pixel coordinate.</span>
253 + <div class="line"><span class="comment">      */</span></div>
254 + <div class="line">    write_imagef(destinationImage, coordinate, colour);</div>
255 + </div><!-- fragment --></li>
256 + </ol>
257 + </li>
258 + <li><p class="startli"><b>Retrieve the results</b></p>
259 + <p class="startli">Map the image object to a host pointer and read the results.</p>
260 + </li>
261 + </ol>
262 + <h1><a class="anchor" id="imageScalingRunning"></a>
263 + Running the Sample</h1>
264 + <ol type="1">
265 + <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
266 + <div class="fragment"><div class="line">cd samples/<a class="code" href="image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26">
267 + </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
268 + </div><!-- fragment --><p class="startli">This compiles the image scaling sample code and copies all the files it needs to run to t
269 + </li>
270 + <li>Copy this folder to the board.</li>
271 + <li><p class="startli">Navigate to the folder on the board and run the image scaling binary:</p>
272 + <div class="fragment"><div class="line">./<a class="code" href="image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26" title="]>
273 + </div><!-- fragment --></li>
274 + <li><p class="startli">You should see output similar to:</p>
275 + <div class="fragment"><div class="line">11 Image formats supported (channel order, channel data type):</div>
276 + <div class="line">CL_RGBA, CL_UNORM_INT8</div>
277 + <div class="line">CL_RGBA, CL_UNORM_INT16</div>
278 + <div class="line">CL_RGBA, CL_SIGNED_INT8</div>
279 + <div class="line">CL_RGBA, CL_SIGNED_INT16</div>
280 + <div class="line">CL_RGBA, CL_SIGNED_INT32</div>
281 + <div class="line">CL_RGBA, CL_UNSIGNED_INT8</div>
282 + <div class="line">CL_RGBA, CL_UNSIGNED_INT16</div>
283 + <div class="line">CL_RGBA, CL_UNSIGNED_INT32</div>
284 + <div class="line">CL_RGBA, CL_HALF_FLOAT</div>
285 + <div class="line">CL_RGBA, CL_FLOAT</div>
286 + <div class="line">CL_BGRA, CL_UNORM_INT8</div>
287 + <div class="line"></div>
288 + <div class="line">Profiling information:</div>
289 + <div class="line">Queued time:    0.092ms</div>
290 + <div class="line">Wait time:     0.135206ms</div>
291 + <div class="line">Run time:      31.5405ms</div>
292 + </div><!-- fragment --><p class="startli">An output image should be created on the board called output.bmp.</p>
293 + </li>
294 + </ol>
295 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</p>
296 + <h1><a class="anchor" id="imageScalingMoreInformation"></a>
297 + More Information</h1>
298 + <p>For more information have a look at the code in <a class="el" href="image_scaling_8cpp.html">image_scaling.cpp</a> and <a class
299 + </div></div><!-- contents -->
300 + </div><!-- doc-content -->
301 + <!-- start footer part -->
302 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
303 +   <ul>
304 +     <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li><li class="navelem"><a class="el" href="image_objects
305 +     <li class="footer">
306 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
307 +     </li>
308 +   </ul>
309 + </div>

```

```
310 + </body>
311 + </html>
```

```
... ... @@ -0,0 +1,167 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Main Page</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li class="current"><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('index.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +         name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Mali OpenCL SDK v1.1.0 Documentation</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>Welcome to Mali OpenCL SDK v1.1.0.</p>
101 + <p>The Mali OpenCL SDK v1.1.0 provides developers a framework and series of samples for developing OpenCL 1.1 application on ARM Mali GPUs. It includes a set of developer tools and libraries to facilitate the development of parallel applications on Mali GPUs. The SDK is designed to be easy to use and provides a comprehensive set of features for building high-performance parallel applications.
102 + <p>OpenCL is an open standard defined by Khronos that expose the vast parallel processing capabilities of the GPU to the developer, allowing them to write efficient parallel code that can be run on various GPU architectures.
103 + <h1><a class="anchor" id="requirements"></a>
104 + Requirements</h1>
105 + <p>To build and run the OpenCL sample applications you will need:</p>
106 + <ul>
107 + <li>Sourcery CodeBench Lite Edition for ARM GNU/Linux. Available for free <a href="http://www.mentor.com/embedded-software/sourcery">here</a>.
108 + <li>An ARM based development board with a Mali-T600 series GPU running Linux.</li>
109 + </ul>
110 + <h1><a class="anchor" id="gettingStarted"></a>
111 + Getting Started</h1>
112 + <ul>
113 + <li>See the <a class="el" href="quick_start.html">Quick Start Guide</a> for information on how to get started.</li>
114 + <li>Have a look at some specific <a class="el" href="tutorials.html">Tutorials</a>.</li>
115 + <li>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</li>
116 + <li>Get <a class="el" href="support.html">Support</a> from ARM.</li>
117 + </ul>
118 + <h1><a class="anchor" id="changeLog"></a>
119 + Change Log</h1>
120 + <p>Summary of changes between versions of the Mali OpenCL SDK.</p>
121 + <h2><a class="anchor" id="v110"></a>
122 + Changes in version 1.1.0</h2>
123 + <ul>
124 + <li>Added <a class="el" href="hello_world_tutorial.html">Hello World</a> tutorial.</li>
125 + <li>Added version of the <a class="el" href="sobel_tutorial.html">Sobel Filter</a> sample which doesn't use vectors.</li>
126 + <li>Added OpenCL <a class="el" href="template_tutorial.html">Template</a> tutorial.</li>
127 + <li>Added data sharing (between CPU and GPU) tutorial (using <a class="el" href="memory_buffers_tutorial.html">Memory Buffers</a>).
128 + <li>Added <a class="el" href="image_objects_tutorial.html">Image Objects</a> tutorial.</li>
129 + <li>Added <a class="el" href="long64_bit_integer_tutorial.html">64-bit Integers and Atomics</a> tutorial.</li>
130 + <li>Fixed bug 116: <a class="el" href="image_8cpp.html">image.cpp</a> in the common library does not load BMP images correctly if the file is not in the current directory.</li>
131 + </ul>
```

```

132 + <h2><a class="anchor" id="v100"></a>
133 + Changes in version 1.0.0</h2>
134 + <ul>
135 + <li>First release of the Mali OpenCL SDK.</li>
136 + <li>Four tutorials included: <a class="el" href="sobel_tutorial.html">Sobel Filter</a>, <a class="el" href="firTutorial.html">FIR
137 + </ul>
138 + <h1><a class="anchor" id="contents"></a>
139 + Contents</h1>
140 + <table class="doxtable">
141 + <tr>
142 + <th>Directory </th><th>Contents</th></tr>
143 + <tr>
144 + <td>bin </td><td>Built sample binaries and assets, created when <code>make install</code> is run on the samples. </td></tr>
145 + <tr>
146 + <td>common </td><td>A library of commonly used functions. </td></tr>
147 + <tr>
148 + <td>docs </td><td>Documentation for the SDK, including tutorials and API references. </td></tr>
149 + <tr>
150 + <td>include </td><td>OpenCL header files. </td></tr>
151 + <tr>
152 + <td>lib </td><td>An OpenCL dummy library (allows linking of OpenCL applications on the host). </td></tr>
153 + <tr>
154 + <td>samples </td><td>Sample OpenCL applications. </td></tr>
155 + </table>
156 + </div></div><!-- contents -->
157 + </div><!-- doc-content -->
158 + <!-- start footer part -->
159 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
160 + <ul>
161 +   <li class="footer">
162 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
163 +   </li>
164 + </ul>
165 + </div>
166 + </body>
167 + </html>

```

```

    ▾ 77 ██████████ docs/html/jquery.js ┌
... ... @@ -0,0 +1,77 @@
1 + /*! jQuery v1.7.1 jquery.com | jquery.org/license */
2 + (function(a,b){function cy(a){return f.isWindow(a)?a:a.nodeType==9?a.defaultView||a.parentWindow:!1}function cv(a){if(!ck[a]){var
3 + {g=c.apply(this,arguments),g&&fisFunction(g.promise)?g.promise().then(d.resolve,d.reject,d.notify):d[e+"With"]((this==i?d:this,[g
4 + f.event={add:function(a,c,d,e,g){var h,i,j,k,l,m,n,o,p,q,r,s;if(!(a.nodeType==3||a.nodeType==8||!c||!d||(h=f._data(a)))){d.handl
5 + &&m.filter(b,a,!0)}},":function(a,b,c){var d,f=e++,g=x;typeof b=="string"&&!l.test(b)&&(b=b.toLowerCase(),d=b,g=w),g("parentNode"
6 + f.cleanData([d])),d.parentNode&&d.parentNode.removeChild(d);return this},empty:function()
7 + {for(var a=0,b;(b=this[a])!=null;a++){b.nodeType==1&&f.cleanData(b.getElementsByTagName("*"));while(b.firstChild)b.removeChild(b.
8 + {if(!c.crossDomain||f.support.cors){var d;return{send:function(e,g){var h=c.xhr(),i,j;c.username?h.open(c.type,c.url,c.async,c.user
9 + /*!
10 + * jQuery UI 1.8.18
11 + *
12 + * Copyright 2011, AUTHORS.txt (http://jqueryui.com/about)
13 + * Dual licensed under the MIT or GPL Version 2 licenses.
14 + * http://jquery.org/license
15 + *
16 + * http://docs.jquery.com/UI
17 + */
18 + (function(a,b){function d(b){return!a(b).parents().andSelf().filter(function(){return a.curCSS(this,"visibility")=="hidden"||a.ex
19 + /*!
20 + * jQuery UI Widget 1.8.18
21 + *
22 + * Copyright 2011, AUTHORS.txt (http://jqueryui.com/about)
23 + * Dual licensed under the MIT or GPL Version 2 licenses.
24 + * http://jquery.org/license
25 + *
26 + * http://docs.jquery.com/UI/Widget
27 + */
28 + (function(a,b){if(a.cleanData){var c=a.cleanData;a.cleanData=function(b){for(var d=0,e;(e=b[d])!=null;d++)try{a(e).triggerHandler('

```

< BIN docs/html/logo.png

Unable to render code block

202 docs/html/long64_bit_integer_tutorial.html

... ... @@ -0,0 +1,202 @@

```
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: 64-bit Integers and Atomics</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
```

```

10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 +   <script type="text/javascript">
78 +     $(document).ready(function(){initNavTree('long64_bit_integer_tutorial.html','');});

```

```

79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +         name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">64-bit Integers and Atomics </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>A tutorial to demonstrate the use of the <em>long</em> data type (64-bit integer) including atomics.</p>
101 + <h1><a class="anchor" id="long64BitIntegerIntroduction"></a>
102 + Introduction</h1>
103 + <p>In this tutorial we will look at using the <em>long</em> data types in OpenCL. We will also touch on how and why to use atomics
104 + <h2><a class="anchor" id="long64BitIntegerType"></a>
105 + Long Data Type</h2>
106 + <p>In the OpenCL Embedded Profile, 64-bit integer (i.e. long, ulong) types are optional (including the corresponding vector data ty
107 + <p>The <em>long</em> data types are used for calculations that require very large integers. Example use cases include:</p>
108 + <ul>
109 + <li>Fixed point arithmetic.</li>
110 + <li>Encryption/decryption.</li>
111 + <li>Hashing.</li>
112 + <li>64-bit arithmetic.</li>
113 + </ul>
114 + <h2><a class="anchor" id="long64BitIntegerAtomics"></a>
115 + 64-bit Atomics</h2>
116 + <p>This tutorial requires atomic operations for accumulating values across kernels. Atomic operations for 32-bit integers are a par
117 + <dl class="section note"><dt>Note</dt><dd>Both 32-bit and 64-bit atomics are optional extensions in the OpenCL Embedded Profile.</dd>
118 + <h1><a class="anchor" id="long64BitIntegerImplementation"></a>
119 + Implementation</h1>
120 + <p>Unless otherwise noted, all code snippets come from <a class="el" href="64_bit_integer_8cl.html">64_bit_integer.cl</a>.</p>
121 + <h2><a class="anchor" id="long64BitIntegerSize"></a>
122 + Image Size</h2>
123 + <p>We have included a 512x512 input bitmap for use with this sample (to keep the size of the installer small). However, you are mor
124 + <p>This sample has been coded to allow any input bitmap to be used. Simply change <em>input.bmp</em> in the assets directory of the
125 + <h2><a class="anchor" id="long64BitInteger"></a>
126 + 64-bit Arithmetic</h2>
127 + <p>Some face detection techniques, such as the Robust Real-time Object Detection (Viola and Jones, 2001) framework need to calculate
128 + <p><code>Variance = ((&Sigma; p) / N)<sup>2</sup> - 1/N * &Sigma;(p<sup>2</sup>)</code></p>
129 + <p>Where <em>p</em> is the pixels values and <em>N</em> is the total number of pixels.</p>
130 + <p>For this example, we are only calculating the sum of pixel values and the sum of the pixel values squared. We calculate these va
131 + <p>On Mali-T600 series GPUs, we recommend the use of vectors 128-bit wide. For more information about vectorization, see <a class='
132 + <p>If we consider that the maximum pixel value at 8-bits per pixel is 255. Squaring this value (255 * 255 = 65025) fits inside a <e
133 + <p>However, the sum of the squares and the sum of pixels can overflow a <em>short</em> and an <em>int</em>. Therefore, we convert i
134 + <div class="fragment"><div class="line">    <span class="comment">/* Load 8 pixels (char) and convert them to shorts to calculate t
135 + <div class="line">    ushort8 pixelShort = convert_ushort8(vload8(i, imagePixels));</div>
136 + <div class="line">    <span class="comment">/* Square of 255 < 2 ^ 16. */</span></div>
137 + <div class="line">    ushort8 newSquareShort = pixelShort * pixelShort;</div>
138 + <div class="line"></div>
139 + <div class="line">    <span class="comment">/*</span></div>
140 + <div class="line"><span class="comment">    * Convert original pixel value and the square to longs to sum</span></div>
141 + <div class="line"><span class="comment">    * all the vectors together and add the final values to the</span></div>
142 + <div class="line"><span class="comment">    * respective accumulators.</span></div>
143 + <div class="line"><span class="comment">    */</span></div>
144 + <div class="line">    ulong8 pixelLong = convert_ulong8(pixelShort);</div>
145 + <div class="line">    ulong8 newSquareLong = convert_ulong8(newSquareShort);</div>
146 + <div class="line"></div>
147 + <div class="line">    <span class="comment">/*</span></div>

```

```

148 + <div class="line"><span class="comment"> * Use vector data type suffixes (.lo and .hi) to get smaller vector types,</span></div>
149 + <div class="line"><span class="comment"> * until we obtain one single value.</span></div>
150 + <div class="line"><span class="comment">*>/</span></div>
151 + <div class="line"> ulong4 sumLongPixels1 = pixelLong.hi + pixelLong.lo;</div>
152 + <div class="line"> ulong2 sumLongPixels2 = sumLongPixels1.hi + sumLongPixels1.lo;</div>
153 + <div class="line"> ulong sumLongPixels3 = sumLongPixels2.hi + sumLongPixels2.lo;</div>
154 + <div class="line"></div>
155 + <div class="line"> ulong4 sumLongSquares1 = newSquareLong.hi + newSquareLong.lo;</div>
156 + <div class="line"> ulong2 sumLongSquares2 = sumLongSquares1.hi + sumLongSquares1.lo;</div>
157 + <div class="line"> ulong sumLongSquares3 = sumLongSquares2.hi + sumLongSquares2.lo;</div>
158 + </div><!-- fragment --><p> As all the kernels are accessing the accumulators at the same time, memory accessing conflicts can happen
159 + <p>To avoid this, we use <em>atom_add</em> to add an integer value to a value referenced by a pointer. This guarantees that no other
160 + <div class="fragment"><div class="line"> atom_add(sumOfPixels, sumLongPixels3);</div>
161 + <div class="line"> atom_add(squareOfPixels, sumLongSquares3);</div>
162 + </div><!-- fragment --><p> To enable <em>atom_add</em> for 64-bit integers, we add this <em>pragma</em> to the kernel code: </p>
163 + <div class="fragment"><div class="line"><span class="preprocessor">#pragma OPENCL EXTENSION cl_khr_int64_base_atomics : enable</span>
164 + </div><!-- fragment --> <h1><a class="anchor" id="long64BitIntegerRunning"></a>
165 + Running the Sample</h1>
166 + <p>From a command prompt in the root of the SDK, run:</p>
167 + <ol type="1">
168 + <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
169 + <div class="fragment"><div class="line">cd samples/64_bit_integer</div>
170 + </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
171 + </div><!-- fragment --><p class="startli">This compiles the 64-bit integer sample code and copies all the files it needs to run to
172 + </li>
173 + <li>Copy this folder to the board.</li>
174 + <li><p class="startli">Navigate to the folder on the board and run the 64-bit integer binary:</p>
175 + <div class="fragment"><div class="line">./64_bit_integer</div>
176 + </div><!-- fragment --></li>
177 + <li><p class="startli">You should see output similar to:</p>
178 + <div class="fragment"><div class="line">Profiling information:</div>
179 + <div class="line">Queued time: 0.079ms</div>
180 + <div class="line">Wait time: 0.263749ms</div>
181 + <div class="line">Run time: 0.228437ms</div>
182 + <div class="line">Square of the pixel values = 914239116</div>
183 + <div class="line">Sum of the pixel values = 9365464</div>
184 + </div><!-- fragment --></li>
185 + </ol>
186 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</p>
187 + <h1><a class="anchor" id="long64BitIntegerMoreInformation"></a>
188 + More Information</h1>
189 + <p>For more information have a look at the code in <a class="el" href="64_bit_integer_8cpp.html">64_bit_integer.cpp</a> and <a class="el" href="64_bit_integer_8h.html">64_bit_integer.h</a>.
190 + </div></div><!-- contents -->
191 + </div><!-- doc-content -->
192 + <!-- start footer part -->
193 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
194 + <ul>
195 +   <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
196 +   <li class="footer">
197 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
198 +   </li>
199 + </ul>
200 + </div>
201 + </body>
202 + </html>

```

118 docs/html/main_page_8dox.html

...	...	@@ -0,0 +1,118 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: main_page.dox File Reference</title>	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	

```

10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>

```

```
79 +   <div id="splitbar" style="-moz-user-select:none;"  
80 +     class="ui-resizable-handle">  
81 +   </div>  
82 + </div>  
83 + <script type="text/javascript">  
84 + $(document).ready(function(){initNavTree('main__page_8dox.html','');});  
85 + </script>  
86 + <div id="doc-content">  
87 + <!-- window showing the filter options -->  
88 + <div id="MSearchSelectWindow"  
89 +   onmouseover="return searchBox.OnSearchSelectShow()"  
90 +   onmouseout="return searchBox.OnSearchSelectHide()"  
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">  
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>  
93 +  
94 + <!-- iframe showing the search results (closed by default) -->  
95 + <div id="MSearchResultsWindow">  
96 + <iframe src="javascript:void(0)" frameborder="0"  
97 +   name="MSearchResults" id="MSearchResults">  
98 + </iframe>  
99 + </div>  
100 +  
101 + <div class="header">  
102 +   <div class="headertitle">  
103 +     <div class="title">main_page.dox File Reference</div>  </div>  
104 +   </div><!--header-->  
105 + <div class="contents">  
106 + </div><!-- contents -->  
107 + </div><!-- doc-content -->  
108 + <!-- start footer part -->  
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->  
110 +   <ul>  
111 +     <li class="navelem"><a class="el" href="main__page_8dox.html">main_page.dox</a></li>  
112 +     <li class="footer">  
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>  
114 +     </li>  
115 +   </ul>  
116 + </div>  
117 + </body>  
118 + </html>
```

226 ██████████ docs/html/mandelbrot_8c1.html

Oops, something went wrong. [Retry](#)

6 ██████████ docs/html/mandelbrot_8c1.js

Oops, something went wrong. [Retry](#)

220 ██████████ docs/html/mandelbrot_8c1_source.html

Oops, something went wrong. [Retry](#)

161 ██████████ docs/html/mandelbrot_8cpp.html

Oops, something went wrong. [Retry](#)

▽ 4 ━━━━ docs/html/mandelbrot_8cpp.js □

⚠ Oops, something went wrong. [Retry](#)

▽ 276 ━━━━ docs/html/mandelbrot_8cpp_source.html □

⚠ Oops, something went wrong. [Retry](#)

▽ 118 ━━━━ docs/html/mandelbrot_8dox.html □

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/mandelbrot.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
```

```
53 +         onmouseout="return searchBox.OnSearchSelectHide()"
54 +         alt=""/>
55 +         <input type="text" id="MSearchField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +             <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;" 
80 +       class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('mandelbrot_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 +   <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/mandelbrot.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 +   <div class="contents">
106 +     </div><!-- contents -->
107 +   </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="mandelbrot_8dox.html">mandelbrot.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

✓ BIN docs/html/mandelbrot_output.bmp

Binary file not shown.

265 docs/html/mandelbrot_tutorial.html

```
... @@ -0,0 +1,265 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Mandelbrot</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('mandelbrot_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 +   <iframe src="javascript:void(0)" frameborder="0"
91 +     name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Mandelbrot </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock"><p>The results of calculating the Mandelbrot set produces fractal patterns.</p>
101 +   <h1><a class="anchor" id="mandelbrotExampleResult"></a>
102 +   Example Result</h1>
103 +   <div class="image">
104 +     
105 +   <div class="caption">
106 +     Output image</div></div>
107 +   <h1><a class="anchor" id="mandelbrotAlgorithm"></a>
108 +   The Algorithm</h1>
109 +   <p>A complex number is in the Mandelbrot set if the it doesn't tend to infinity when a given equation is iterated on the number.</p>
110 +   <p>The equation used is:</p>
111 +   <p> $z^{n+1} = z^n \cdot c$ </p>
112 +   where  $c$  is the complex number and  $n$  is the iteration.  $z^0$  is set as 0.</p>
113 +   To produce a visualization of the set, like the one shown above, you can treat the x and y pixel coordinates of an image as the
114 +   It can be shown that if the distance from  $z^n$  to the origin is greater than 2 for any value of  $n$ , it is unbounded.
115 +   Examples:</p>
116 +   <ul>
117 +     <li><p class="startli">Not in the Mandelbrot set:<br/>
118 +        $c = 2 + 1i$ <br/>
119 +     </p>
120 +     <p class="startli"> $z^0 = 0$ <br/>
121 +        $z^1 = 2 + 1i$ <br/>
122 +     </p>
123 +     <p class="startli">If you use  $2 + 1i$  as coordinates  $(2, 1)$  then the euquidean distance to the origin is  $\sqrt{2^2 + 1^2} = 2.24$  &gt; 2 and therefore for this input the equation is unbounded and the input is not part of the Mandelbrot set.</p>
124 +   </li>
125 +   <li><p class="startli">In the Mandelbrot set:<br/>
126 +        $c = 0 + 1i$ <br/>
127 +     </p>
128 +     <p class="startli"> $z^0 = 0$ <br/>
129 +        $z^1 = 0 + 1i$ <br/>
130 +     </p>

```

```

131 + z<sub>2</sub> = -1 + 1i<br/>
132 + z<sub>3</sub> = 0 - 1i<br/>
133 + z<sub>4</sub> = -1 + 1i<br/>
134 + </p>
135 + <p class="startli">You can see that this is forming a repeating pattern that will never become unbounded.</p>
136 + </li>
137 + </ul>
138 + <p>To create the output image, the number of iterations taken to determine whether the point is or is not part of the Mandelbrot set is determined by the user. For more details see <a href="http://en.wikipedia.org/wiki/Mandelbrot_set">Wikipedia</a>.</p>
140 + <h1><a class="anchor" id="mandelbrotImplementation"></a></h1>
141 + Implementation</h1>
142 + <p>Unless otherwise noted, all code snippets come from the OpenCL kernel found in <a class="el" href="mandelbrot_8cl.html">mandelbrot.cl</a>.
143 + <ol type="1">
144 + <li><p class="startli"><b>Choosing the size of the kernel</b></p>
145 + <p class="startli">We are using vector types in the kernel and so we are actually outputting 4 results per kernel. See below for more information on vectors and floating-point types.</p>
146 + <p class="startli">We adjust the pointers into the data to reflect this: </p>
147 + <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
148 + <div class="line"><span class="comment">        * Each kernel calculates 4 output pixels in the same row (hence the * 4).</span></div>
149 + <div class="line"><span class="comment">        * x is in the range [0, width] in steps of 4.</span></div>
150 + <div class="line"><span class="comment">        * y is in the range [0, height].</span></div>
151 + <div class="line"><span class="comment">        */</span></div>
152 + <div class="line">    <span class="keywordtype">int</span> x = get_global_id(0) * 4;</div>
153 + <div class="line">    <span class="keywordtype">int</span> y = get_global_id(1);</div>
154 + </div><!-- fragment --><p> And when we enqueue the kernel in <a class="el" href="mandelbrot_8cpp.html">mandelbrot.cpp</a>, we reduce the width and height by 4. </p>
155 + <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
156 + <div class="line"><span class="comment">        * The OpenCL kernel calculates four pixels at a time (all in the same row).</span></div>
157 + <div class="line"><span class="comment">        * Therefore, we only need to run the kernel width / 4 times in the x dimension.</span></div>
158 + <div class="line"><span class="comment">        */</span></div>
159 + <div class="line">    <span class="keywordtype">size_t</span> globalWorksize[2] = {width / 4, height};</div>
160 + </div><!-- fragment --></li>
161 + <li><p class="startli"><b>Creating the inputs</b></p>
162 + <p class="startli">Mali-T600 series GPU pipelines provide true IEEE-754 single-precision floating-point math in hardware. Each Mali-T600 series GPU has 16 execution units, each with 4 ALUs. This means that each pixel is processed in parallel by one of the 16 execution units. This allows for fast calculations of multiple pixels at once. In this sample, the calculations use 32-bit floating point numbers. One 128-bit vector can fit four 32-bit floating point numbers. This means that each pixel is represented by a 128-bit vector. We recommend the use of vectors wherever possible when using a Mali-T600 series GPU.</p>
164 + <p class="startli">Here we create the input vectors: </p>
166 + <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
167 + <div class="line"><span class="comment">        * Calculate the coordinates of the four pixels in the real and imaginary space.</span></div>
168 + <div class="line"><span class="comment">        * Scale the coordinates by the height and width such that the same image is produced for all four pixels.</span></div>
169 + <div class="line"><span class="comment">        * The real coordinate is scaled to the range [0, 2.5] (using / width * 2.5f);</span></div>
170 + <div class="line"><span class="comment">        * The imaginary coordinate is scaled to the range [0, 2] (using / ((float) height * 2));</span></div>
171 + <div class="line"><span class="comment">        * The resulting ranges([-2, 0.5], [-1, 1]) are the limits of the interesting parts of the Mandelbrot set.</span></div>
172 + <div class="line"><span class="comment">        * Four pixels (adjacent in x (real) dimension) are calculated per kernel instance. This is because each kernel calculates four pixels in the same row.</span></div>
173 + <div class="line"><span class="comment">        */</span></div>
174 + <div class="line">    float4 initialReal = -2 + (<a class="code" href="mandelbrot_8cl.html#a4dfffa8ed5ea4612c75f705e514351c4a" title="Initial real value">z</a>);</div>
175 + <div class="line">    float4 initialImaginary = -1 + (y / ((float)height * 2));</div>
176 + <div class="line"></div>
177 + <div class="line">    float4 real = initialReal;</div>
178 + <div class="line">    float4 imaginary = initialImaginary;</div>
179 + </div><!-- fragment --></li>
180 + <li><p class="startli"><b>Doing the calculation</b></p>
181 + <p class="startli">All of the main calculations are done on vectors of 4 floating point numbers. Each vector calculation can be done in parallel. This means that each pixel is calculated in parallel by one of the 16 execution units. This allows for fast calculations of multiple pixels at once. In this sample, the calculations use 32-bit floating point numbers. One 128-bit vector can fit four 32-bit floating point numbers. This means that each pixel is represented by a 128-bit vector. We recommend the use of vectors wherever possible when using a Mali-T600 series GPU.</p>
182 + <p class="startli">The main calculation loop: </p>
183 + <div class="fragment"><div class="line">    <span class="comment">/*</span></div>
184 + <div class="line"><span class="comment">        * Loop until we can say that all pixels are not part of the Mandelbrot set or the maximum number of iterations has been reached.</span></div>
185 + <div class="line"><span class="comment">        * iterations has been reached.</span></div>
186 + <div class="line"><span class="comment">        */</span></div>
188 + <div class="line">    <span class="keywordflow">do</span></div>
189 + <div class="line">    {</div>
190 + <div class="line">        iterations++;</div>
191 + <div class="line">        <span class="keywordflow">if</span> (iterations &gt; <a class="code" href="mandelbrot_8cl.html#acd517c6f1" title="Maximum iterations">MAX_ITERS</a>){</div>
192 + <div class="line">            <span class="keywordflow">break</span>;</div>
193 + <div class="line">        }</div>
195 + <div class="line"></div>
196 + <div class="line">    <span class="comment">/* Backup the real value as its used in both calculations but changed by the first iteration.</span></div>
197 + <div class="line">    float4 oldReal = real;</div>
198 + <div class="line"></div>
199 + <div class="line">    <span class="comment">/* Evaluate the equation. */</span></div>

```

```

200 + <div class="line">           real = real * real - imaginary * imaginary + initialReal;</div>
201 + <div class="line">           imaginary = 2 * oldReal * imaginary + initialImaginary;</div>
202 + <div class="line"></div>
203 + <div class="line">           <span class="comment"> /*</span></div>
204 + <div class="line"><span class="comment">           * Calculate which indices to update.</span></div>
205 + <div class="line"><span class="comment">           * Mathematically, if the result of the calculation becomes greater than 2, it will
206 + <div class="line"><span class="comment">           * Therefore, if the result becomes greater than 2 it cannot be part of the Mandelbrot set.
207 + <div class="line"><span class="comment">           * To get the absolute value of the calculation we have squared and added the components
208 + <div class="line"><span class="comment">           * 4 (2 squared).</span></div>
209 + <div class="line"><span class="comment">           */</span></div>
210 + <div class="line">           float4 absoluteValue = real * real + imaginary * imaginary;</div>
211 + <div class="line">           <span class="comment"> /* For vector input isless(x, y) returns -1 per component if x < y. */</span></div>
212 + <div class="line">           mask = isless(absoluteValue, (float4) 4.0f);</div>
213 + <div class="line">           <span class="comment"> /* Increase the iterations per pixel (if they are less than 4). */</span></div>
214 + <div class="line">           iterationsPerPixel -= mask;</div>
215 + <div class="line">       } <span class="keywordflow">while</span>(any(mask));</div>
216 + </div><!-- fragment --></li>
217 + <li><p class="startli"><b>Storing the results</b></p>
218 + <p class="startli">Finally we convert the data to unsigned chars and store the data.</p>
219 + <p class="startli">Pixels in the Mandelbrot set will have the value of MAX_ITER.</p>
220 + <p class="startli">We use a vector store to write out all 4 results at once: </p>
221 + <div class="fragment"><div class="line">           <span class="comment"> /*</span></div>
222 + <div class="line"><span class="comment">           * Write the result to the output buffer.</span></div>
223 + <div class="line"><span class="comment">           * Convert the output to unsigned char to make it easier to write to a bitmap.</span><div class="line"><span class="comment"> /*</span></div>
224 + <div class="line">           vstore4(convert_uchar4(iterationsPerPixel), 0, output + x + y * width);</div>
225 + </div><!-- fragment --></li>
226 + </ol>
227 + <h1><a class="anchor" id="mandelbrotRunning"></a>
228 + Running the Sample</h1>
229 + <p>From a command prompt in the root of the SDK, run:</p>
230 + <ol type="1">
231 + <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
232 + <div class="fragment"><div class="line">cd samples/<a class="code" href="mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a" title="Mandelbrot 8cl sample code">make install</a></div>
233 + </div><!-- fragment --><div class="fragment"><div class="line">make install</div>
234 + </div><!-- fragment --><p class="startli">This compiles the Mandelbrot sample code and copies all the files it needs to run to the board.
235 + </li>
236 + <li>Copy this folder to the board.</li>
237 + <li><p class="startli">Navigate to the folder on the board and run the Mandelbrot binary:</p>
238 + <div class="fragment"><div class="line">./<a class="code" href="mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a" title="Mandelbrot 8cl sample code">make install</a></div>
239 + </div><!-- fragment --></li>
240 + <li><p class="startli">You should see output similar to:</p>
241 + <div class="fragment"><div class="line">Profiling information:</div>
242 + <div class="line">Queued time:    0.087ms</div>
243 + <div class="line">Wait time:      0.059914ms</div>
244 + <div class="line">Run time:        14.3642ms</div>
245 + </div><!-- fragment --><p class="startli">An output image should be created on the board called output.bmp.</p>
246 + </li>
247 + </ol>
248 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</p>
249 + <h1><a class="anchor" id="mandelbrotMoreInformation"></a>
250 + More Information</h1>
251 + <p>For more information have a look at the code in <a class="el" href="mandelbrot_8cpp.html">mandelbrot.cpp</a> and <a class="el" href="mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a" title="Mandelbrot 8cl sample code">make install</a>.</p>
252 + </div></div><!-- contents -->
253 + </div><!-- doc-content -->
254 + <!-- start footer part -->
255 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
256 +   <ul>
257 +     <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
258 +     <li class="footer">
259 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
260 +     </li>
261 +   </ul>
262 + </div>
263 + </body>
264 + </html>

```

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/memory_buffers.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('memory__buffers_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/memory_buffers.dox File Reference</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="memory__buffers_8dox.html">memory_buffers.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```

203 docs/html/memory_buffers_tutorial.html

...	...	@@ -0,0 +1,203 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: Memory Buffers</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script>

```

12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 +   <table cellspacing="0" cellpadding="0">
27 +     <tbody>
28 +       <tr style="height: 56px;">
29 +         <td id="projectlogo"></td>
30 +         <td style="padding-left: 0.5em;">
31 +           <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 +   var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('memory_buffers_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
```

```

81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +     onmouseover="return searchBox.OnSearchSelectShow()"
84 +     onmouseout="return searchBox.OnSearchSelectHide()"
85 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 +     <!-- iframe showing the search results (closed by default) -->
89 +     <div id="MSearchResultsWindow">
90 +         <iframe src="javascript:void(0)" frameborder="0"
91 +                 name="MSearchResults" id="MSearchResults">
92 +             </iframe>
93 +         </div>
94 +
95 +         <div class="header">
96 +             <div class="headertitle">
97 +                 <div class="title">Memory Buffers </div> </div>
98 +             </div><!--header-->
99 +         <div class="contents">
100 +             <div class="textblock"><p>How to share of memory efficiently between a Mali-T600 series GPU and a CPU.</p>
101 +             <h1><a class="anchor" id="memoryBuffersIntroduction"></a>
102 +             Introduction</h1>
103 +             <p>When dealing with large amounts of data (as is typically the case in OpenCL applications) it is important to ensure that transfers are efficient. We have already seen how to use memory buffers in the <a class="el" href="hello_world_tutorial.html">Hello World</a> tutorial. Unless otherwise noted, all code snippets come from <a class="el" href="hello_world_vector_8cpp.html">hello_world_vector.cpp</a>.
104 +             <h1><a class="anchor" id="memoryBuffersSharedMemorySystems"></a>
105 +             Shared Memory Systems</h1>
106 +             <p>OpenCL is typically run on systems where the application processor and the GPU have separate memories. To share data between them, systems with Mali GPUs typically have a shared memory so you are not required to copy data. However, OpenCL assumes the memories are separate by default.
107 +             <h1><a class="anchor" id="memoryBuffersAcrossDevices"></a>
108 +             Sharing Data Across Devices</h1>
109 +             <p>To avoid the copies, use the OpenCL API to allocate memory buffers and use mapping operations. These operations enable both the host and device to access the same memory.
110 +             <dl class="section note"><dt>Note</dt><dd>OpenCL must be initialised before allocating memory buffers.</dd></dl>
111 +             <ol type="1">
112 +                 <li><p class="startli"><b>Allocating memory buffers</b></p>
113 +                     <p class="startli">The application creates buffer objects that can pass data to and from the kernels by calling clCreateBuffer(). A buffer object is a handle to a buffer.
114 +                     <div class="image">
115 +                         
116 +                     <div class="caption">
117 +                         <p>Image 1: Buffers created by user (malloc) are not mapped into the GPU memory space</p>
118 +                     </div>
119 +                     <div class="image">
120 +                         
121 +                     <div class="caption">
122 +                         <p>So calling clCreateBuffer() with <b>CL_MEM_USE_HOST_PTR</b> and passing in a user created buffer requires the driver to create a new buffer and copy the data over.
123 +                         <div class="fragment"><div class="line">    memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &createMemoryObjectsSuccess);</div>
124 +                         <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clCreateBuffer</a>(<div>context</div>, <div>CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR</div>, <div>bufferSize</div>, <div>NULL</div>, &lt;br/><div>createMemoryObjectsSuccess</div>);</div>
125 +                         <div class="line">    memoryObjects[1] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &createMemoryObjectsSuccess);</div>
126 +                         <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clCreateBuffer</a>(<div>context</div>, <div>CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR</div>, <div>bufferSize</div>, <div>NULL</div>, &lt;br/><div>createMemoryObjectsSuccess</div>);</div>
127 +                         <div class="line">    memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &createMemoryObjectsSuccess);</div>
128 +                         <div class="line">    createMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clCreateBuffer</a>(<div>context</div>, <div>CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR</div>, <div>bufferSize</div>, <div>NULL</div>, &lt;br/><div>createMemoryObjectsSuccess</div>);</div>
129 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[0]</div>, CL_TRUE, CL_MAP_READ, 0, bufferSize, &inputA);</div>
130 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[1]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputB);</div>
131 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[2]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputC);</div>
132 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[3]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputD);</div>
133 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[4]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputE);</div>
134 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[5]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputF);</div>
135 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[6]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputG);</div>
136 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[7]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputH);</div>
137 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[8]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputI);</div>
138 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[9]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputJ);</div>
139 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[10]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputK);</div>
140 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[11]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputL);</div>
141 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[12]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputM);</div>
142 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[13]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputN);</div>
143 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[14]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputO);</div>
144 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[15]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputP);</div>
145 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[16]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputQ);</div>
146 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[17]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputR);</div>
147 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[18]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputS);</div>
148 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[19]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputT);</div>
149 +                         <div class="line">    mapMemoryObjectsSuccess &= <a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e145644">clEnqueueMapBuffer</a>(<div>commandQueue</div>, <div>memoryObjects[20]</div>, CL_TRUE, CL_MAP_WRITE, 0, bufferSize, &inputU);</div>

```

```

150 + </div><!-- fragment --></li>
151 + <li><p class="startli"><b>Initialize data using the C pointers</b></p>
152 + <p class="startli">Once the buffers have been mapped to a <em>cl_int</em> pointer, they can be used as a normal C pointer to initialize memory</p>
153 + <div class="fragment"><div class="line">    <span class="keywordflow">for</span> (<span class="keywordtype">int</span> i = 0; i &lt; N; i &lt;= i) {</div>
154 + <div class="line">        inputA[i] = i;</div>
155 + <div class="line">        inputB[i] = i;</div>
156 + <div class="line">    }</div>
157 + </div><!-- fragment --></li>
158 + <li><p class="startli"><b>Unmap memory objects</b></p>
159 + <p class="startli">When we are finished using the memory objects, we unmap them from the CPU side. We unmap the memory because other threads</p>
160 + <ul>
161 + <li>Reads and writes to that memory from inside a kernel on the OpenCL side are undefined,</li>
162 + <li>The OpenCL implementation cannot free the memory when it is finished. <div class="fragment"><div class="line">    <span class='keywordflow'>return</span> 0;</div>
163 + <div class="line">    cerr &lt;&lt; <span class="stringliteral">"Unmapping memory objects failed "</span> &lt;&lt; __FILE__ &lt;&lt; __LINE__ &lt;&lt; endl;</div>
164 + <div class="line">    <span class="keywordflow">return</span> 1;</div>
165 + <div class="line">}</div>
166 + <div class="line">    <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objects">Release any OpenCL objects</a>
167 + <div class="line">    <span class="stringliteral">"Unmapping memory objects failed "</span> &lt;&lt; __FILE__ &lt;&lt; __LINE__ &lt;&lt; endl;</div>
168 + <div class="line">    <span class="keywordflow">return</span> 1;</div>
169 + <div class="line">}</div>
170 + <div class="line">    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14562" title="Release any OpenCL objects">Release any OpenCL objects</a>
171 + <div class="line">        cerr &lt;&lt; <span class="stringliteral">"Unmapping memory objects failed "</span> &lt;&lt; __FILE__ &lt;&lt; __LINE__ &lt;&lt; endl;</div>
172 + <div class="line">        <span class="keywordflow">return</span> 1;</div>
173 + <div class="line">    }</div>
174 + <div class="line">    <span class="keywordflow">return</span> 1;</div>
175 + <div class="line">}</div>
176 + </div><!-- fragment --></li>
177 + </ul>
178 + </li>
179 + </ol>
180 + <h1><a class="anchor" id="memoryBuffersRecommendations"></a>
181 + Additional Recommendations</h1>
182 + <p>In addition to the above tutorial, we recommend the following:</p>
183 + <ul>
184 + <li>Do not use private or local memory. There is no performance gain using these on the Mali-T600 Series GPUs.</li>
185 + <li>In the event that your kernels are memory bandwidth limited, use a formula to compute variables instead of reading from memory.</li>
186 + </ul>
187 + <h1><a class="anchor" id="memoryBuffersMoreInformation"></a>
188 + More Information</h1>
189 + <p>For more information have a look at the <a class="el" href="hello_world_tutorial.html">Hello World</a> tutorial.</p>
190 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>. </p>
191 + </div><!-- contents -->
192 + </div><!-- doc-content -->
193 + <!-- start footer part -->
194 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
195 + <ul>
196 +   <li class="navelem"><a class="el" href="tutorials.html">Tutorials</a></li>
197 +   <li class="footer">
198 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
199 +   </li>
200 + </ul>
201 + </div>
202 + </body>
203 + </html>

```

◀ ▶

▼ BIN  docs/html/memory_malloc.png 

Unable to render code block

▼ BIN  docs/html/nav_f.png 

Unable to render code block

▼ BIN  docs/html/nav_g.png 

Unable to render code block

▽ BIN  docs/html/nav_h.png 

Unable to render code block

▽ 143  docs/html/navtree.css 

```
... ... @@ -0,0 +1,143 @@
1 + #nav-tree .children_ul {
2 +   margin:0;
3 +   padding:4px;
4 + }
5 +
6 + #nav-tree ul {
7 +   list-style:none outside none;
8 +   margin:0px;
9 +   padding:0px;
10 + }
11 +
12 + #nav-tree li {
13 +   white-space:nowrap;
14 +   margin:0px;
15 +   padding:0px;
16 + }
17 +
18 + #nav-tree .plus {
19 +   margin:0px;
20 + }
21 +
22 + #nav-tree .selected {
23 +   background-image: url('tab_a.png');
24 +   background-repeat:repeat-x;
25 +   color: #fff;
26 +   text-shadow: 0px 1px 1px rgba(0, 0, 0, 1.0);
27 + }
28 +
29 + #nav-tree img {
30 +   margin:0px;
31 +   padding:0px;
32 +   border:0px;
33 +   vertical-align: middle;
34 + }
35 +
36 + #nav-tree a {
37 +   text-decoration:none;
38 +   padding:0px;
39 +   margin:0px;
40 +   outline:none;
41 + }
42 +
43 + #nav-tree .label {
44 +   margin:0px;
45 +   padding:0px;
46 +   font: 12px 'Lucida Grande', Geneva, Helvetica, Arial, sans-serif;
47 + }
48 +
49 + #nav-tree .label a {
50 +   padding:2px;
51 + }
52 +
53 + #nav-tree .selected a {
54 +   text-decoration:none;
55 +   color:#fff;
56 + }
```

```
57 +
58 + #nav-tree .children_ul {
59 +   margin:0px;
60 +   padding:0px;
61 + }
62 +
63 + #nav-tree .item {
64 +   margin:0px;
65 +   padding:0px;
66 + }
67 +
68 + #nav-tree {
69 +   padding: 0px 0px;
70 +   background-color: #FAFAFF;
71 +   font-size:14px;
72 +   overflow:auto;
73 + }
74 +
75 + #doc-content {
76 +   overflow:auto;
77 +   display:block;
78 +   padding:0px;
79 +   margin:0px;
80 +   -webkit-overflow-scrolling : touch; /* iOS 5+ */
81 + }
82 +
83 + #side-nav {
84 +   padding:0 6px 0 0;
85 +   margin: 0px;
86 +   display:block;
87 +   position: absolute;
88 +   left: 0px;
89 +   width: 300px;
90 + }
91 +
92 + .ui-resizable .ui-resizable-handle {
93 +   display:block;
94 + }
95 +
96 + .ui-resizable-e {
97 +   background:url("ftv2splitbar.png") repeat scroll right center transparent;
98 +   cursor:e-resize;
99 +   height:100%;
100 +   right:0;
101 +   top:0;
102 +   width:6px;
103 + }
104 +
105 + .ui-resizable-handle {
106 +   display:none;
107 +   font-size:0.1px;
108 +   position:absolute;
109 +   z-index:1;
110 + }
111 +
112 + #nav-tree-contents {
113 +   margin: 6px 0px 0px 0px;
114 + }
115 +
116 + #nav-tree {
117 +   background-image:url('nav_h.png');
118 +   background-repeat:repeat-x;
119 +   background-color: #F9FAFC;
120 +   -webkit-overflow-scrolling : touch; /* iOS 5+ */
121 + }
122 +
123 + #nav-sync {
124 +   position:absolute;
125 +   top:5px;
```

```

126 +   right:24px;
127 +   z-index:0;
128 + }
129 +
130 + #nav-sync img {
131 +   opacity:0.3;
132 + }
133 +
134 + #nav-sync img:hover {
135 +   opacity:0.9;
136 + }
137 +
138 + @media print
139 + {
140 +   #nav-tree { display: none; }
141 +   div.ui-resizable-handle { display: none; position: relative; }
142 + }
143 +

```

✓ 531 ━━━━ docs/html/navtree.js □

...	...	@@ -0,0 +1,531 @@
	1	+ var NAVTREE =
	2	+ [
	3	+ ["Mali OpenCL SDK v1.1.0", "index.html", [
	4	+ ["Common Issues", "common_issues.html", [
	5	+ ["On the Board", "common_issues.html#board", null],
	6	+ ["On the Host", "common_issues.html#host", null]
	7	+]],
	8	+ ["Quick Start Guide", "quick_start.html", [
	9	+ ["Running an OpenCL sample", "quick_start.html#quickRun", null]
	10	+]],
	11	+ ["Support", "support.html", [
	12	+ ["Local Help", "support.html#supportLocal", null],
	13	+ ["Mali Developer Forums", "support.html#supportMaliDeveloper", null]
	14	+]],
	15	+ ["Tutorials", "tutorials.html", "tutorials"],
	16	+ ["Files", null, [
	17	+ ["File List", "files.html", "files"],
	18	+ ["File Members", "globals.html", [
	19	+ ["All", "globals.html", null],
	20	+ ["Functions", "globals_func.html", null],
	21	+ ["Variables", "globals_vars.html", null],
	22	+ ["Macros", "globals_defs.html", null]
	23	+]]
	24	+]]
	25	+]]
	26	+];
	27	+
	28	+ var NAVTREEINDEX =
	29	+ [
	30	+ "64_bit_integer_8cl.html",
	31	+ "tutorials.html"
	32	+];
	33	+
	34	+ var SYNCONMSG = 'click to disable panel synchronisation';
	35	+ var SYNCOFFMSG = 'click to enable panel synchronisation';
	36	+ var navTreeSubIndices = new Array();
	37	+
	38	+ function getData(varName)
	39	+ {
	40	+ var i = varName.lastIndexOf('/');
	41	+ var n = i>=0 ? varName.substring(i+1) : varName;
	42	+ return eval(n.replace(/\-/g,'_'));
	43	+ }
	44	+
	45	+ function stripPath(uri)
	46	+ {
	47	+ return uri.substring(uri.lastIndexOf('/')+1);

```

48 + }
49 +
50 + function stripPath2(uri)
51 + {
52 +   var i = uri.lastIndexOf('/');
53 +   var s = uri.substring(i+1);
54 +   var m = uri.substring(0,i+1).match(/\d\w\d\w\w\$/);
55 +   return m ? uri.substring(i-6) : s;
56 + }
57 +
58 + function localStorageSupported()
59 + {
60 +   try {
61 +     return 'localStorage' in window && window['localStorage'] !== null && window.localStorage.getItem;
62 +   }
63 +   catch(e) {
64 +     return false;
65 +   }
66 + }
67 +
68 +
69 + function storeLink(link)
70 + {
71 +   if (!$("#nav-sync").hasClass('sync') && localStorageSupported()) {
72 +     window.localStorage.setItem('navpath',link);
73 +   }
74 + }
75 +
76 + function deleteLink()
77 + {
78 +   if (localStorageSupported()) {
79 +     window.localStorage.setItem('navpath','');
80 +   }
81 + }
82 +
83 + function cachedLink()
84 + {
85 +   if (localStorageSupported()) {
86 +     return window.localStorage.getItem('navpath');
87 +   } else {
88 +     return '';
89 +   }
90 + }
91 +
92 + function getScript(scriptName,func,show)
93 + {
94 +   var head = document.getElementsByTagName("head")[0];
95 +   var script = document.createElement('script');
96 +   script.id = scriptName;
97 +   script.type = 'text/javascript';
98 +   script.onload = func;
99 +   script.src = scriptName+'.js';
100 +  if ($.browser.msie && $.browser.version<=8) {
101 +    // script.onload does work with older versions of IE
102 +    script.onreadystatechange = function() {
103 +      if (script.readyState=='complete' || script.readyState=='loaded') {
104 +        func(); if (show) showRoot();
105 +      }
106 +    }
107 +  }
108 +  head.appendChild(script);
109 + }
110 +
111 + function createIndent(o,domNode,node,level)
112 + {
113 +   if (node.parentNode && node.parentNode.parentNode) {
114 +     createIndent(o,domNode,node.parentNode,level+1);
115 +   }
116 +   var imgNode = document.createElement("img");

```

```

117 +     imgNode.width = 16;
118 +     imgNode.height = 22;
119 +     if (level==0 && node.childrenData) {
120 +         node.plus_img = imgNode;
121 +         node.expandToggle = document.createElement("a");
122 +         node.expandToggle.href = "javascript:void(0)";
123 +         node.expandToggle.onclick = function() {
124 +             if (node.expanded) {
125 +                 $(node.getChildrenUL()).slideUp("fast");
126 +                 if (node.isLast) {
127 +                     node.plus_img.src = node.relpPath+"ftv2plastnode.png";
128 +                 } else {
129 +                     node.plus_img.src = node.relpPath+"ftv2pnode.png";
130 +                 }
131 +                 node.expanded = false;
132 +             } else {
133 +                 expandNode(o, node, false, false);
134 +             }
135 +         }
136 +         node.expandToggle.appendChild(imgNode);
137 +         domNode.appendChild(node.expandToggle);
138 +     } else {
139 +         domNode.appendChild(imgNode);
140 +     }
141 +     if (level==0) {
142 +         if (node.isLast) {
143 +             if (node.childrenData) {
144 +                 imgNode.src = node.relpPath+"ftv2plastnode.png";
145 +             } else {
146 +                 imgNode.src = node.relpPath+"ftv2lastnode.png";
147 +                 domNode.appendChild(imgNode);
148 +             }
149 +         } else {
150 +             if (node.childrenData) {
151 +                 imgNode.src = node.relpPath+"ftv2pnode.png";
152 +             } else {
153 +                 imgNode.src = node.relpPath+"ftv2node.png";
154 +                 domNode.appendChild(imgNode);
155 +             }
156 +         }
157 +     } else {
158 +         if (node.isLast) {
159 +             imgNode.src = node.relpPath+"ftv2blank.png";
160 +         } else {
161 +             imgNode.src = node.relpPath+"ftv2vertline.png";
162 +         }
163 +     }
164 +     imgNode.border = "0";
165 + }
166 +
167 + function newNode(o, po, text, link, childrenData, lastNode)
168 + {
169 +     var node = new Object();
170 +     node.children = Array();
171 +     node.childrenData = childrenData;
172 +     node.depth = po.depth + 1;
173 +     node.relpPath = po.relpPath;
174 +     node.isLast = lastNode;
175 +
176 +     node.li = document.createElement("li");
177 +     po.getChildrenUL().appendChild(node.li);
178 +     node.parentNode = po;
179 +
180 +     node.itemDiv = document.createElement("div");
181 +     node.itemDiv.className = "item";
182 +
183 +     node.labelSpan = document.createElement("span");
184 +     node.labelSpan.className = "label";
185 +

```

```

186 +     createIndent(o,node.itemDiv,node,0);
187 +     node.itemDiv.appendChild(node.labelSpan);
188 +     node.li.appendChild(node.itemDiv);
189 +
190 +     var a = document.createElement("a");
191 +     node.labelSpan.appendChild(a);
192 +     node.label = document.createTextNode(text);
193 +     node.expanded = false;
194 +     a.appendChild(node.label);
195 +     if (link) {
196 +         var url;
197 +         if (link.substring(0,1)=='^') {
198 +             url = link.substring(1);
199 +             link = url;
200 +         } else {
201 +             url = node.relpPath+link;
202 +         }
203 +         a.className = stripPath(link.replace('#',':'));
204 +         if (link.indexOf('#')!=-1) {
205 +             var fname = '#'+link.split('#')[1];
206 +             var srcPage = stripPath($('location').attr('pathname'));
207 +             var targetPage = stripPath(link.split('#')[0]);
208 +             a.href = srcPage!=targetPage ? url : '#';
209 +             a.onclick = function(){
210 +                 storeLink(link);
211 +                 if (!$(a).parent().parent().hasClass('selected'))
212 +                 {
213 +                     $('.item').removeClass('selected');
214 +                     $('.item').removeAttr('id');
215 +                     $(a).parent().parent().addClass('selected');
216 +                     $(a).parent().parent().attr('id','selected');
217 +                 }
218 +                 var pos, anchor = $(aname), docContent = $('#doc-content');
219 +                 if (anchor.parent().attr('class')=='memItemLeft') {
220 +                     pos = anchor.parent().position().top;
221 +                 } else if (anchor.position()) {
222 +                     pos = anchor.position().top;
223 +                 }
224 +                 if (pos) {
225 +                     var dist = Math.abs(Math.min(
226 +                         pos-docContent.offset().top,
227 +                         docContent[0].scrollHeight-
228 +                         docContent.height()-docContent.scrollTop()));
229 +                     docContent.animate({
230 +                         scrollTop: pos + docContent.scrollTop() - docContent.offset().top
231 +                     },Math.max(50,Math.min(500,dist)),function(){
232 +                         window.location.replace(aname);
233 +                     });
234 +                 }
235 +             };
236 +         } else {
237 +             a.href = url;
238 +             a.onclick = function() { storeLink(link); }
239 +         }
240 +     } else {
241 +         if (childrenData != null)
242 +         {
243 +             a.className = "nolink";
244 +             a.href = "javascript:void(0)";
245 +             a.onclick = node.expandToggle.onclick;
246 +         }
247 +     }
248 +
249 +     node.childrenUL = null;
250 +     node.getChildrenUL = function() {
251 +         if (!node.childrenUL) {
252 +             node.childrenUL = document.createElement("ul");
253 +             node.childrenUL.className = "children_ul";
254 +             node.childrenUL.style.display = "none";

```

```

255 +     node.li.appendChild(node.childrenUL);
256 +
257 +   return node.childrenUL;
258 +
259 +
260 +   return node;
261 +
262 +
263 + function showRoot()
264 + {
265 +   var headerHeight = $("#top").height();
266 +   var footerHeight = $("#nav-path").height();
267 +   var windowHeight = $(window).height() - headerHeight - footerHeight;
268 +   (function (){ // retry until we can scroll to the selected item
269 +     try {
270 +       var navtree=$('#nav-tree');
271 +       navtree.scrollTo('#selected',0,{offset:-windowHeight/2});
272 +     } catch (err) {
273 +       setTimeout(arguments.callee, 0);
274 +     }
275 +   })();
276 +
277 +
278 + function expandNode(o, node, imm, showRoot)
279 + {
280 +   if (node.childrenData && !node.expanded) {
281 +     if (typeof(node.childrenData)=='string') {
282 +       var varName = node.childrenData;
283 +       getScript(node.relpPath+varName,function(){
284 +         node.childrenData = getData(varName);
285 +         expandNode(o, node, imm, showRoot);
286 +       }, showRoot);
287 +     } else {
288 +       if (!node.childrenVisited) {
289 +         getNode(o, node);
290 +       } if (imm || ($.browser.msie && $.browser.version>8)) {
291 +         // somehow slideDown jumps to the start of tree for IE9 :-( 
292 +         $(node.getChildrenUL()).show();
293 +       } else {
294 +         $(node.getChildrenUL()).slideDown("fast");
295 +       }
296 +       if (node.isLast) {
297 +         node.plus_img.src = node.relpPath+"ftv2mlastnode.png";
298 +       } else {
299 +         node.plus_img.src = node.relpPath+"ftv2mnode.png";
300 +       }
301 +       node.expanded = true;
302 +     }
303 +   }
304 + }
305 +
306 + function glowEffect(n,duration)
307 + {
308 +   n.addClass('glow').delay(duration).queue(function(next){
309 +     $(this).removeClass('glow');next();
310 +   });
311 + }
312 +
313 + function highlightAnchor()
314 + {
315 +   var anchor = $($location).attr('hash');
316 +   if (anchor.parent().attr('class')=='memItemLeft'){
317 +     var rows = $('.memberdecls tr[class$="'+
318 +               window.location.hash.substring(1)+'"]');
319 +     glowEffect(rows.children(),300); // member without details
320 +   } else if (anchor.parents().slice(2).prop('tagName')=='TR') {
321 +     glowEffect(anchor.parents('div.memitem'),1000); // enum value
322 +   } else if (anchor.parent().attr('class')=='fieldtype'){
323 +     glowEffect(anchor.parent().parent(),1000); // struct field

```

```

324 + } else if (anchor.parent().is(":header")) {
325 +   glowEffect(anchor.parent(),1000); // section header
326 + } else {
327 +   glowEffect(anchor.next(),1000); // normal member
328 + }
329 +
330 +
331 + function selectAndHighlight(hash,n)
332 + {
333 +   var a;
334 +   if (hash) {
335 +     var link=stripPath($(location).attr('pathname'))+':'+hash.substring(1);
336 +     a$('.item a[class$="'+link+'"]');
337 +   }
338 +   if (a && a.length) {
339 +     a.parent().parent().addClass('selected');
340 +     a.parent().parent().attr('id','selected');
341 +     highlightAnchor();
342 +   } else if (n) {
343 +     $(n.itemDiv).addClass('selected');
344 +     $(n.itemDiv).attr('id','selected');
345 +   }
346 +   showRoot();
347 + }
348 +
349 + function showNode(o, node, index, hash)
350 + {
351 +   if (node && node.childrenData) {
352 +     if (typeof(node.childrenData)=='string') {
353 +       var varName = node.childrenData;
354 +       getScript(node.relpPath+varName,function(){
355 +         node.childrenData = getData(varName);
356 +         showNode(o,node,index,hash);
357 +       },true);
358 +     } else {
359 +       if (!node.childrenVisited) {
360 +         getNode(o, node);
361 +       }
362 +       $(node.getChildrenUL()).show();
363 +       if (node.isLast) {
364 +         node.plus_img.src = node.relpPath+"ftv2mlastnode.png";
365 +       } else {
366 +         node.plus_img.src = node.relpPath+"ftv2mnode.png";
367 +       }
368 +       node.expanded = true;
369 +       var n = node.children[o.breadcrumbs[index]];
370 +       if (index+1<o.breadcrumbs.length) {
371 +         showNode(o,n,index+1,hash);
372 +       } else {
373 +         if (typeof(n.childrenData)=='string') {
374 +           var varName = n.childrenData;
375 +           getScript(n.relpPath+varName,function(){
376 +             n.childrenData = getData(varName);
377 +             node.expanded=false;
378 +             showNode(o,node,index,hash); // retry with child node expanded
379 +           },true);
380 +         } else {
381 +           var rootBase = stripPath(o.toroot.replace(/\..+$/, '')); 
382 +           if (rootBase=="index" || rootBase=="pages") {
383 +             expandNode(o, n, true, true);
384 +           }
385 +           selectAndHighlight(hash,n);
386 +         }
387 +       }
388 +     }
389 +   } else {
390 +     selectAndHighlight(hash);
391 +   }
392 + }

```

```

393 +
394 + function getNode(o, po)
395 +
396 + po.childrenVisited = true;
397 + var l = po.childrenData.length-1;
398 + for (var i in po.childrenData) {
399 +   var nodeData = po.childrenData[i];
400 +   po.children[i] = newNode(o, po, nodeData[0], nodeData[1], nodeData[2],
401 +     i==l);
402 + }
403 +
404 +
405 + function gotoNode(o,subIndex,root,hash,relpath)
406 +
407 + var nti = navTreeSubIndices[subIndex][root+hash];
408 + o.breadcrumbs = $.extend(true, [], nti ? nti : navTreeSubIndices[subIndex][root]);
409 + if (!o.breadcrumbs && root!=NAVTREE[0][1]) { // fallback: show index
410 +   navTo(o,NAVTREE[0][1],"",relpath);
411 +   $('.item').removeClass('selected');
412 +   $('.item').removeAttr('id');
413 + }
414 + if (o.breadcrumbs) {
415 +   o.breadcrumbs.unshift(0); // add 0 for root node
416 +   showNode(o, o.node, 0, hash);
417 + }
418 +
419 +
420 + function navTo(o,root,hash,relpath)
421 +
422 + var link = cachedLink();
423 + if (link) {
424 +   var parts = link.split('#');
425 +   root = parts[0];
426 +   if (parts.length>1) hash = '#'+parts[1];
427 +   else hash='';
428 + }
429 + if (root==NAVTREE[0][1]) {
430 +   $('#nav-sync').css('top','30px');
431 + } else {
432 +   $('#nav-sync').css('top','5px');
433 + }
434 + if (hash.match(/^#l\d+$/)) {
435 +   var anchor=$('#a[name='+hash.substring(1)+']');
436 +   glowEffect(anchor.parent(),1000); // line number
437 +   hash=''; // strip line number anchors
438 +   //root=root.replace(/_source\./,''); // source link to doc link
439 + }
440 + var url=root+hash;
441 + var i=-1;
442 + while (NAVTREEINDEX[i+1]<=url) i++;
443 + if (navTreeSubIndices[i]) {
444 +   gotoNode(o,i,root,hash,relpath)
445 + } else {
446 +   getScript(relpath+'navtreeindex'+i,function(){
447 +     navTreeSubIndices[i] = eval('NAVTREEINDEX'+i);
448 +     if (navTreeSubIndices[i]) {
449 +       gotoNode(o,i,root,hash,relpath);
450 +     }
451 +   },true);
452 + }
453 +
454 +
455 + function showSyncOff(n,relpath)
456 +
457 + n.html('');
458 +
459 +
460 + function showSyncOn(n,relpath)
461 +

```

```

462 +     n.html('1){
514 +             var a;
515 +             if ($(location).attr('hash')){
516 +                 var clslink=stripPath2($(location).attr('pathname'))+':'+
517 +                             $(location).attr('hash').substring(1);
518 +                 a=$('#.item a[class$="'+clslink+'"]');
519 +             }
520 +             if (a==null || !$(a).parent().parent().hasClass('selected')){
521 +                 $('.item').removeClass('selected');
522 +                 $('.item').removeAttr('id');
523 +             }
524 +             var link=stripPath2($(location).attr('pathname'));
525 +             navTo(o,link,$(location).attr('hash'),relpath);
526 +         }
527 +     })
528 +
529 +     $(window).load(showRoot);
530 +

```

v 253 docs/html/navtreeindex0.js

```

... ... @@ -0,0 +1,253 @@
1 + var NAVTREEINDEX0 =
2 +
3 + "64_bit_integer_8cl.html": [4,0,1,0,0,0],
4 + "64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8fe75539098": [4,0,1,0,0,0,0],
5 + "64_bit_integer_8cl_source.html": [4,0,1,0,0,0],
6 + "64_bit_integer_8cpp.html": [4,0,1,0,1],
7 + "64_bit_integer_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,0,1,0],
8 + "64_bit_integer_8cpp_source.html": [4,0,1,0,1],
9 + "common_8cpp.html": [4,0,0,0],
10 + "common_8cpp.html#a119c92d8d25b68950de4d0e6f337df18": [4,0,0,0,5],
11 + "common_8cpp.html#a30ee399cc6a4b82d46c581f037b447fa": [4,0,0,0,2],
12 + "common_8cpp.html#a33ff0013574626bb47147495e02b5d08": [4,0,0,0,9],
13 + "common_8cpp.html#a4feec45e4b990aad8e40cc3faa32a9c8": [4,0,0,0,4],
14 + "common_8cpp.html#a6fc67d121370b02ac8bff71ec00a7665": [4,0,0,0,3],
15 + "common_8cpp.html#a736045ae74d9ed8d35cacce59b92772a": [4,0,0,0,10],
16 + "common_8cpp.html#a73727ed6f5d821d8c97756404e145644": [4,0,0,0,0],
17 + "common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d": [4,0,0,0,1],
18 + "common_8cpp.html#ad800ae2b2358904a9051a31f76e711c3": [4,0,0,0,8],
19 + "common_8cpp.html#af351b63fc0df43f3702d01de76d344ae": [4,0,0,0,6],
20 + "common_8cpp.html#afbc9c225ddee8ca4913817d1d9f55307": [4,0,0,0,7],
21 + "common_8cpp_source.html": [4,0,0,0],
22 + "common_8h.html": [4,0,0,1],
23 + "common_8h.html#a1200474d0c84aaaf23b5bf36b4d9abfd": [4,0,0,1,6],
24 + "common_8h.html#a30ee399cc6a4b82d46c581f037b447fa": [4,0,0,1,2],
25 + "common_8h.html#a33ff0013574626bb47147495e02b5d08": [4,0,0,1,9],
26 + "common_8h.html#a4b392a835c01476e368c4444bfef3017": [4,0,0,1,8],
27 + "common_8h.html#a6fc67d121370b02ac8bff71ec00a7665": [4,0,0,1,3],
28 + "common_8h.html#a736045ae74d9ed8d35cacce59b92772a": [4,0,0,1,10],
29 + "common_8h.html#a73727ed6f5d821d8c97756404e145644": [4,0,0,1,0],
30 + "common_8h.html#a7fe72dc9fb4aad614e19d6bfbb2a7fce": [4,0,0,1,4],
31 + "common_8h.html#a8ce6fa1f13405092e05b3a1b464b1f77": [4,0,0,1,5],
32 + "common_8h.html#abf4221def5272b7188679785d807f6cb": [4,0,0,1,7],
33 + "common_8h.html#acd459e74d0cef3c4616c7ce1a5a47f4d": [4,0,0,1,1],
34 + "common_8h_source.html": [4,0,0,1],
35 + "common_issues.html": [0],
36 + "common_issues.html#board": [0,0],
37 + "common_issues.html#host": [0,1],
38 + "dir_0289395444cf489a29bc36f15be66f35.html": [4,0,1,4],
39 + "dir_0dae9d24a39dcc22094c5116ff3a8be1.html": [4,0,1,5,0],
40 + "dir_10f12679427188891e820fce3e11401a.html": [4,0,1,5],
41 + "dir_2057de030161fe0957379729a87c463f.html": [4,0,1,10,0],
42 + "dir_33f3275c1127fb7d435e719a53b54021.html": [4,0,1,9],
43 + "dir_3d70ec2e68ff85e042132c1108ba337a.html": [4,0,1,0,0],
44 + "dir_490217e45394b06d48a471b031b70a3e.html": [4,0,1,6],
45 + "dir_536689d07d4a9d8d4d9f119eb2909e9b.html": [4,0,1,4,0],
46 + "dir_53e809feb72b43d0f52f5efc50237d2d.html": [4,0,1,9,0],
47 + "dir_6f9635d4fbfa321d4c00f29df5cd540c.html": [4,0,1],
48 + "dir_75d5c689b70aefa142bdff5ebcb7d98a3.html": [4,0,1,3],
49 + "dir_75f962b3696c1618a5722e38faad1027.html": [4,0,1,1,0],
50 + "dir_8c530a8c9903b6ceb2227ad2f52f6cd5.html": [4,0,1,10],
51 + "dir_9127a1cb36a7caf66e62b387863738ab.html": [4,0,1,3,0],
52 + "dir_98aa652b5938058672ba296b58b44cbf.html": [4,0,1,0],
53 + "dir_a37fa8be2cc2eecbd460c0442aa89426.html": [4,0,1,8,0],
54 + "dir_ab99bc0d9adf5322737f71f92fb9e408.html": [4,0,1,7,0],
55 + "dir_bdd9a5d540de89e9fe90efdfc6973a4f.html": [4,0,0],
56 + "dir_cbd57f3d7d7e9034c814d8124b45dbb2.html": [4,0,1,1],
57 + "dir_dd0c2a8767cfede8cdb873abaafa716f.html": [4,0,1,8],
58 + "dir_df019e407d3fcaab5e49d9c13350c94c.html": [4,0,1,7],
59 + "dir_e76a63218516693600e6e995cc89a2c4.html": [4,0,1,2],
60 + "dir_f1436c75c3fc029af44aa811691e101e.html": [4,0,1,6,0],
61 + "files.html": [4,0],
62 + "fir_float_8cl.html": [4,0,1,1,0,0],
63 + "fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba7210": [4,0,1,1,0,0,6],
64 + "fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19": [4,0,1,1,0,0,5],

```

```
65 + "fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c": [4,0,1,1,0,0,10],  
66 + "fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6": [4,0,1,1,0,0,0],  
67 + "fir_float_8cl.html#a5d47ed70581c7a693231547336cb0aa": [4,0,1,1,0,0,4],  
68 + "fir_float_8cl.html#a86163952d447939d88b2ab454efd091a": [4,0,1,1,0,0,9],  
69 + "fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566": [4,0,1,1,0,0,2],  
70 + "fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e": [4,0,1,1,0,0,3],  
71 + "fir_float_8cl.html#ad4c882aae33d779624d02d0d88bae565": [4,0,1,1,0,0,7],  
72 + "fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f": [4,0,1,1,0,0,1],  
73 + "fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01": [4,0,1,1,0,0,8],  
74 + "fir_float_8cl_source.html": [4,0,1,1,0,0],  
75 + "fir_float_8cpp.html": [4,0,1,1,1],  
76 + "fir_float_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,1,1,0],  
77 + "fir_float_8cpp_source.html": [4,0,1,1,1],  
78 + "fir_tutorial.html": [3,6],  
79 + "fir_tutorial.html#firAlgorithm": [3,6,1],  
80 + "fir_tutorial.html#firCode": [3,6,2,5],  
81 + "fir_tutorial.html#firExampleResult": [3,6,0],  
82 + "fir_tutorial.html#firFilter": [3,6,2,4],  
83 + "fir_tutorial.html#firImplementation": [3,6,2],  
84 + "fir_tutorial.html#firMali": [3,6,2,2],  
85 + "fir_tutorial.html#firMoreInformation": [3,6,4],  
86 + "fir_tutorial.html#firPadding": [3,6,2,1],  
87 + "fir_tutorial.html#firRunning": [3,6,3],  
88 + "fir_tutorial.html#firSize": [3,6,2,0],  
89 + "fir_tutorial.html#firSpecifics": [3,6,2,3],  
90 + "globals.html": [4,1,0],  
91 + "globals_defs.html": [4,1,3],  
92 + "globals_func.html": [4,1,1],  
93 + "globals_vars.html": [4,1,2],  
94 + "hello_world_c_8cpp.html": [4,0,1,2,0],  
95 + "hello_world_c_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,2,0,0],  
96 + "hello_world_c_8cpp_source.html": [4,0,1,2,0],  
97 + "hello_world_opencl_8cl.html": [4,0,1,3,0,0],  
98 + "hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7": [4,0,1,3,0,0,0],  
99 + "hello_world_opencl_8cl_source.html": [4,0,1,3,0,0],  
100 + "hello_world_opencl_8cpp.html": [4,0,1,3,1],  
101 + "hello_world_opencl_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,3,1,0],  
102 + "hello_world_opencl_8cpp_source.html": [4,0,1,3,1],  
103 + "hello_world_vector_8cl.html": [4,0,1,4,0,0],  
104 + "hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53af57d89": [4,0,1,4,0,0,0],  
105 + "hello_world_vector_8cl_source.html": [4,0,1,4,0,0],  
106 + "hello_world_vector_8cpp.html": [4,0,1,4,1],  
107 + "hello_world_vector_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,4,1,0],  
108 + "hello_world_vector_8cpp_source.html": [4,0,1,4,1],  
109 + "hello_world_open_c_lTutorial.html": [3,0,0],  
110 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLAlgorithm": [3,0,0,0],  
111 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLBasics": [3,0,0,2,0],  
112 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLImplementation": [3,0,0,2],  
113 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLMemory": [3,0,0,2,2],  
114 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLMoreInformation": [3,0,0,3],  
115 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLImplementation": [3,0,0,1],  
116 + "hello_world_open_c_lTutorial.html#helloWorldOpenCLSetup": [3,0,0,2,1],  
117 + "hello_world_runningTutorial.html": [3,0,2],  
118 + "hello_world_runningTutorial.html#helloWorldRunningC": [3,0,2,1],  
119 + "hello_world_runningTutorial.html#helloWorldRunningMoreInformation": [3,0,2,4],  
120 + "hello_world_runningTutorial.html#helloWorldRunningOpenCL": [3,0,2,2],  
121 + "hello_world_runningTutorial.html#helloWorldRunningOutput": [3,0,2,0],  
122 + "hello_world_runningTutorial.html#helloWorldRunningVector": [3,0,2,3],  
123 + "hello_worldTutorial.html": [3,0],  
124 + "hello_world_vectorTutorial.html": [3,0,1],  
125 + "hello_world_vectorTutorial.html#helloWorldVectorMali": [3,0,1,0,2],  
126 + "hello_world_vectorTutorial.html#helloWorldVectorMoreInformation": [3,0,1,2],  
127 + "hello_world_vectorTutorial.html#helloWorldVectorPerformance": [3,0,1,0,0],  
128 + "hello_world_vectorTutorial.html#helloWorldVectorQuery": [3,0,1,0,1],  
129 + "hello_world_vectorTutorial.html#helloWorldVectorTheory": [3,0,1,0],  
130 + "hello_world_vectorTutorial.html#helloWorldVectorVectorizing": [3,0,1,1],  
131 + "image_8cpp.html": [4,0,0,2],  
132 + "image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39": [4,0,0,2,0],  
133 + "image_8cpp.html#a75fa143dcc45f3d5dc030884ca09cc9": [4,0,0,2,3],
```

```
134 + "image_8cpp.html#a83b7aea3d44c26db2222227c0dc5d19a": [4,0,0,2,4],
135 + "image_8cpp.html#a872cec0732df69b80796a61acea716f0": [4,0,0,2,2],
136 + "image_8cpp.html#a9390e4ddc634d83452a15e93017ab979": [4,0,0,2,1],
137 + "image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31": [4,0,0,2,5],
138 + "image_8cpp_source.html": [4,0,0,2],
139 + "image_8h.html": [4,0,0,3],
140 + "image_8h.html#a189e940abcfb40459918c86ab01a1121": [4,0,0,3,7],
141 + "image_8h.html#a3d566da55411efac7e49e2f33bf6c155": [4,0,0,3,5],
142 + "image_8h.html#a9390e4ddc634d83452a15e93017ab979": [4,0,0,3,4],
143 + "image_8h.html#a95b53cb5341aa2660b74a5f3a40228de": [4,0,0,3,6],
144 + "image_8h.html#ab9744225ef92254ada77ddaeaddad25d": [4,0,0,3,8],
145 + "image_8h.html#ae8afb226cfa212cce225a77a0ff79121": [4,0,0,3,3],
146 + "image_8h_source.html": [4,0,0,3],
147 + "image_scaling_8cl.html": [4,0,1,5,0,0],
148 + "image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26": [4,0,1,5,0,0,0],
149 + "image_scaling_8cl.html#a9165c6046146d2d28cc268394d585f17": [4,0,1,5,0,0,1],
150 + "image_scaling_8cl_source.html": [4,0,1,5,0,0],
151 + "image_scaling_8cpp.html": [4,0,1,5,1],
152 + "image_scaling_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,5,1,0],
153 + "image_scaling_8cpp_source.html": [4,0,1,5,1],
154 + "image_objects_tutorial.html": [3,3],
155 + "image_objects_tutorial.html#imageObjectsBuffers": [3,3,0,0],
156 + "image_objects_tutorial.html#imageObjectsImageObjects": [3,3,0,1],
157 + "image_objects_tutorial.html#imageObjectsIntroduction": [3,3,0],
158 + "image_objects_tutorial.html#imageObjectsRecommendations": [3,3,1],
159 + "image_objects_tutorial.html#imageObjectsSample": [3,3,2],
160 + "image_scaling_tutorial.html": [3,3,3],
161 + "image_scaling_tutorial.html#imageScalingCode": [3,3,3,3],
162 + "image_scaling_tutorial.html#imageScalingDifferences": [3,3,3,1],
163 + "image_scaling_tutorial.html#imageScalingIntroduction": [3,3,3,0],
164 + "image_scaling_tutorial.html#imageScalingMoreInformation": [3,3,3,5],
165 + "image_scaling_tutorial.html#imageScalingRunning": [3,3,3,4],
166 + "image_scaling_tutorial.html#imageScalingSamplers": [3,3,3,2],
167 + "index.html": [],
168 + "long64_bit_integer_tutorial.html": [3,4],
169 + "long64_bit_integer_tutorial.html#long64BitInteger": [3,4,1,1],
170 + "long64_bit_integer_tutorial.html#long64BitIntegerAtomics": [3,4,0,1],
171 + "long64_bit_integer_tutorial.html#long64BitIntegerImplementation": [3,4,1],
172 + "long64_bit_integer_tutorial.html#long64BitIntegerIntroduction": [3,4,0],
173 + "long64_bit_integer_tutorial.html#long64BitIntegerMoreInformation": [3,4,3],
174 + "long64_bit_integer_tutorial.html#long64BitIntegerRunning": [3,4,2],
175 + "long64_bit_integer_tutorial.html#long64BitIntegerSize": [3,4,1,0],
176 + "long64_bit_integer_tutorial.html#long64BitIntegerType": [3,4,0,0],
177 + "mandelbrot_8cl.html": [4,0,1,6,0,0],
178 + "mandelbrot_8cl.html#a4dfffa8ed5ea4612c75f705e514351c4a": [4,0,1,6,0,0,1],
179 + "mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a": [4,0,1,6,0,0,2],
180 + "mandelbrot_8cl.html#acd517c6f195c75b9dd0f3aad65326f3b": [4,0,1,6,0,0,0],
181 + "mandelbrot_8cl_source.html": [4,0,1,6,0,0],
182 + "mandelbrot_8cpp.html": [4,0,1,6,1],
183 + "mandelbrot_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,6,1,0],
184 + "mandelbrot_8cpp_source.html": [4,0,1,6,1],
185 + "mandelbrot_tutorial.html": [3,7],
186 + "mandelbrot_tutorial.html#mandelbrotAlgorithm": [3,7,1],
187 + "mandelbrot_tutorial.html#mandelbrotExampleResult": [3,7,0],
188 + "mandelbrot_tutorial.html#mandelbrotImplementation": [3,7,2],
189 + "mandelbrot_tutorial.html#mandelbrotMoreInformation": [3,7,4],
190 + "mandelbrot_tutorial.html#mandelbrotRunning": [3,7,3],
191 + "memory_buffers_tutorial.html": [3,2],
192 + "memory_buffers_tutorial.html#memoryBuffersAcrossDevices": [3,2,2],
193 + "memory_buffers_tutorial.html#memoryBuffersIntroduction": [3,2,0],
194 + "memory_buffers_tutorial.html#memoryBuffersMoreInformation": [3,2,4],
195 + "memory_buffers_tutorial.html#memoryBuffersRecommendations": [3,2,3],
196 + "memory_buffers_tutorial.html#memoryBufferssharedMemorySystems": [3,2,1],
197 + "pages.html": [],
198 + "quick_start.html": [1],
199 + "quick_start.html#quickRun": [1,0],
200 + "sgemm_8cl.html": [4,0,1,7,0,0],
201 + "sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25": [4,0,1,7,0,0,0],
202 + "sgemm_8cl_source.html": [4,0,1,7,0,0],
```

```

203 + "sgemm_8cpp.html":[4,0,1,7,1],
204 + "sgemm_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe":[4,0,1,7,1,0],
205 + "sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6aff":[4,0,1,7,1,1],
206 + "sgemm_8cpp_source.html":[4,0,1,7,1],
207 + "sgemm_tutorial.html": [3,8],
208 + "sgemm_tutorial.html#sgemmAlgorithm": [3,8,1],
209 + "sgemm_tutorial.html#sgemmExampleResult": [3,8,0],
210 + "sgemm_tutorial.html#sgemmImplementation": [3,8,2],
211 + "sgemm_tutorial.html#sgemmMoreInformation": [3,8,4],
212 + "sgemm_tutorial.html#sgemmRunning": [3,8,3],
213 + "sobel_8cl.html": [4,0,1,8,0,0],
214 + "sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850": [4,0,1,8,0,0,0],
215 + "sobel_8cl_source.html": [4,0,1,8,0,0],
216 + "sobel_8cpp.html": [4,0,1,8,1],
217 + "sobel_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,8,1,0],
218 + "sobel_8cpp_source.html": [4,0,1,8,1],
219 + "sobel_no_vectors_8cl.html": [4,0,1,9,0,0],
220 + "sobel_no_vectors_8cl.html#aba83b870a7ef709e9a5608496084ec3a": [4,0,1,9,0,0,0],
221 + "sobel_no_vectors_8cl_source.html": [4,0,1,9,0,0],
222 + "sobel_no_vectors_8cpp.html": [4,0,1,9,1],
223 + "sobel_no_vectors_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,9,1,0],
224 + "sobel_no_vectors_8cpp_source.html": [4,0,1,9,1],
225 + "sobel_tutorial.html": [3,5],
226 + "sobel_tutorial.html#sobelAlgorithm": [3,5,1],
227 + "sobel_tutorial.html#sobelCode": [3,5,2,3],
228 + "sobel_tutorial.html#sobelExampleResult": [3,5,0],
229 + "sobel_tutorial.html#sobelImplementation": [3,5,2],
230 + "sobel_tutorial.html#sobelMoreInformation": [3,5,4],
231 + "sobel_tutorial.html#sobelPadding": [3,5,2,1],
232 + "sobel_tutorial.html#sobelRunning": [3,5,3],
233 + "sobel_tutorial.html#sobelSize": [3,5,2,0],
234 + "sobel_tutorial.html#sobelSpecifics": [3,5,2,2],
235 + "support.html": [2],
236 + "support.html#supportLocal": [2,0],
237 + "support.html#supportMaliDeveloper": [2,1],
238 + "template_8cl.html": [4,0,1,10,0,0],
239 + "template_8cl.html#a3fd9dfc155a2b110d8632041d0961625": [4,0,1,10,0,0,0],
240 + "template_8cl_source.html": [4,0,1,10,0,0],
241 + "template_8cpp.html": [4,0,1,10,1],
242 + "template_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe": [4,0,1,10,1,0],
243 + "template_8cpp_source.html": [4,0,1,10,1],
244 + "template_tutorial.html": [3,1],
245 + "template_tutorial.html#templateAfterExecution": [3,1,1,3],
246 + "template_tutorial.html#templateCheckList": [3,1,0],
247 + "template_tutorial.html#templateEnvironment": [3,1,1,0],
248 + "template_tutorial.html#templateKernelExecution": [3,1,1,2],
249 + "template_tutorial.html#templateMemory": [3,1,1,1],
250 + "template_tutorial.html#templateMoreInformation": [3,1,3],
251 + "template_tutorial.html#templateRunning": [3,1,2],
252 + "template_tutorial.html#templateWalkthrough": [3,1,1]
253 + };

```

4 docs/html/navtreeindex1.js

...	...	@@ -0,0 +1,4 @@
	1	+ var NAVTREEINDEX1 =
	2	+ {
	3	+ "tutorials.html": [3]
	4	+ };

BIN docs/html/open.png

Unable to render code block

132 docs/html/pages.html

...	...	@@ -0,0 +1,132 @@
-----	-----	-------------------

```

1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Help and Tutorials</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">

```

```

70 +         <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;" 
74 +       class="ui-resizable-handle">
75 +   </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('pages.html','');});
79 + </script>
80 + <div id="doc-content">
81 +   <!-- window showing the filter options -->
82 +   <div id="MSearchSelectWindow"
83 +       onmouseover="return searchBox.OnSearchSelectShow()"
84 +       onmouseout="return searchBox.OnSearchSelectHide()"
85 +       onkeydown="return searchBox.OnSearchSelectKey(event)">
86 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
87 +
88 +   <!-- iframe showing the search results (closed by default) -->
89 +   <div id="MSearchResultsWindow">
90 +     <iframe src="javascript:void(0)" frameborder="0"
91 +             name="MSearchResults" id="MSearchResults">
92 +   </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Help and Tutorials</div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 +   <div class="textblock">Please see the following pages for more information:</div><div class="directory">
101 +   <div class="levels">[detail level <span onclick="javascript:toggleLevel(1);">1</span><span onclick="javascript:toggleLevel(2);">2</span><span onclick="javascript:toggleLevel(3);">3</span><span onclick="javascript:toggleLevel(4);">4</span><span onclick="javascript:toggleLevel(5);">5</span><span onclick="javascript:toggleLevel(6);">6</span><span onclick="javascript:toggleLevel(7);">7</span><span onclick="javascript:toggleLevel(8);">8</span><span onclick="javascript:toggleLevel(9);">9</span><span onclick="javascript:toggleLevel(10);">10</span><span onclick="javascript:toggleLevel(11);">11</span><span onclick="javascript:toggleLevel(12);">12</span><span onclick="javascript:toggleLevel(13);">13</span><span onclick="javascript:toggleLevel(14);">14</span><span onclick="javascript:toggleLevel(15);">15</span><span onclick="javascript:toggleLevel(16);">16</span><span onclick="javascript:toggleLevel(17);">17</span><span onclick="javascript:toggleLevel(18);">18</span><span onclick="javascript:toggleLevel(19);">19</span><span onclick="javascript:toggleLevel(20);">20</span><span onclick="javascript:toggleLevel(21);">21</span><span onclick="javascript:toggleLevel(22);">22</span><span onclick="javascript:toggleLevel(23);">23</span><span onclick="javascript:toggleLevel(24);">24</span><span onclick="javascript:toggleLevel(25);">25</span><span onclick="javascript:toggleLevel(26);">26</span><span onclick="javascript:toggleLevel(27);">27</span><span onclick="javascript:toggleLevel(28);">28</span><span onclick="javascript:toggleLevel(29);">29</span><span onclick="javascript:toggleLevel(30);">30</span><span onclick="javascript:toggleLevel(31);">31</span><span onclick="javascript:toggleLevel(32);">32</span><span onclick="javascript:toggleLevel(33);">33</span><span onclick="javascript:toggleLevel(34);">34</span><span onclick="javascript:toggleLevel(35);">35</span><span onclick="javascript:toggleLevel(36);">36</span><span onclick="javascript:toggleLevel(37);">37</span><span onclick="javascript:toggleLevel(38);">38</span><span onclick="javascript:toggleLevel(39);">39</span><span onclick="javascript:toggleLevel(40);">40</span><span onclick="javascript:toggleLevel(41);">41</span><span onclick="javascript:toggleLevel(42);">42</span><span onclick="javascript:toggleLevel(43);">43</span><span onclick="javascript:toggleLevel(44);">44</span><span onclick="javascript:toggleLevel(45);">45</span><span onclick="javascript:toggleLevel(46);">46</span><span onclick="javascript:toggleLevel(47);">47</span><span onclick="javascript:toggleLevel(48);">48</span><span onclick="javascript:toggleLevel(49);">49</span><span onclick="javascript:toggleLevel(50);">50</span><span onclick="javascript:toggleLevel(51);">51</span><span onclick="javascript:toggleLevel(52);">52</span><span onclick="javascript:toggleLevel(53);">53</span><span onclick="javascript:toggleLevel(54);">54</span><span onclick="javascript:toggleLevel(55);">55</span><span onclick="javascript:toggleLevel(56);">56</span><span onclick="javascript:toggleLevel(57);">57</span><span onclick="javascript:toggleLevel(58);">58</span><span onclick="javascript:toggleLevel(59);">59</span><span onclick="javascript:toggleLevel(60);">60</span><span onclick="javascript:toggleLevel(61);">61</span><span onclick="javascript:toggleLevel(62);">62</span><span onclick="javascript:toggleLevel(63);">63</span><span onclick="javascript:toggleLevel(64);">64</span><span onclick="javascript:toggleLevel(65);">65</span><span onclick="javascript:toggleLevel(66);">66</span><span onclick="javascript:toggleLevel(67);">67</span><span onclick="javascript:toggleLevel(68);">68</span><span onclick="javascript:toggleLevel(69);">69</span><span onclick="javascript:toggleLevel(70);">70</span><span onclick="javascript:toggleLevel(71);">71</span><span onclick="javascript:toggleLevel(72);">72</span><span onclick="javascript:toggleLevel(73);">73</span><span onclick="javascript:toggleLevel(74);">74</span><span onclick="javascript:toggleLevel(75);">75</span><span onclick="javascript:toggleLevel(76);">76</span><span onclick="javascript:toggleLevel(77);">77</span><span onclick="javascript:toggleLevel(78);">78</span><span onclick="javascript:toggleLevel(79);">79</span><span onclick="javascript:toggleLevel(80);">80</span><span onclick="javascript:toggleLevel(81);">81</span><span onclick="javascript:toggleLevel(82);">82</span><span onclick="javascript:toggleLevel(83);">83</span><span onclick="javascript:toggleLevel(84);">84</span><span onclick="javascript:toggleLevel(85);">85</span><span onclick="javascript:toggleLevel(86);">86</span><span onclick="javascript:toggleLevel(87);">87</span><span onclick="javascript:toggleLevel(88);">88</span><span onclick="javascript:toggleLevel(89);">89</span><span onclick="javascript:toggleLevel(90);">90</span><span onclick="javascript:toggleLevel(91);">91</span><span onclick="javascript:toggleLevel(92);">92</span><span onclick="javascript:toggleLevel(93);">93</span><span onclick="javascript:toggleLevel(94);">94</span><span onclick="javascript:toggleLevel(95);">95</span><span onclick="javascript:toggleLevel(96);">96</span><span onclick="javascript:toggleLevel(97);">97</span><span onclick="javascript:toggleLevel(98);">98</span><span onclick="javascript:toggleLevel(99);">99</span><span onclick="javascript:toggleLevel(100);">100</span><span onclick="javascript:toggleLevel(101);">101</span><span onclick="javascript:toggleLevel(102);">102</span><span onclick="javascript:toggleLevel(103);">103</span><span onclick="javascript:toggleLevel(104);">104</span><span onclick="javascript:toggleLevel(105);">105</span><span onclick="javascript:toggleLevel(106);">106</span><span onclick="javascript:toggleLevel(107);">107</span><span onclick="javascript:toggleLevel(108);">108</span><span onclick="javascript:toggleLevel(109);">109</span><span onclick="javascript:toggleLevel(110);">110</span><span onclick="javascript:toggleLevel(111);">111</span><span onclick="javascript:toggleLevel(112);">112</span><span onclick="javascript:toggleLevel(113);">113</span><span onclick="javascript:toggleLevel(114);">114</span><span onclick="javascript:toggleLevel(115);">115</span><span onclick="javascript:toggleLevel(116);">116</span><span onclick="javascript:toggleLevel(117);">117</span><span onclick="javascript:toggleLevel(118);">118</span><span onclick="javascript:toggleLevel(119);">119</span><span onclick="javascript:toggleLevel(120);">120</span><span onclick="javascript:toggleLevel(121);">121</span><span onclick="javascript:toggleLevel(122);">122</span><span onclick="javascript:toggleLevel(123);">123</span><span onclick="javascript:toggleLevel(124);">124</span><span onclick="javascript:toggleLevel(125);">125</span><span onclick="javascript:toggleLevel(126);">126</span><span onclick="javascript:toggleLevel(127);">127</span><span onclick="javascript:toggleLevel(128);">128</span><span onclick="javascript:toggleLevel(129);">129</span><span onclick="javascript:toggleLevel(130);">130</span><span onclick="javascript:toggleLevel(131);">131</span><span onclick="javascript:toggleLevel(132);">132</span>

```

▽ 118 docs/html/quick_start_8dox.html □

...	...	@@ -0,0 +1,118 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	

```

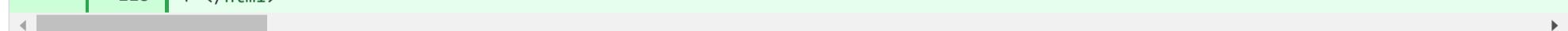
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: quick_start.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +   </ul>

```

```

71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('quick_start_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">quick_start.dox File Reference</div> </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="quick_start_8dox.html">quick_start.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>

```



▼ 134 docs/html/quick_start.html □

...	...	@@ -0,0 +1,134 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: Quick Start Guide</title> 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> 11 + <script type="text/javascript" src="resize.js"></script> 12 + <script type="text/javascript" src="navtree.js"></script> 13 + <script type="text/javascript"> 14 + \$(document).ready(initResizable); 15 + </script> 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/> </pre>

```

17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li class="current"><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <div id="nav-tree">
69 +     <div id="nav-tree-contents">
70 +       <div id="nav-sync" class="sync"></div>
71 +     </div>
72 +   </div>
73 +   <div id="splitbar" style="-moz-user-select:none;">
74 +     <div class="ui-resizable-handle">
75 +     </div>
76 +   </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('quick_start.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 +   onmouseover="return searchBox.OnSearchSelectShow()"
84 +   onmouseout="return searchBox.OnSearchSelectHide()"
85 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
```

```

86 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 +         name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 +   <div class="headertitle">
97 +     <div class="title">Quick Start Guide </div> </div>
98 +   </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>Easy guide to building and running your first Mali OpenCL SDK v1.1.0 sample.</p>
101 + <h1><a class="anchor" id="quickRun"></a>
102 + Running an OpenCL sample</h1>
103 + <ol type="1">
104 + <li><p class="startli">From a command prompt in the root of the SDK, run:</p>
105 + <div class="fragment"><div class="line">cd samples/<a class="code" href="sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850" title="Sobel filter example code">sobel_8cl.html</a></div><!-- fragment --><div class="fragment"><div class="line">make install</div>
106 + </div><!-- fragment --><p class="startli">This compiles the Sobel sample code and copies all the files it needs to run to the bin directory. It also creates a build log file in the same directory</p>
107 + </li>
108 + <li>Copy this folder to the board.</li>
109 + <li><p class="startli">Navigate to the folder on the board and run the Sobel binary:</p>
110 + <div class="fragment"><div class="line">./<a class="code" href="sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850" title="Sobel filter example code">sobel_8cl.html</a></div><!-- fragment --></li>
111 + <li><p class="startli">You should see output similar to:</p>
112 + <div class="fragment"><div class="line">Profiling information:</div>
113 + <div class="line">Queued time: 0.067ms</div>
114 + <div class="line">Wait time: 0.057835ms</div>
115 + <div class="line">Run time: 0.164923ms</div>
116 + </div><!-- fragment --><p class="startli">An output image should be created on the board called output.bmp.</p>
117 + </li>
118 + </ol>
119 + <p>Find solutions for <a class="el" href="common_issues.html">Common Issues</a>.</p>
120 + <p>For more information about the Sobel filter example see the <a class="el" href="sobel_tutorial.html">Sobel Filter</a> tutorial.</p>
121 + </div></div><!-- contents -->
122 + </div><!-- doc-content -->
123 + <!-- start footer part -->
124 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
125 +   <ul>
126 +     <li class="footer">
127 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
128 +     </li>
129 +   </ul>
130 + </div>
131 + </div>
132 + </body>
133 + </html>
134

```

93 docs/html/resize.js

...	...	@@ -0,0 +1,93 @@
		<pre> 1 + var cookie_namespace = 'doxygen'; 2 + var sidenav,navtree,content,header; 3 + 4 + function readCookie(cookie) 5 + { 6 + var myCookie = cookie_namespace+"_"+cookie+"="; 7 + if (document.cookie) 8 + { 9 + var index = document.cookie.indexOf(myCookie); 10 + if (index != -1) 11 + { 12 + var valStart = index + myCookie.length; 13 + var valEnd = document.cookie.indexOf(";", valStart); 14 + if (valEnd == -1) 15 + { </pre>

```

16     +         valEnd = document.cookie.length;
17     +     }
18     +     var val = document.cookie.substring(valStart, valEnd);
19     +     return val;
20     + }
21     +
22     + return 0;
23     +
24     +
25     + function writeCookie(cookie, val, expiration)
26     + {
27     +     if (val==undefined) return;
28     +     if (expiration == null)
29     +     {
30     +         var date = new Date();
31     +         date.setTime(date.getTime()+(10*365*24*60*60*1000)); // default expiration is one week
32     +         expiration = date.toGMTString();
33     +     }
34     +     document.cookie = cookie_namespace + "_" + cookie + "=" + val + "; expires=" + expiration+"; path=/";
35     + }
36     +
37     + function resizeWidth()
38     + {
39     +     var windowWidth = $(window).width() + "px";
40     +     var sidenavWidth = $(sidenav).width();
41     +     content.css({marginLeft:parseInt(sidenavWidth)+6+"px"}); //account for 6px-wide handle-bar
42     +     writeCookie('width',sidenavWidth, null);
43     + }
44     +
45     + function restoreWidth(navWidth)
46     + {
47     +     var windowWidth = $(window).width() + "px";
48     +     content.css({marginLeft:parseInt(navWidth)+6+"px"});
49     +     sidenav.css({width:navWidth + "px"});
50     + }
51     +
52     + function resizeHeight()
53     + {
54     +     var headerHeight = header.height();
55     +     var footerHeight = footer.height();
56     +     var windowHeight = $(window).height() - headerHeight - footerHeight;
57     +     content.css({height:windowHeight + "px"});
58     +     navtree.css({height:windowHeight + "px"});
59     +     sidenav.css({height:windowHeight + "px",top: headerHeight+"px"});
60     + }
61     +
62     + function initResizable()
63     + {
64     +     header = $("#top");
65     +     sidenav = $("#side-nav");
66     +     content = $("#doc-content");
67     +     navtree = $("#nav-tree");
68     +     footer = $("#nav-path");
69     +     $(".side-nav-resizable").resizable({resize: function(e, ui) { resizeWidth(); } });
70     +     $(window).resize(function() { resizeHeight(); });
71     +     var width = readCookie('width');
72     +     if (width) { restoreWidth(width); } else { resizeWidth(); }
73     +     resizeHeight();
74     +     var url = location.href;
75     +     var i=url.indexOf("#");
76     +     if (i>0) window.location.hash=url.substr(i);
77     +     var _preventDefault = function(evt) { evt.preventDefault(); };
78     +     $("#splitbar").bind("dragstart", _preventDefault).bind("selectstart", _preventDefault);
79     +     $(document).bind('touchmove',function(e){
80     +         try {
81     +             var target = e.target;
82     +             while (target) {
83     +                 if ($(target).css('-webkit-overflow-scrolling')=='touch') return;
84     +                 target = target.parentNode;

```

```
85 +         }
86 +         e.preventDefault();
87 +     } catch(err) {
88 +         e.preventDefault();
89 +     }
90 + });
91 +
92 +
93 +
```

▽ 25 ████████ docs/html/search/all_36.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_36.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 7 ████████ docs/html/search/all_36.js □

```
... ... @@ -0,0 +1,7 @@
1 + var searchData=
2 + [
3 +   ['64_5fbt_5finteger_2ecl',['64_bit_integer.cl','[../../../64_bit_integer_8cl.html',1,'']],
4 +   ['64_5fbt_5finteger_2ecpp',['64_bit_integer.cpp','[../../../64_bit_integer_8cpp.html',1,'']],
5 +   ['64_5fbt_5finteger_2edox',['64_bit_integer.dox','[../../../64_bit_integer_8dox.html',1,'']],
6 +   ['64_2dbit_20integers_20and_20atomics',['64-bit Integers and Atomics','[../../../long64_bit_integer_tutorial.html',1,'tutorials']]]
7 + ];
```

▽ 25 ████████ docs/html/search/all_62.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_62.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
```

```

16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 7 docs/html/search/all_62.js □

...	...	@@ -0,0 +1,7 @@
		<pre> 1 + var searchData= 2 + 3 + ['bitmapheader',['bitmapHeader',['../structbitmap_header.html',1,'']]], 4 + ['bitmapinformationheader',['bitmapInformationHeader',['../structbitmap_information_header.html',1,'']]], 5 + ['bitmapmagic',['bitmapMagic',['../structbitmap_magic.html',1,'']]], 6 + ['bitsperpixel',['bitsPerPixel',['../structbitmap_information_header.html#ae25aec64837eed48f745ae7728af7dff',1,'bitmapInformation 7 +]];</pre>

▽ 25 docs/html/search/all_63.html □

...	...	@@ -0,0 +1,25 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html><head><title></title> 3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 4 + <link rel="stylesheet" type="text/css" href="search.css"/> 5 + <script type="text/javascript" src="all_63.js"></script> 6 + <script type="text/javascript" src="search.js"></script> 7 + </head> 8 + <body class="SRPage"> 9 + <div id="SRIndex"> 10 + <div class="SRStatus" id="Loading">Loading...</div> 11 + <div id="SRResults"></div> 12 + <script type="text/javascript"><!-- 13 + createResults(); 14 + --></script> 15 + <div class="SRStatus" id="Searching">Searching...</div> 16 + <div class="SRStatus" id="NoMatches">No Matches</div> 17 + <script type="text/javascript"><!-- 18 + document.getElementById("Loading").style.display="none"; 19 + document.getElementById("NoMatches").style.display="none"; 20 + var searchResults = new SearchResults("searchResults"); 21 + searchResults.Search(); 22 + --></script> 23 + </div> 24 + </body> 25 + </html></pre>

▽ 16 docs/html/search/all_63.js □

...	...	@@ -0,0 +1,16 @@
		<pre> 1 + var searchData= 2 + 3 + ['checksuccess',['checkSuccess',['../common_8cpp.html#a73727ed6f5d821d8c97756404e145644',1,'checkSuccess(cl_int errorNumber):&#16 4 + ['cleanupopencl',['cleanUpOpenCL',['../common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d',1,'cleanUpOpenCL(cl_context context, cl 5 + ['common_2ecpp',['common.cpp',['../common_8cpp.html',1,'']]], 6 + ['common_2eh',['common.h',['../common_8h.html',1,'']]], 7 + ['common_5errors_2edox',['common_errors.dox',['../common_errors_8dox.html',1,'']]], 8 + ['common_20issues',['Common Issues',['../common_issues.html',1,'']]], 9 + ['compressiontype',['compressionType',['../structbitmap_information_header.html#a1a6659ee7987cc1be662ec93a6f2eef7',1,'bitmapInfor 10 + ['createcommandqueue',['createCommandQueue',['../common_8cpp.html#a30ee399cc6a4b82d46c581f037b447fa',1,'createCommandQueue(cl_c 11 + ['createcontext',['createContext',['../common_8cpp.html#a6fc67d121370b02ac8bff71ec00a7665',1,'createContext(cl_context *context) 12 + ['createprogram',['createProgram',['../common_8cpp.html#a4feec45e4b990aad8e40cc3faa32a9c8',1,'createProgram(cl_context context, cl 13 + ['createstartx',['createStartX',['../mandelbrot_8cl.html#a4dffaa8ed5ea4612c75f705e514351c4a',1,'mandelbrot.cl']]],</pre>

```
14 +    ['creator1',[ 'creator1',[..]/structbitmap_header.html#ad1281577a12cb4314cf869877135231',1,'bitmapHeader']]],  
15 +    ['creator2',[ 'creator2',[..]/structbitmap_header.html#aafdfafe00204ad8448ab9cd98aa3040b2',1,'bitmapHeader']]]  
16 + ];
```

25 docs/html/search/all_65.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_65.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/all_65.js

```
... @@ -0,0 +1,4 @@  
1 + var searchData=  
2 + [  
3 +   ['errornumberToString',[ 'errorNumberToString',[.. /common_8cpp.html#a119c92d8d25b68950de4d0e6f337df18' ,1,'errorNumberToString(cl  
4 + ];
```

25 docs/html/search/all 66.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_66.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
```

```
24 + </body>
25 + </html>
```

20 docs/html/search/all_66.js

```
... @@ -0,0 +1,20 @@
1 + var searchData=
2 +
3 + ['filesize',[['fileSize',['../structbitmap_header.html#ad06f4dbac80aa4d85163d3862ed34197',1,'bitmapHeader']]],,
4 + ['fir_5ffloat',[['fir_float',['../fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c',1,'fir_float.cl']]],,
5 + ['fir_5ffloat_2ecl',[['fir_float.cl',['../fir_float_8cl.html',1,'']]],,
6 + ['fir_5ffloat_2ecpp',[['fir_float.cpp',['../fir_float_8cpp.html',1,'']]],,
7 + ['fir_5ffloat_2edox',[['fir_float.dox',['../fir_float_8dox.html',1,'']]],,
8 + ['fir_20filter',[['FIR Filter',['../fir_tutorial.html',1,'tutorials']]],,
9 + ['fw_5fb1',[['FW_BL',['../fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6',1,'fir_float.cl']]],,
10 + ['fw_5fbm',[['FW_BM',['../fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f',1,'fir_float.cl']]],,
11 + ['fw_5fbrr',[['FW_BR',['../fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566',1,'fir_float.cl']]],,
12 + ['fw_5fc1',[['FW_CL',['../fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e',1,'fir_float.cl']]],,
13 + ['fw_5fcml',[['FW_CM',['../fir_float_8cl.html#a5d47ed70581c7a693231547336cb00aa',1,'fir_float.cl']]],,
14 + ['fw_5fcr',[['FW_CR',['../fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19',1,'fir_float.cl']]],,
15 + ['fw_5fscale',[['FW_SCALE',['../fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba7210',1,'fir_float.cl']]],,
16 + ['fw_5ful',[['FW_UL',['../fir_float_8cl.html#ad4c882aae33d779624d02d0d88bae565',1,'fir_float.cl']]],,
17 + ['fw_5fum',[['FW_UM',['../fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01',1,'fir_float.cl']]],,
18 + ['fw_5fur',[['FW_UR',['../fir_float_8cl.html#a86163952d447939d88b2ab454efd091a',1,'fir_float.cl']]],,
19 + ['from_20c_20to_20opencl',[['From C to OpenCL',['../hello_world_open_c_lTutorial.html',1,'helloWorldTutorial']]]]]
20 + ];
```

25 docs/html/search/all_68.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_68.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

17 docs/html/search/all_68.js

```
... @@ -0,0 +1,17 @@
1 + var searchData=
2 + [
3 +   ['height',[['height',[..>structbitmap_information_header.html#a5c5209b385872825e8f9c629ac288a12',1,'bitmapInformationHeader']]], 
4 +   ['hello_5fworld_2edox',[['hello_world.dox',[..>hello_world_8dox.html',1,'']]], 
5 +   ['hello_5fworld_5fc_2ecpp',[['hello_world_c.cpp',[..>hello_world_c_8cpp.html',1,'']]], 
6 +   ['hello_5fworld_5fopencl',[['hello_world_opencl',[..>hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7',1,'hello_world_opencl']]], 
7 +   ['hello_5fworld_5fopencl_2ecl',[['hello_world_opencl.cl',[..>hello_world_opencl_8cl.html',1,'']]], 
8 +   ['hello_5fworld_5fopencl_2ecpp',[['hello_world_opencl.cpp',[..>hello_world_opencl_8cpp.html',1,'']]], 
9 +   ['hello_5fworld_5fopencl_2edox',[['hello_world_opencl.dox',[..>hello_world_opencl_8dox.html',1,'']]]]
```

```
10 + ['hello_5fworld_5frunning_2edox',['hello_world_running.dox',['../hello_world_running_8dox.html',1,'']]],  
11 + ['hello_5fworld_5fvector',['hello_world_vector',['../hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53af57d89',1,'hello_wo  
12 + ['hello_5fworld_5fvector_2ecl',['hello_world_vector.cl',['../hello_world_vector_8cl.html',1,'']]],  
13 + ['hello_5fworld_5fvector_2ecpp',['hello_world_vector.cpp',['../hello_world_vector_8cpp.html',1,'']]],  
14 + ['hello_5fworld_5fvector_2edox',['hello_world_vector.dox',['../hello_world_vector_8dox.html',1,'']]],  
15 + ['hello_20world,['Hello World',['..//hello_worldTutorial.html',1,'tutorials']]],  
16 + ['horizontalresolution',['horizontalResolution',['..//structbitmap_information_header.html#a39272c25c46f5628cdefc3965f4f6e0d',1,'t  
17 + ];
```

25 docs/html/search/all_69.html

```
... ... @@ -0,0 +1,25 @@  
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
2 + <html><head><title></title>  
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>  
4 + <link rel="stylesheet" type="text/css" href="search.css"/>  
5 + <script type="text/javascript" src="all_69.js"></script>  
6 + <script type="text/javascript" src="search.js"></script>  
7 + </head>  
8 + <body class="SRPage">  
9 + <div id="SRIndex">  
10 + <div class="SRStatus" id="Loading">Loading...</div>  
11 + <div id="SRResults"></div>  
12 + <script type="text/javascript"><!--  
13 + createResults();  
14 + --></script>  
15 + <div class="SRStatus" id="Searching">Searching...</div>  
16 + <div class="SRStatus" id="NoMatches">No Matches</div>  
17 + <script type="text/javascript"><!--  
18 + document.getElementById("Loading").style.display="none";  
19 + document.getElementById("NoMatches").style.display="none";  
20 + var searchResults = new SearchResults("searchResults");  
21 + searchResults.Search();  
22 + --></script>  
23 + </div>  
24 + </body>  
25 + </html>
```

15 docs/html/search/all_69.js

```
... ... @@ -0,0 +1,15 @@  
1 + var searchData=  
2 + [  
3 + ['image_2ecpp',['image.cpp',['..//image_8cpp.html',1,'']]],  
4 + ['image_2eh',['image.h',['..//image_8h.html',1,'']]],  
5 + ['image_5fobjects_2edox',['image_objects.dox',['..//image_objects_8dox.html',1,'']]],  
6 + ['image_5fscaling',['image_scaling',['..//image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26',1,'image_scaling.cl']]],  
7 + ['image_5fscaling_2ecl',['image_scaling.cl',['..//image_scaling_8cl.html',1,'']]],  
8 + ['image_5fscaling_2ecpp',['image_scaling.cpp',['..//image_scaling_8cpp.html',1,'']]],  
9 + ['image_5fscaling_2edox',['image_scaling.dox',['..//image_scaling_8dox.html',1,'']]],  
10 + ['imagechanneldatatypeToString',['imageChannelDataTypeToString',['..//common_8cpp.html#af351b63fc0df43f3702d01de76d344ae',1,'imageChann  
11 + ['imagechannelorderToString',['imageChannelOrderToString',['..//common_8cpp.html#afbc9c225ddee8ca4913817d1d9f55307',1,'imageChanne  
12 + ['image_20objects,['Image Objects',['..//image_objects_tutorial.html',1,'tutorials']]],  
13 + ['image_20scaling,['Image Scaling',['..//image_scaling_tutorial.html',1,'imageObjectsTutorial']]],  
14 + ['isextensionsupported',['isExtensionSupported',['..//common_8cpp.html#ad800ae2b2358904a9051a31f76e711c3',1,'isExtensionSupported  
15 + ];
```

25 docs/html/search/all_6c.html

```
... ... @@ -0,0 +1,25 @@  
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
2 + <html><head><title></title>  
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>  
4 + <link rel="stylesheet" type="text/css" href="search.css"/>  
5 + <script type="text/javascript" src="all_6c.js"></script>  
6 + <script type="text/javascript" src="search.js"></script>  
7 + </head>
```

```

8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▼ 6 ████████ docs/html/search/all_6c.js □

...	...	@@ -0,0 +1,6 @@
		<pre> 1 + var searchData= 2 + [3 + ['loadfrombitmap',['loadFromBitmap',['../image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39' ,1,'loadFromBitmap(const string filename)']], 4 + ['long_5fvectors',['long_vectors',['../64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8fe75539098' ,1,'64_bit_integer.cl']]], 5 + ['luminancetorgb',['luminanceToRGB',['../image_8cpp.html#a9390e4ddc634d83452a15e93017ab979' ,1,'luminanceToRGB(const unsigned char*, 6 +]; </pre>

▼ 25 ████████ docs/html/search/all_6d.html □

...	...	@@ -0,0 +1,25 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html><head><title></title> 3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 4 + <link rel="stylesheet" type="text/css" href="search.css"/> 5 + <script type="text/javascript" src="all_6d.js"></script> 6 + <script type="text/javascript" src="search.js"></script> 7 + </head> 8 + <body class="SRPage"> 9 + <div id="SRIndex"> 10 + <div class="SRStatus" id="Loading">Loading...</div> 11 + <div id="SRResults"></div> 12 + <script type="text/javascript"><!-- 13 + createResults(); 14 + --></script> 15 + <div class="SRStatus" id="Searching">Searching...</div> 16 + <div class="SRStatus" id="NoMatches">No Matches</div> 17 + <script type="text/javascript"><!-- 18 + document.getElementById("Loading").style.display="none"; 19 + document.getElementById("NoMatches").style.display="none"; 20 + var searchResults = new SearchResults("searchResults"); 21 + searchResults.Search(); 22 + --></script> 23 + </div> 24 + </body> 25 + </html> </pre>

▼ 14 ████████ docs/html/search/all_6d.js □

...	...	@@ -0,0 +1,14 @@
		<pre> 1 + var searchData= 2 + [3 + ['magic',['magic',['../structbitmap_magic.html#a477646205ecad5019613626f0b478694' ,1,'bitmapMagic']]], 4 + ['main',['main',['../64_bit_integer_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe' ,1,'main(void):64_bit_integer.cpp']] , 5 + ['main_5fpage_2edox',['main_page.dox',['../main_page_8dox.html',1,'']]], 6 + ['mandelbrot',['mandelbrot',['../mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a' ,1,'mandelbrot.cl']]], </pre>

```
7 + ['mandelbrot_2ec1',[ 'mandelbrot.cl',[ '../mandelbrot_8cl.html',1,'']]],  
8 + ['mandelbrot_2ecpp',[ 'mandelbrot.cpp',[ '../mandelbrot_8cpp.html',1,'']]],  
9 + ['mandelbrot_2edox',[ 'mandelbrot.dox',[ '../mandelbrot_8dox.html',1,'']]],  
10 + ['mandelbrot',[ 'Mandelbrot',[ '../mandelbrot_tutorial.html',1,'tutorials']]],[  
11 + ['max_5filter',[ 'MAX_ITER',[ '../mandelbrot_8cl.html#a517c6f195c75b9dd0f3aad65326f3b',1,'mandelbrot.cl']]],[  
12 + ['memory_5buffers_2edox',[ 'memory_buffers.dox',[ '../memory_buffers_8dox.html',1,'']]],[  
13 + ['memory_20buffers',[ 'Memory Buffers',[ '../memory_buffers_tutorial.html',1,'tutorials']]][  
14 + ];
```

25 docs/html/search/all_6e.html

```
... ... @@ -0,0 +1,25 @@  
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
2 + <html><head><title></title>  
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>  
4 + <link rel="stylesheet" type="text/css" href="search.css"/>  
5 + <script type="text/javascript" src="all_6e.js"></script>  
6 + <script type="text/javascript" src="search.js"></script>  
7 + </head>  
8 + <body class="SRPage">  
9 + <div id="SRIndex">  
10 + <div class="SRStatus" id="Loading">Loading...</div>  
11 + <div id="SRResults"></div>  
12 + <script type="text/javascript"><!--  
13 + createResults();  
14 + --></script>  
15 + <div class="SRStatus" id="Searching">Searching...</div>  
16 + <div class="SRStatus" id="NoMatches">No Matches</div>  
17 + <script type="text/javascript"><!--  
18 + document.getElementById("Loading").style.display="none";  
19 + document.getElementById("NoMatches").style.display="none";  
20 + var searchResults = new SearchResults("searchResults");  
21 + searchResults.Search();  
22 + --></script>  
23 + </div>  
24 + </body>  
25 + </html>
```

6 docs/html/search/all_6e.js

```
... ... @@ -0,0 +1,6 @@  
1 + var searchData=  
2 + [  
3 + ['numberofcolorplanes',[ 'numberOfColorPlanes',[ '../structbitmap_information_header.html#a92ce2fb0499b65ccb0dccbec12b44c4c',1,'bit'  
4 + ['numberofcolors',[ 'numberOfColors',[ '../structbitmap_information_header.html#ab8a3e77e6b66d1361d65523a9910f5f',1,'bitmapInformationHeader'...  
5 + ['numberofimportantcolors',[ 'numberOfImportantColors',[ '../structbitmap_information_header.html#aa6296b037bae6831a6c53f6115c29769',1,'im'  
6 + ];
```

25 docs/html/search/all_6f.html

```
... ... @@ -0,0 +1,25 @@  
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
2 + <html><head><title></title>  
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>  
4 + <link rel="stylesheet" type="text/css" href="search.css"/>  
5 + <script type="text/javascript" src="all_6f.js"></script>  
6 + <script type="text/javascript" src="search.js"></script>  
7 + </head>  
8 + <body class="SRPage">  
9 + <div id="SRIndex">  
10 + <div class="SRStatus" id="Loading">Loading...</div>  
11 + <div id="SRResults"></div>  
12 + <script type="text/javascript"><!--  
13 + createResults();  
14 + --></script>  
15 + <div class="SRStatus" id="Searching">Searching...</div>  
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
```

```
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/all_6f.js □

...	...	@@ -0,0 +1,4 @@
	1	+ var searchData=
	2	+ [
	3	+ ['offset',['offset',['../structbitmap_header.html#a5e74a0bfe6340ad581369b48bce59dbe' ,1,'bitmapHeader']]
	4	+];

▽ 25 ━━━━ docs/html/search/all_70.html □

...	...	@@ -0,0 +1,25 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html><head><title></title>
	3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	4	+ <link rel="stylesheet" type="text/css" href="search.css"/>
	5	+ <script type="text/javascript" src="all_70.js"></script>
	6	+ <script type="text/javascript" src="search.js"></script>
	7	+ </head>
	8	+ <body class="SRPage">
	9	+ <div id="SRIndex">
	10	+ <div class="SRStatus" id="Loading">Loading...</div>
	11	+ <div id="SRResults"></div>
	12	+ <script type="text/javascript"><!--
	13	+ createResults();
	14	+ --></script>
	15	+ <div class="SRStatus" id="Searching">Searching...</div>
	16	+ <div class="SRStatus" id="NoMatches">No Matches</div>
	17	+ <script type="text/javascript"><!--
	18	+ document.getElementById("Loading").style.display="none";
	19	+ document.getElementById("NoMatches").style.display="none";
	20	+ var searchResults = new SearchResults("searchResults");
	21	+ searchResults.Search();
	22	+ --></script>
	23	+ </div>
	24	+ </body>
	25	+ </html>

▽ 5 ━━━━ docs/html/search/all_70.js □

...	...	@@ -0,0 +1,5 @@
	1	+ var searchData=
	2	+ [
	3	+ ['printprofilinginfo',['printProfilingInfo',['../common_8cpp.html#a33ff0013574626bb47147495e02b5d08' ,1,'printProfilingInfo(cl_eve']
	4	+ ['printsupported2dimageformats',['printSupported2DImageFormats',['../common_8cpp.html#a73604ae74d9ed8d35cacce59b92772a' ,1,'print']
	5	+];

▽ 25 ━━━━ docs/html/search/all_71.html □

...	...	@@ -0,0 +1,25 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html><head><title></title>
	3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	4	+ <link rel="stylesheet" type="text/css" href="search.css"/>
	5	+ <script type="text/javascript" src="all_71.js"></script>
	6	+ <script type="text/javascript" src="search.js"></script>
	7	+ </head>
	8	+ <body class="SRPage">

```

9  + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▽ 5 ████████ docs/html/search/all_71.js □

...	...	@@ -0,0 +1,5 @@
	1	+ var searchData=
	2	+ [
	3	+ ['quick_5fstart_2edox',['quick_start.dox',['../quick_start_8dox.html',1,'']]],
	4	+ ['quick_20start_20guide',['Quick Start Guide',['../quick_start.html',1,'']]]
	5	+];

▽ 25 ████████ docs/html/search/all_72.html □

...	...	@@ -0,0 +1,25 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html><head><title></title>
	3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	4	+ <link rel="stylesheet" type="text/css" href="search.css"/>
	5	+ <script type="text/javascript" src="all_72.js"></script>
	6	+ <script type="text/javascript" src="search.js"></script>
	7	+ </head>
	8	+ <body class="SRPage">
	9	+ <div id="SRIndex">
	10	+ <div class="SRStatus" id="Loading">Loading...</div>
	11	+ <div id="SRResults"></div>
	12	+ <script type="text/javascript"><!--
	13	+ createResults();
	14	+ --></script>
	15	+ <div class="SRStatus" id="Searching">Searching...</div>
	16	+ <div class="SRStatus" id="NoMatches">No Matches</div>
	17	+ <script type="text/javascript"><!--
	18	+ document.getElementById("Loading").style.display="none";
	19	+ document.getElementById("NoMatches").style.display="none";
	20	+ var searchResults = new SearchResults("searchResults");
	21	+ searchResults.Search();
	22	+ --></script>
	23	+ </div>
	24	+ </body>
	25	+ </html>

▽ 8 ████████ docs/html/search/all_72.js □

...	...	@@ -0,0 +1,8 @@
	1	+ var searchData=
	2	+ [
	3	+ ['running_20the_20samples',['Running the Samples',['../hello_world_running_tutorial.html',1,'helloWorldTutorial']]],
	4	+ ['rawbitmapsize',['rawBitmapSize',['../structbitmap_information_header.html#abd9001c6c1eefbef9c53f15ec6f3162a',1,'bitmapInformati
	5	+ ['rgbatorgb',['RGBAToRGB',['../image_8cpp.html#a872cec0732df69b80796a61acea716f0',1,'RGBAToRGB(const unsigned char *const rgbaDat
	6	+ ['rgbtoluminance',['RGBToLuminance',['../image_8cpp.html#a75fa143dccc45f3d5dc030884ca09cc9',1,'RGBToLuminance(const unsigned char
	7	+ ['rgbtorgba',['RGBToRGBA',['../image_8cpp.html#a83b7aea3d44c26db222227c0dc5d19a',1,'RGBToRGBA(const unsigned char *const rgbData
	8	+];

25 docs/html/search/all_73.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_73.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

22 docs/html/search/all 73.js

```
... @@ -0,0 +1,22 @@
...
1 + var searchData=
2 +
3 + ['sampler',[['sampler',['../image_scaling_8cl.html#a9165c6046146d2d28cc268394d585f17',1,'image_scaling.cl']]],+
4 + ['savetobitmap',[['saveToBitmap',['../image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31',1,'saveToBitmap(string filename, int width, int height)']]],
5 + ['sgemm',[['sgemm',['../sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25',1,'sgemm.cl']]],+
6 + ['sgemm_2ecl',[['sgemm.cl',['../sgemm_8cl.html',1,'']]],+
7 + ['sgemm_2ecpp',[['sgemm.cpp',['../sgemm_8cpp.html',1,'']]],+
8 + ['sgemm_2edox',[['sgemm.dox',['../sgemm_8dox.html',1,'']]],+
9 + ['sgemminitialize',[['sgemmInitialize',['../sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6aff',1,'sgemm.cpp']]],+
10 + ['sgemm',[['SGEMM',['../sgemm_tutorial.html',1,'tutorials']]],+
11 + ['size',[['size',['../structbitmap_information_header.html#afd30cb5246210713920211afb56f13f0',1,'bitmapInformationHeader']]],+
12 + ['sobel',[['sobel',['../sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850',1,'sobel.cl']]],+
13 + ['sobel_2ecl',[['sobel.cl',['../sobel_8cl.html',1,'']]],+
14 + ['sobel_2ecpp',[['sobel.cpp',['../sobel_8cpp.html',1,'']]],+
15 + ['sobel_2edox',[['sobel.dox',['../sobel_8dox.html',1,'']]],+
16 + ['sobel_5fno_5fvectors',[['sobel_no_vectors',['../sobel_no_vectors_8cl.html#aba83b870a7ef709e9a5608496084ec3a',1,'sobel_no_vectors.cl']]],+
17 + ['sobel_5fno_5fvectors_2ecl',[['sobel_no_vectors.cl',['../sobel_no_vectors_8cl.html',1,'']]],+
18 + ['sobel_5fno_5fvectors_2ecpp',[['sobel_no_vectors.cpp',['../sobel_no_vectors_8cpp.html',1,'']]],+
19 + ['sobel_20filter',[['Sobel Filter',['../sobel_tutorial.html',1,'tutorials']]],+
20 + ['support',[['Support',['../support.html',1,'']]],+
21 + ['support_2edox',[['support.dox',['../support_8dox.html',1,'']]]]+
22 + ];
```

25 docs/html/search/all_74.html

Load diff

< 10 docs/html/search/all_74.js □

```
...     ... @@ -0,0 +1,10 @@
```

```
1 + var searchData=
2 +
3 + ['template',[ 'template',[ '../template_8cl.html#a3fd9dfc155a2b110d8632041d0961625',1,'template.cl']] ],
4 + ['template_2ecl',[ 'template.cl',[ '../template_8cl.html',1,'']] ],
5 + ['template_2ecpp',[ 'template.cpp',[ '../template_8cpp.html',1,'']] ],
6 + ['template_2edox',[ 'template.dox',[ '../template_8dox.html',1,'']] ],
7 + ['template',[ 'Template',[ '../templateTutorial.html',1,'tutorials']] ],
8 + ['tutorials',[ 'Tutorials',[ '../tutorials.html',1,'']] ],
9 + ['tutorials_2edox',[ 'tutorials.dox',[ '../tutorials_8dox.html',1,'']] ]
10 + ];
```

▽ 25 ━━━━ docs/html/search/all_76.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_76.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 5 ━━━━ docs/html/search/all_76.js □

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 +
3 + ['vectorizing_20your_20opencl_20code',[ 'Vectorizing your OpenCL code',[ '../hello_world_vector_tutorial.html',1,'helloWorldTutorial']] ],
4 + ['verticalresolution',[ 'verticalResolution',[ '../structbitmap_information_header.html#a9596ce6332941aafbbf85b7e379e948f',1,'bitmapInformationHeader']] ],
5 + ];
```

▽ 25 ━━━━ docs/html/search/all_77.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="all_77.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
```

```
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ■■■■■ docs/html/search/all_77.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['width',['width',[('../structbitmap_information_header.html#abb2a108b489900502eb06b3982b0dc02',1,'bitmapInformationHeader')]]
4 + ];
```

▽ 25 ■■■■■ docs/html/search/classes_62.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="classes_62.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 6 ■■■■■ docs/html/search/classes_62.js □

```
... ... @@ -0,0 +1,6 @@
1 + var searchData=
2 +
3 + ['bitmapheader',['bitmapHeader',[('../structbitmap_header.html',1,'')]],,
4 + ['bitmapinformationheader',['bitmapInformationHeader',[('../structbitmap_information_header.html',1,'')]],,
5 + ['bitmapmagic',['bitmapMagic',[('../structbitmap_magic.html',1,'')]]]
6 + ];
```

▽ BIN ■■■■■ docs/html/search/close.png □

Unable to render code block

▽ 25 ■■■■■ docs/html/search/defines_66.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
```

```
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="defines_66.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

13 docs/html/search/defines_66.js

```
... @@ -0,0 +1,13 @@
...
1 + var searchData=
2 +
3 + ['fw_5fbl',['FW_BL',[.../fir_float_8cl.html#a436f4eeb8849d5ddf8c0fcba12a847b6',1,'fir_float.cl']]],+
4 + ['fw_5fbm',['FW_BM',[.../fir_float_8cl.html#ad946956a7dc74b2b24008dfbcf6cc56f',1,'fir_float.cl']]],+
5 + ['fw_5fbr',['FW_BR',[.../fir_float_8cl.html#ac2d22f5bd6ac4522b7fe5cbc1b32c566',1,'fir_float.cl']]],+
6 + ['fw_5fc1',['FW_CL',[.../fir_float_8cl.html#ac7935f8e7004ebaa9c1cb835ebb7576e',1,'fir_float.cl']]],+
7 + ['fw_5fcm',['FW_CM',[.../fir_float_8cl.html#a5d47ed70581c7a693231547336cb0aa',1,'fir_float.cl']]],+
8 + ['fw_5fcr',['FW_CR',[.../fir_float_8cl.html#a1a85069496abcfdd6757ca710c185c19',1,'fir_float.cl']]],+
9 + ['fw_5fscale',['FW_SCALE',[.../fir_float_8cl.html#a054b6a28d5e2412083493f2d43ba7210',1,'fir_float.cl']]],+
10 + ['fw_5ful',['FW_UL',[.../fir_float_8cl.html#ad4c882aae33d779624d02d0d88bae565',1,'fir_float.cl']]],+
11 + ['fw_5fum',['FW_UM',[.../fir_float_8cl.html#ada3c939d265394a260f3bcf800c16d01',1,'fir_float.cl']]],+
12 + ['fw_5fur',['FW_UR',[.../fir_float_8cl.html#a86163952d447939d88b2ab454efd091a',1,'fir_float.cl']]]+
13 + ];
```

25 docs/html/search/defines_6d.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="defines_6d.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
```

```
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/defines_6d.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['max_5filter',[ 'MAX_ITER',[ '../mandelbrot_8cl.html#acd517c6f195c75b9dd0f3aad65326f3b',1,'mandelbrot.cl']] ]
4 + ];
```

▽ 25 ━━━━ docs/html/search/files_36.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_36.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 6 ━━━━ docs/html/search/files_36.js □

```
... ... @@ -0,0 +1,6 @@
1 + var searchData=
2 +
3 + ['64_5fbt_5finteger_2ec1',[ '64_bit_integer.cl',[ '../64_bit_integer_8cl.html',1,'']] ],
4 + ['64_5fbt_5finteger_2ecpp',[ '64_bit_integer.cpp',[ '../64_bit_integer_8cpp.html',1,'']] ],
5 + ['64_5fbt_5finteger_2edox',[ '64_bit_integer.dox',[ '../64_bit_integer_8dox.html',1,'']] ]
6 + ];
```

▽ 25 ━━━━ docs/html/search/files_63.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_63.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
```

```

16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▽ 6 ━━━━━━ docs/html/search/files_63.js □

...	...	@@ -0,0 +1,6 @@
		<pre> 1 + var searchData= 2 + 3 + ['common_2ecpp',['common.cpp',['../common_8cpp.html',1,'']]], 4 + ['common_2eh',['common.h',['../common_8h.html',1,'']]], 5 + ['common_5ferrors_2odox',['common_errors.dox',['../common__errors_8dox.html',1,'']]] 6 + </pre>

▽ 25 ━━━━━━ docs/html/search/files_66.html □

...	...	@@ -0,0 +1,25 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html><head><title></title> 3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 4 + <link rel="stylesheet" type="text/css" href="search.css"/> 5 + <script type="text/javascript" src="files_66.js"></script> 6 + <script type="text/javascript" src="search.js"></script> 7 + </head> 8 + <body class="SRPage"> 9 + <div id="SRIndex"> 10 + <div class="SRStatus" id="Loading">Loading...</div> 11 + <div id="SRResults"></div> 12 + <script type="text/javascript"><!-- 13 + createResults(); 14 + --></script> 15 + <div class="SRStatus" id="Searching">Searching...</div> 16 + <div class="SRStatus" id="NoMatches">No Matches</div> 17 + <script type="text/javascript"><!-- 18 + document.getElementById("Loading").style.display="none"; 19 + document.getElementById("NoMatches").style.display="none"; 20 + var searchResults = new SearchResults("searchResults"); 21 + searchResults.Search(); 22 + --></script> 23 + </div> 24 + </body> 25 + </html> </pre>

▽ 6 ━━━━━━ docs/html/search/files_66.js □

...	...	@@ -0,0 +1,6 @@
		<pre> 1 + var searchData= 2 + 3 + ['fir_5ffloat_2ecl',['fir_float.cl',['../fir_float_8cl.html',1,'']]], 4 + ['fir_5ffloat_2ecpp',['fir_float.cpp',['../fir_float_8cpp.html',1,'']]], 5 + ['fir_5ffloat_2odox',['fir_float.dox',['../fir_float_8dox.html',1,'']]'] 6 + </pre>

▽ 25 ━━━━━━ docs/html/search/files_68.html □

...	...	@@ -0,0 +1,25 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html><head><title></title> 3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 4 + <link rel="stylesheet" type="text/css" href="search.css"/> 5 + <script type="text/javascript" src="files_68.js"></script> </pre>

```
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 12 docs/html/search/files_68.js

```
... ... @@ -0,0 +1,12 @@
1 + var searchData=
2 + [
3 + ['hello_5fworld_2edox',['hello_world.dox',[..../hello_world_8dox.html',1,'']]],
4 + ['hello_5fworld_5fc_2ecpp',['hello_world_c.cpp',[..../hello_world_c_8cpp.html',1,'']]],
5 + ['hello_5fworld_5fopencl_2ecl',['hello_world_opencl.cl',[..../hello_world_opencl_8cl.html',1,'']]],
6 + ['hello_5fworld_5fopencl_2ecpp',['hello_world_opencl.cpp',[..../hello_world_opencl_8cpp.html',1,'']]],
7 + ['hello_5fworld_5fopencl_2edox',['hello_world_opencl.dox',[..../hello_world_opencl_8dox.html',1,'']]],
8 + ['hello_5fworld_5frunning_2edox',['hello_world_running.dox',[..../hello_world_running_8dox.html',1,'']]],
9 + ['hello_5fworld_5fvector_2ecl',['hello_world_vector.cl',[..../hello_world_vector_8cl.html',1,'']]],
10 + ['hello_5fworld_5fvector_2ecpp',['hello_world_vector.cpp',[..../hello_world_vector_8cpp.html',1,'']]],
11 + ['hello_5fworld_5fvector_2edox',['hello_world_vector.dox',[..../hello_world_vector_8dox.html',1,'']]]
12 + ];
```

▼ 25 docs/html/search/files_69.html

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_69.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 9 docs/html/search/files_69.js

... ...

```
@@ -0,0 +1,9 @@
1 + var searchData=
2 + [
3 +   ['image_2ecpp',['image.cpp',['../image_8cpp.html',1,'']]],
4 +   ['image_2eh',['image.h',['../image_8h.html',1,'']]],
5 +   ['image_5fobjects_2edox',['image_objects.dox',['../image__objects_8dox.html',1,'']]],
6 +   ['image_5fscaling_2ecl',['image_scaling.cl',['../image__scaling_8cl.html',1,'']]],
7 +   ['image_5fscaling_2ecpp',['image_scaling.cpp',['../image__scaling_8cpp.html',1,'']]],
8 +   ['image_5fscaling_2edox',['image_scaling.dox',['../image__scaling_8dox.html',1,'']]]
9 + ];
```

▽ 25 ■■■■■ docs/html/search/files_6d.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_6d.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 8 ■■■■■ docs/html/search/files_6d.js □

```
... ... @@ -0,0 +1,8 @@
1 + var searchData=
2 + [
3 +   ['main_5fpage_2edox',['main_page.dox',['../main__page_8dox.html',1,'']]],
4 +   ['mandelbrot_2ecl',['mandelbrot.cl',['../mandelbrot_8cl.html',1,'']]],
5 +   ['mandelbrot_2ecpp',['mandelbrot.cpp',['../mandelbrot_8cpp.html',1,'']]],
6 +   ['mandelbrot_2edox',['mandelbrot.dox',['../mandelbrot_8dox.html',1,'']]],
7 +   ['memory_5fbuffers_2edox',['memory_buffers.dox',['../memory__buffers_8dox.html',1,'']]]
8 + ];
```

▽ 25 ■■■■■ docs/html/search/files_71.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_71.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
```

```
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 4 ████████ docs/html/search/files_71.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['quick_5fstart_2edox',[ 'quick_start.dox',[ '../quick_start_8dox.html',1,'']] ]
4 + ];
```

▼ 25 ████████ docs/html/search/files_73.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_73.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 12 ████████ docs/html/search/files_73.js □

```
... ... @@ -0,0 +1,12 @@
1 + var searchData=
2 +
3 + ['sgemm_2ecl',[ 'sgemm.cl',[ '../sgemm_8cl.html',1,'']] ],
4 + ['sgemm_2ecpp',[ 'sgemm.cpp',[ '../sgemm_8cpp.html',1,'']] ],
5 + ['sgemm_2edox',[ 'sgemm.dox',[ '../sgemm_8dox.html',1,'']] ],
6 + ['sobel_2ecl',[ 'sobel.cl',[ '../sobel_8cl.html',1,'']] ],
7 + ['sobel_2ecpp',[ 'sobel.cpp',[ '../sobel_8cpp.html',1,'']] ],
8 + ['sobel_2edox',[ 'sobel.dox',[ '../sobel_8dox.html',1,'']] ],
9 + ['sobel_5fno_5fvectors_2ecl',[ 'sobel_no_vectors.cl',[ '../sobel_no_vectors_8cl.html',1,'']] ],
10 + ['sobel_5fno_5fvectors_2ecpp',[ 'sobel_no_vectors.cpp',[ '../sobel_no_vectors_8cpp.html',1,'']] ],
11 + ['support_2edox',[ 'support.dox',[ '../support_8dox.html',1,'']] ]
12 + ];
```

▼ 25 ████████ docs/html/search/files_74.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="files_74.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 7 docs/html/search/files_74.js □

```
... ... @@ -0,0 +1,7 @@
1 + var searchData=
2 + [
3 +   ['template_2ecl',[ 'template.cl',['../template_8cl.html',1,'']] ],
4 +   ['template_2ecpp',[ 'template.cpp',['../template_8cpp.html',1,'']] ],
5 +   ['template_2edox',[ 'template.dox',['../template_8dox.html',1,'']] ],
6 +   ['tutorials_2edox',[ 'tutorials.dox',['../tutorials_8dox.html',1,'']] ]
7 + ];
```

▼ 25 docs/html/search/functions_63.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_63.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 9 docs/html/search/functions_63.js □

```
... ... @@ -0,0 +1,9 @@
1 + var searchData=
2 + [
3 +   ['checksuccess',['checkSuccess',[.../common_8cpp.html#a73727ed6f5d821d8c97756404e145644',1,'checkSuccess(cl_int errorNumber):&#160;
4 +   ['cleanupopencl',['cleanUpOpenCL',[.../common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d',1,'cleanUpOpenCL(cl_context context, cl_int errorNumber):&#160;
5 +   ['createcommandqueue',['createCommandQueue',[.../common_8cpp.html#a30ee399cc6a4b82d46c581f037b447fa',1,'createCommandQueue(cl_context context, cl_int errorNumber):&#160;
6 +   ['createcontext',['createContext',[.../common_8cpp.html#a6fc67d121370b02ac8bff71ec00a7665',1,'createContext(cl_context *context, cl_int errorNumber):&#160;
7 +   ['createprogram',['createProgram',[.../common_8cpp.html#a4feec45e4b990aad8e40cc3faa32a9c8',1,'createProgram(cl_context context, cl_int errorNumber):&#160;
8 +   ['createstartx,['createStartX',[.../mandelbrot_8cl.html#a4dff8ed5ea4612c75f705e514351c4a',1,'mandelbrot.cl']]'
9 + ];
```

25 docs/html/search/functions_65.html

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_65.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/functions_65.js

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['errornumbertostring',['errorNumberToString',[.../common_8cpp.html#a119c92d8d25b68950de4d0e6f337df18',1,'errorNumberToString(cl_int errorNumber):&#160;
4 + ];
```

25 docs/html/search/functions_66.html

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_66.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
```

```
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/functions_66.js

```
. @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['fir_5fffloat',['fir_float','../fir_float_8cl.html#a1bacdbaeb8f7bf3c8ac34929a28e689c',1,'fir_float.cl']]
4 + ];
```

25 docs/html/search/functions_68.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_68.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

5 docs/html/search/functions_68.js

```
. @@ -0,0 +1,5 @@
1 + var searchData=
2 + [
3 +   ['hello_5fworld_5fopencl',['hello_world_opencl',[..../hello_world_opencl_8cl.html#a1e483e8dc82df49f47005c9ede1f0ed7',1,'hello_w
4 +   ['hello_5fworld_5fvector',['hello_world_vector',[..../hello_world_vector_8cl.html#afbd9d391c741f52cb9cd5a53af57d89',1,'hello_w
5 + ];
```

25 docs/html/search/functions_69.html

```
. @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_69.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
```

```

8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▽ 7 docs/html/search/functions_69.js □

...	...	@@ -0,0 +1,7 @@
1	+ var searchData=	
2	+ [
3	+ ['image_5fscaling',['image_scaling',[('../image_scaling_8cl.html#a2f2c7656161bcd4a3956c362d0052b26',1,'image_scaling.cl')]],	
4	+ ['imagechanneldatatypeToString',['imageChannelDataTypeToString',[('../common_8cpp.html#af351b63fc0df43f3702d01de76d344ae',1,'image	
5	+ ['imagechannelorderToString',['imageChannelOrderToString',[('../common_8cpp.html#afbc9c225ddee8ca4913817d1d9f55307',1,'imageChanne	
6	+ ['isextensionsupported',['isExtensionSupported',[('../common_8cpp.html#ad800ae2b2358904a9051a31f76e711c3',1,'isExtensionSupported')],	
7	+];	

▽ 25 docs/html/search/functions_6c.html □

...	...	@@ -0,0 +1,25 @@
1	+ !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html><head><title></title>	
3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
4	+ <link rel="stylesheet" type="text/css" href="search.css"/>	
5	+ <script type="text/javascript" src="functions_6c.js"></script>	
6	+ <script type="text/javascript" src="search.js"></script>	
7	+ </head>	
8	+ <body class="SRPage">	
9	+ <div id="SRIndex">	
10	+ <div class="SRStatus" id="Loading">Loading...</div>	
11	+ <div id="SRResults"></div>	
12	+ <script type="text/javascript"><!--	
13	+ createResults();	
14	+ --></script>	
15	+ <div class="SRStatus" id="Searching">Searching...</div>	
16	+ <div class="SRStatus" id="NoMatches">No Matches</div>	
17	+ <script type="text/javascript"><!--	
18	+ document.getElementById("Loading").style.display="none";	
19	+ document.getElementById("NoMatches").style.display="none";	
20	+ var searchResults = new SearchResults("searchResults");	
21	+ searchResults.Search();	
22	+ --></script>	
23	+ </div>	
24	+ </body>	
25	+ </html>	

▽ 6 docs/html/search/functions_6c.js □

...	...	@@ -0,0 +1,6 @@
1	+ var searchData=	
2	+ [
3	+ ['loadfrombitmap',['loadFromBitmap',[('../image_8cpp.html#a24ebc43a2f3d72aff84912a1a69f2c39',1,'loadFromBitmap(const string filename&,&void* bitmap)')],	
4	+ ['long_5fvectors',['long_vectors',[('../64_bit_integer_8cl.html#a6bcf29a04ecbeff8aa2ed8fe75539098',1,'64_bit_integer.cl')]],	
5	+ ['luminancetorgb',['luminanceToRGB',[('../image_8cpp.html#a9390e4ddc634d83452a15e93017ab979',1,'luminanceToRGB(const unsigned char& src, const float r, const float g, const float b, const float a, void* dst)')],	

```
6 + ];
```

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_6d.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

```
5 docs/html/search/functions_6d.js
```

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 + [
3 + ['main',[['main',['..64_bit_integer_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe',1,'main(void):=&#160;64_bit_integer.cpp'],[['..',
4 + ['mandelbrot',[['mandelbrot',['..mandelbrot_8cl.html#aa9c49529b3f34c7675aedea1b068ef9a',1,'mandelbrot.cl']]'
5 + ]];
```

```
25 docs/html/search/functions_70.html
```

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_70.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
```

25 + </html>

▽ 5 ━━━━━━ docs/html/search/functions_70.js □

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 +
3 + ['printprofilinginfo',[ 'printProfilingInfo',[ '../common_8cpp.html#a33ff0013574626bb47147495e02b5d08' ,1,'printProfilingInfo(cl_eve
4 + ['printsupported2dimageformats',[ 'printSupported2DImageFormats',[ '../common_8cpp.html#a736045ae74d9ed8d35cacce59b92772a' ,1,'print
5 + ];
```

▽ 25 ━━━━━━ docs/html/search/functions_72.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_72.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 6 ━━━━━━ docs/html/search/functions_72.js □

```
... ... @@ -0,0 +1,6 @@
1 + var searchData=
2 +
3 + ['rgbatorgb',[ 'RGBAToRGB',[ '../image_8cpp.html#a872cec0732df69b80796a61acea716f0' ,1,'RGBAToRGB(const unsigned char *const rgbaDat
4 + ['rgbtoluminance',[ 'RGBToLuminance',[ '../image_8cpp.html#a75fa143dccc45f3d5dc030884ca09cc9' ,1,'RGBToLuminance(const unsigned char
5 + ['rgbtorgba',[ 'RGBToRGBA',[ '../image_8cpp.html#a83b7aea3d44c26db222227c0dc5d19a' ,1,'RGBToRGBA(const unsigned char *const rgbData
6 + ];
```

▽ 25 ━━━━━━ docs/html/search/functions_73.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_73.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
```

```
+ --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 8 docs/html/search/functions_73.js □

```
... ... @@ -0,0 +1,8 @@
1 + var searchData=
2 +
3 + ['savetobitmap',[ 'saveToBitmap',[ '../image_8cpp.html#ad7fed8ed5795a8ddd3e86265cc5a4d31',1,'saveToBitmap(string filename, int width, int height, int stride, int pitch)' ]],
4 + ['sgemm',[ 'sgemm',[ '../sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25',1,'sgemm.cl' ]]],
5 + ['sgemminitialize',[ 'sgemmInitialize',[ '../sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6aff',1,'sgemm.cpp' ]]],
6 + ['sobel',[ 'sobel',[ '../sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850',1,'sobel.cl' ]]],
7 + ['sobel_5fno_5fvectors',[ 'sobel_no_vectors',[ '../sobel_no_vectors_8cl.html#aba83b870a7ef709e9a5608496084ec3a',1,'sobel_no_vectors.cl' ]]],
8 + ];
```

▼ 25 docs/html/search/functions_74.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="functions_74.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▼ 4 docs/html/search/functions_74.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['template',[ 'template',[ '../template_8cl.html#a3fd9dfc155a2b110d8632041d0961625',1,'template.cl' ]]]
4 + ];
```

▼ BIN docs/html/search/mag_sel.png □

Unable to render code block

12 docs/html/search/nomatches.html

```
... @@ -0,0 +1,12 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="search.js"></script>
6 + </head>
7 + <body class="SRPage">
8 + <div id="SRIndex">
9 + <div class="SRStatus" id="NoMatches">No Matches</div>
10 + </div>
11 + </body>
12 + </html>
```

25 docs/html/search/pages_36.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_36.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/pages_36.js

```
... @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['64_2dbit_20integers_20and_20atomics','64-bit Integers and Atomics',['../long64_bit_integer_tutorial.html',1,'tutorials']]]
4 + ];
```

25 docs/html/search/pages_63.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_63.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
```

```
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/pages_63.js

```
...     ...      @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['common_20issues','Common Issues',[ '../common_issues.html',1,'']]
```

25 docs/html/search/pages_66.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_66.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

5 docs/html/search/pages_66.js

```
...     ... @@ -0,0 +1,5 @@  
1 + var searchData=  
2 + [  
3 +   ['fir_20filter',['FIR Filter',[..fir_tutorial.html',1,'tutorials']]],  
4 +   ['from_20c_20to_20opencl',['From C to OpenCL',[..hello_world_open_c_l_tutorial.html',1,'helloWorldTutorial']]  
5 + ];
```

25 docs/html/search/pages_68.html

```
... @@ -0,0 +1,25 @@
...
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_68.js"></script>
```

```

6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▽ 4 ━━━━ docs/html/search/pages_68.js □

...	...	@@ -0,0 +1,4 @@
		<pre> 1 + var searchData= 2 + 3 + ['hello_20world','[Hello World',['../hello_world_tutorial.html',1,'tutorials']]' 4 + </pre>

▽ 25 ━━━━ docs/html/search/pages_69.html □

...	...	@@ -0,0 +1,25 @@
		<pre> 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html><head><title></title> 3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 4 + <link rel="stylesheet" type="text/css" href="search.css"/> 5 + <script type="text/javascript" src="pages_69.js"></script> 6 + <script type="text/javascript" src="search.js"></script> 7 + </head> 8 + <body class="SRPage"> 9 + <div id="SRIndex"> 10 + <div class="SRStatus" id="Loading">Loading...</div> 11 + <div id="SRResults"></div> 12 + <script type="text/javascript"><!-- 13 + createResults(); 14 + --></script> 15 + <div class="SRStatus" id="Searching">Searching...</div> 16 + <div class="SRStatus" id="NoMatches">No Matches</div> 17 + <script type="text/javascript"><!-- 18 + document.getElementById("Loading").style.display="none"; 19 + document.getElementById("NoMatches").style.display="none"; 20 + var searchResults = new SearchResults("searchResults"); 21 + searchResults.Search(); 22 + --></script> 23 + </div> 24 + </body> 25 + </html> </pre>

▽ 5 ━━━━ docs/html/search/pages_69.js □

...	...	@@ -0,0 +1,5 @@
		<pre> 1 + var searchData= 2 + 3 + ['image_20objects','[Image Objects,['../image_objects_tutorial.html',1,'tutorials']]', 4 + ['image_20scaling','[Image Scaling,['../image_scaling_tutorial.html',1,'imageObjectsTutorial']]' 5 + </pre>

▽ 25 ━━━━ docs/html/search/pages_6d.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_6d.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 5 ━━━━ docs/html/search/pages_6d.js □

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 + [
3 +   ['mandelbrot',[ 'Mandelbrot',[ '../mandelbrot_tutorial.html',1,'tutorials' ]]],
4 +   ['memory_20buffers',[ 'Memory Buffers',[ '../memory_buffers_tutorial.html',1,'tutorials' ]]]
5 + ];
```

▽ 25 ━━━━ docs/html/search/pages_71.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_71.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/pages_71.js □

```
... ... @@ -0,0 +1,4 @@
1 + @@@ -0,0 +1,4 @@
```

```
1 + var searchData=
2 +
3 + ['quick_20start_20guide',[ 'Quick Start Guide',['../quick_start.html',1,'']]]
4 + ];
```

▽ 25 ━━━━ docs/html/search/pages_72.html □

```
... ... @@ -0,0 +1,25 @@
1 + !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_72.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/pages_72.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['running_20the_20samples',[ 'Running the Samples',['../hello_world_running_tutorial.html',1,'helloWorldTutorial']]]
4 + ];
```

▽ 25 ━━━━ docs/html/search/pages_73.html □

```
... ... @@ -0,0 +1,25 @@
1 + !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_73.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
```

```
24 + </body>
25 + </html>
```

▽ 6 ━━━━━━ docs/html/search/pages_73.js □

```
... ... @@ -0,0 +1,6 @@
1 + var searchData=
2 +
3 + ['sgemm','[SGEMM',[('../sgemm_tutorial.html',1,'tutorials')]],
4 + ['sobel_20filter','[Sobel Filter',[('../sobel_tutorial.html',1,'tutorials')]],
5 + ['support',[Support,[('../support.html',1,'')]]]
6 + ];
```

▽ 25 ━━━━━━ docs/html/search/pages_74.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_74.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 5 ━━━━━━ docs/html/search/pages_74.js □

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 +
3 + ['template','[Template',[('../template_tutorial.html',1,'tutorials')]],
4 + ['tutorials',[Tutorials,[('../tutorials.html',1,'')]]]
5 + ];
```

▽ 25 ━━━━━━ docs/html/search/pages_76.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="pages_76.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
```

```
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 [diff] docs/html/search/pages_76.js

Load diff

▽ 238 [diff] docs/html/search/search.css

...	...	@@ -0,0 +1,238 @@
		1 + /*----- Search Box */ 2 + 3 + #FSearchBox { 4 + float: left; 5 + } 6 + 7 + #MSearchBox { 8 + white-space : nowrap; 9 + position: absolute; 10 + float: none; 11 + display: inline; 12 + margin-top: 8px; 13 + right: 0px; 14 + width: 170px; 15 + z-index: 102; 16 + background-color: white; 17 + } 18 + 19 + #MSearchBox .left 20 + { 21 + display:block; 22 + position:absolute; 23 + left:10px; 24 + width:20px; 25 + height:19px; 26 + background:url('search_l.png') no-repeat; 27 + background-position:right; 28 + } 29 + 30 + #MSearchSelect { 31 + display:block; 32 + position:absolute; 33 + width:20px; 34 + height:19px; 35 + } 36 + 37 + .left #MSearchSelect { 38 + left:4px; 39 + } 40 + 41 + .right #MSearchSelect { 42 + right:5px; 43 + } 44 +

```
45 + #MSearchField {
46 +     display:block;
47 +     position:absolute;
48 +     height:19px;
49 +     background:url('search_m.png') repeat-x;
50 +     border:none;
51 +     width:116px;
52 +     margin-left:20px;
53 +     padding-left:4px;
54 +     color: #909090;
55 +     outline: none;
56 +     font: 9pt Arial, Verdana, sans-serif;
57 + }
58 +
59 + #FSearchBox #MSearchField {
60 +     margin-left:15px;
61 + }
62 +
63 + #MSearchBox .right {
64 +     display:block;
65 +     position:absolute;
66 +     right:10px;
67 +     top:0px;
68 +     width:20px;
69 +     height:19px;
70 +     background:url('search_r.png') no-repeat;
71 +     background-position:left;
72 + }
73 +
74 + #MSearchClose {
75 +     display: none;
76 +     position: absolute;
77 +     top: 4px;
78 +     background : none;
79 +     border: none;
80 +     margin: 0px 4px 0px 0px;
81 +     padding: 0px 0px;
82 +     outline: none;
83 + }
84 +
85 + .left #MSearchClose {
86 +     left: 6px;
87 + }
88 +
89 + .right #MSearchClose {
90 +     right: 2px;
91 + }
92 +
93 + .MSearchBoxActive #MSearchField {
94 +     color: #000000;
95 + }
96 +
97 + /*----- Search filter selection */
98 +
99 + #MSearchSelectWindow {
100 +     display: none;
101 +     position: absolute;
102 +     left: 0; top: 0;
103 +     border: 1px solid #90A5CE;
104 +     background-color: #F9FAFC;
105 +     z-index: 1;
106 +     padding-top: 4px;
107 +     padding-bottom: 4px;
108 +     -moz-border-radius: 4px;
109 +     -webkit-border-top-left-radius: 4px;
110 +     -webkit-border-top-right-radius: 4px;
111 +     -webkit-border-bottom-left-radius: 4px;
112 +     -webkit-border-bottom-right-radius: 4px;
113 +     -webkit-box-shadow: 5px 5px 5px rgba(0, 0, 0, 0.15);
```

```
114 + }
115 +
116 + .SelectItem {
117 +   font: 8pt Arial, Verdana, sans-serif;
118 +   padding-left: 2px;
119 +   padding-right: 12px;
120 +   border: 0px;
121 + }
122 +
123 + span.SelectionMark {
124 +   margin-right: 4px;
125 +   font-family: monospace;
126 +   outline-style: none;
127 +   text-decoration: none;
128 + }
129 +
130 + a.SelectItem {
131 +   display: block;
132 +   outline-style: none;
133 +   color: #000000;
134 +   text-decoration: none;
135 +   padding-left: 6px;
136 +   padding-right: 12px;
137 + }
138 +
139 + a.SelectItem:focus,
140 + a.SelectItem:active {
141 +   color: #000000;
142 +   outline-style: none;
143 +   text-decoration: none;
144 + }
145 +
146 + a.SelectItem:hover {
147 +   color: #FFFFFF;
148 +   background-color: #3D578C;
149 +   outline-style: none;
150 +   text-decoration: none;
151 +   cursor: pointer;
152 +   display: block;
153 + }
154 +
155 + /*----- Search results window */
156 +
157 + iframe#MSearchResults {
158 +   width: 60ex;
159 +   height: 15em;
160 + }
161 +
162 + #MSearchResultsWindow {
163 +   display: none;
164 +   position: absolute;
165 +   left: 0; top: 0;
166 +   border: 1px solid #000;
167 +   background-color: #EEF1F7;
168 + }
169 +
170 + /* ----- */
171 +
172 +
173 + #SRIndex {
174 +   clear:both;
175 +   padding-bottom: 15px;
176 + }
177 +
178 + .SREntry {
179 +   font-size: 10pt;
180 +   padding-left: 1ex;
181 + }
182 +
```

```
183 + .SRPage .SREntry {
184 +     font-size: 8pt;
185 +     padding: 1px 5px;
186 + }
187 +
188 + body.SRPage {
189 +     margin: 5px 2px;
190 + }
191 +
192 + .SRChildren {
193 +     padding-left: 3ex; padding-bottom: .5em;
194 + }
195 +
196 + .SRPage .SRChildren {
197 +     display: none;
198 + }
199 +
200 + .SRSymbol {
201 +     font-weight: bold;
202 +     color: #425E97;
203 +     font-family: Arial, Verdana, sans-serif;
204 +     text-decoration: none;
205 +     outline: none;
206 + }
207 +
208 + a.SRScope {
209 +     display: block;
210 +     color: #425E97;
211 +     font-family: Arial, Verdana, sans-serif;
212 +     text-decoration: none;
213 +     outline: none;
214 + }
215 +
216 + a.SRSymbol:focus, a.SRSymbol:active,
217 + a.SRScope:focus, a.SRScope:active {
218 +     text-decoration: underline;
219 + }
220 +
221 + span.SRScope {
222 +     padding-left: 4px;
223 + }
224 +
225 + .SRPage .SRStatus {
226 +     padding: 2px 5px;
227 +     font-size: 8pt;
228 +     font-style: italic;
229 + }
230 +
231 + .SRResult {
232 +     display: none;
233 + }
234 +
235 + DIV.searchresults {
236 +     margin-left: 10px;
237 +     margin-right: 10px;
238 + }
```

807 docs/html/search/search.js []

```
...     ... @@ -0,0 +1,807 @@  
1+ // Search script generated by doxygen  
2+ // Copyright (C) 2009 by Dimitri van Heesch.  
3+  
4+ // The code in this file is loosely based on main.js, part of Natural Docs,  
5+ // which is Copyright (C) 2003-2008 Greg Valure  
6+ // Natural Docs is licensed under the GPL.  
7+  
8+ var indexSectionsWithContent =  
9+ {
```



```

79 + }
80 +
81 + /* A class handling everything associated with the search panel.
82 +
83 + Parameters:
84 + name - The name of the global variable that will be
85 +         storing this instance. Is needed to be able to set timeouts.
86 + resultPath - path to use for external files
87 + */
88 + function SearchBox(name, resultsPath, inFrame, label)
89 + {
90 +     if (!name || !resultsPath) { alert("Missing parameters to SearchBox."); }
91 +
92 +     // ----- Instance variables
93 +     this.name          = name;
94 +     this.resultsPath    = resultsPath;
95 +     this.keyTimeout      = 0;
96 +     this.keyTimeoutLength = 500;
97 +     this.closeSelectionTimeout = 300;
98 +     this.lastSearchValue   = "";
99 +     this.lastResultsPage    = "";
100 +    this.hideTimeout       = 0;
101 +    this.searchIndex        = 0;
102 +    this.searchActive       = false;
103 +    this.insideFrame        = inFrame;
104 +    this.searchLabel        = label;
105 +
106 +    // ----- DOM Elements
107 +
108 +    this.DOMSearchField = function()
109 +    { return document.getElementById("MSearchField"); }
110 +
111 +    this.DOMSearchSelect = function()
112 +    { return document.getElementById("MSearchSelect"); }
113 +
114 +    this.DOMSearchSelectWindow = function()
115 +    { return document.getElementById("MSearchSelectWindow"); }
116 +
117 +    this.DOMPopupSearchResults = function()
118 +    { return document.getElementById("MSearchResults"); }
119 +
120 +    this.DOMPopupSearchResultsWindow = function()
121 +    { return document.getElementById("MSearchResultsWindow"); }
122 +
123 +    this.DOMSearchClose = function()
124 +    { return document.getElementById("MSearchClose"); }
125 +
126 +    this.DOMSearchBox = function()
127 +    { return document.getElementById("MSearchBox"); }
128 +
129 +    // ----- Event Handlers
130 +
131 +    // Called when focus is added or removed from the search field.
132 +    this.OnSearchFieldFocus = function(isActive)
133 +    {
134 +        this.Activate(isActive);
135 +    }
136 +
137 +    this.OnSearchSelectShow = function()
138 +    {
139 +        var searchSelectWindow = this.DOMSearchSelectWindow();
140 +        var searchField        = this.DOMSearchSelect();
141 +
142 +        if (this.insideFrame)
143 +        {
144 +            var left = getXPos(searchField);
145 +            var top  = getYPos(searchField);
146 +            left += searchField.offsetWidth + 6;
147 +            top += searchField.offsetHeight;

```

```

148 +
149 +     // show search selection popup
150 +     searchSelectWindow.style.display='block';
151 +     left -= searchSelectWindow.offsetWidth;
152 +     searchSelectWindow.style.left =  left + 'px';
153 +     searchSelectWindow.style.top  =   top + 'px';
154 +
155 + }
156 +
157 + var left = getXPos(searchField);
158 + var top  = getYPos(searchField);
159 + top += searchField.offsetHeight;
160 +
161 + // show search selection popup
162 + searchSelectWindow.style.display='block';
163 + searchSelectWindow.style.left =  left + 'px';
164 + searchSelectWindow.style.top  =   top + 'px';
165 +
166 +
167 + // stop selection hide timer
168 + if (this.hideTimeout)
169 + {
170 +     clearTimeout(this.hideTimeout);
171 +     this.hideTimeout=0;
172 + }
173 + return false; // to avoid "image drag" default event
174 +
175 +
176 + this.OnSearchSelectHide = function()
177 + {
178 +     this.hideTimeout = setTimeout(this.name +".CloseSelectionWindow()", 
179 +                                   this.closeSelectionTimeout);
180 +
181 +
182 + // Called when the content of the search field is changed.
183 + this.OnSearchFieldChange = function(evt)
184 + {
185 +     if (this.keyTimeout) // kill running timer
186 +     {
187 +         clearTimeout(this.keyTimeout);
188 +         this.keyTimeout = 0;
189 +     }
190 +
191 +     var e  = (evt) ? evt : window.event; // for IE
192 +     if (e.keyCode==40 || e.keyCode==13)
193 +     {
194 +         if (e.shiftKey==1)
195 +         {
196 +             this.OnSearchSelectShow();
197 +             var win=this.DOMSearchSelectWindow();
198 +             for (i=0;i<win.childNodes.length;i++)
199 +             {
200 +                 var child = win.childNodes[i]; // get span within a
201 +                 if (child.className=='SelectItem')
202 +                 {
203 +                     child.focus();
204 +                     return;
205 +                 }
206 +             }
207 +             return;
208 +         }
209 +         else if (window.frames.MSearchResults.searchResults)
210 +         {
211 +             var elem = window.frames.MSearchResults.searchResults.NavNext(0);
212 +             if (elem) elem.focus();
213 +         }
214 +     }
215 +     else if (e.keyCode==27) // Escape out of the search field
216 +     {

```

```

217 +     this.DOMSearchField().blur();
218 +     this.DOMPopupSearchResultsWindow().style.display = 'none';
219 +     this.DOMSearchClose().style.display = 'none';
220 +     this.lastSearchValue = '';
221 +     this.Activate(false);
222 +     return;
223 + }
224 +
225 + // strip whitespaces
226 + var searchValue = this.DOMSearchField().value.replace(/ +/g, "");
227 +
228 + if (searchValue != this.lastSearchValue) // search value has changed
229 + {
230 +     if (searchValue != "") // non-empty search
231 +     {
232 +         // set timer for search update
233 +         this.keyTimeout = setTimeout(this.name + '.Search()', 
234 +                                         this.keyTimeoutLength);
235 +     }
236 +     else // empty search field
237 +     {
238 +         this.DOMPopupSearchResultsWindow().style.display = 'none';
239 +         this.DOMSearchClose().style.display = 'none';
240 +         this.lastSearchValue = '';
241 +     }
242 + }
243 + }
244 +
245 + this.SelectItemCount = function(id)
246 + {
247 +     var count=0;
248 +     var win=this.DOMSearchSelectWindow();
249 +     for (i=0;i<win.childNodes.length;i++)
250 +     {
251 +         var child = win.childNodes[i]; // get span within a
252 +         if (child.className=='SelectItem')
253 +         {
254 +             count++;
255 +         }
256 +     }
257 +     return count;
258 + }
259 +
260 + this.SelectItemSet = function(id)
261 + {
262 +     var i,j=0;
263 +     var win=this.DOMSearchSelectWindow();
264 +     for (i=0;i<win.childNodes.length;i++)
265 +     {
266 +         var child = win.childNodes[i]; // get span within a
267 +         if (child.className=='SelectItem')
268 +         {
269 +             var node = child.firstChild;
270 +             if (j==id)
271 +             {
272 +                 node.innerHTML='&#8226;';
273 +             }
274 +             else
275 +             {
276 +                 node.innerHTML='&#160;';
277 +             }
278 +             j++;
279 +         }
280 +     }
281 + }
282 +
283 + // Called when an search filter selection is made.
284 + // set item with index id as the active item
285 + this.OnSelectItem = function(id)

```

```

286 + {
287 +     this.searchIndex = id;
288 +     this.SelectItemSet(id);
289 +     var searchValue = this.DOMSearchField().value.replace(/ +/g, "");
290 +     if (searchValue!="" && this.searchActive) // something was found -> do a search
291 +     {
292 +         this.Search();
293 +     }
294 + }
295 +
296 + this.OnSearchSelectKey = function(evt)
297 + {
298 +     var e = (evt) ? evt : window.event; // for IE
299 +     if (e.keyCode==40 && this.searchIndex<this.SelectItemCount()) // Down
300 +     {
301 +         this.searchIndex++;
302 +         this.OnSelectItem(this.searchIndex);
303 +     }
304 +     else if (e.keyCode==38 && this.searchIndex>0) // Up
305 +     {
306 +         this.searchIndex--;
307 +         this.OnSelectItem(this.searchIndex);
308 +     }
309 +     else if (e.keyCode==13 || e.keyCode==27)
310 +     {
311 +         this.OnSelectItem(this.searchIndex);
312 +         this.CloseSelectionWindow();
313 +         this.DOMSearchField().focus();
314 +     }
315 +     return false;
316 + }
317 +
318 + // ----- Actions
319 +
320 + // Closes the results window.
321 + this.CloseResultsWindow = function()
322 + {
323 +     this.DOMPopupSearchResultsWindow().style.display = 'none';
324 +     this.DOMSearchClose().style.display = 'none';
325 +     this.Activate(false);
326 + }
327 +
328 + this.CloseSelectionWindow = function()
329 + {
330 +     this.DOMSearchSelectWindow().style.display = 'none';
331 + }
332 +
333 + // Performs a search.
334 + this.Search = function()
335 + {
336 +     this.keyTimeout = 0;
337 +
338 +     // strip leading whitespace
339 +     var searchValue = this.DOMSearchField().value.replace(/^ +/, "");
340 +
341 +     var code = searchValue.toLowerCase().charCodeAt(0);
342 +     var hexCode;
343 +     if (code<16)
344 +     {
345 +         hexCode="0"+code.toString(16);
346 +     }
347 +     else
348 +     {
349 +         hexCode=code.toString(16);
350 +     }
351 +
352 +     var resultsPage;
353 +     var resultsPageWithSearch;
354 +     var hasResultsPage;

```

```

355 +
356 +     if (indexSectionsWithContent[this.searchIndex].charAt(code) == '1')
357 +     {
358 +         resultsPage = this.resultsPath + '/' + indexSectionNames[this.searchIndex] + '_' + hexCode + '.html';
359 +         resultsPageWithSearch = resultsPage+'?'+'escape(searchValue);
360 +         hasResultsPage = true;
361 +     }
362 +     else // nothing available for this search term
363 +     {
364 +         resultsPage = this.resultsPath + '/nomatches.html';
365 +         resultsPageWithSearch = resultsPage;
366 +         hasResultsPage = false;
367 +     }
368 +
369 +     window.frames.MSearchResults.location = resultsPageWithSearch;
370 +     var domPopupSearchResultsWindow = this.DOMPopupSearchResultsWindow();
371 +
372 +     if (domPopupSearchResultsWindow.style.display!='block')
373 +     {
374 +         var domSearchBox = this.DOMSearchBox();
375 +         this.DOMSearchClose().style.display = 'inline';
376 +         if (this.insideFrame)
377 +         {
378 +             var domPopupSearchResults = this.DOMPopupSearchResults();
379 +             domPopupSearchResultsWindow.style.position = 'relative';
380 +             domPopupSearchResultsWindow.style.display = 'block';
381 +             var width = document.body.clientWidth - 8; // the -8 is for IE :-( 
382 +             domPopupSearchResultsWindow.style.width = width + 'px';
383 +             domPopupSearchResults.style.width = width + 'px';
384 +         }
385 +         else
386 +         {
387 +             var domPopupSearchResults = this.DOMPopupSearchResults();
388 +             var left = getXPos(domSearchBox) + 150; // domSearchBox.offsetWidth;
389 +             var top = getYPos(domSearchBox) + 20; // domSearchBox.offsetHeight + 1;
390 +             domPopupSearchResultsWindow.style.display = 'block';
391 +             left -= domPopupSearchResults.offsetWidth;
392 +             domPopupSearchResultsWindow.style.top = top + 'px';
393 +             domPopupSearchResultsWindow.style.left = left + 'px';
394 +         }
395 +     }
396 +
397 +     this.lastSearchValue = searchValue;
398 +     this.lastResultsPage = resultsPage;
399 + }
400 +
401 + // ----- Activation Functions
402 +
403 + // Activates or deactivates the search panel, resetting things to
404 + // their default values if necessary.
405 + this.Activate = function(isActive)
406 + {
407 +     if (isActive || // open it
408 +         this.DOMPopupSearchResultsWindow().style.display == 'block'
409 +     )
410 +     {
411 +         this.DOMSearchBox().className = 'MSearchBoxActive';
412 +
413 +         var searchField = this.DOMSearchField();
414 +
415 +         if (searchField.value == this.searchLabel) // clear "Search" term upon entry
416 +         {
417 +             searchField.value = '';
418 +             this.searchActive = true;
419 +         }
420 +     }
421 +     else if (!isActive) // directly remove the panel
422 +     {
423 +         this.DOMSearchBox().className = 'MSearchBoxInactive';

```

```

424 +     this.DOMSearchField().value  = this.searchLabel;
425 +     this.searchActive          = false;
426 +     this.lastSearchValue        = '';
427 +     this.lastResultsPage        = '';
428 +
429 +
430 +
431 +
432 + // -----
433 +
434 + // The class that handles everything on the search results page.
435 + function SearchResults(name)
436 + {
437 +     // The number of matches from the last run of <Search()>.
438 +     this.lastMatchCount = 0;
439 +     this.lastKey = 0;
440 +     this.repeatOn = false;
441 +
442 +     // Toggles the visibility of the passed element ID.
443 +     this.FindChildElement = function(id)
444 +     {
445 +         var parentElement = document.getElementById(id);
446 +         var element = parentElement.firstChild;
447 +
448 +         while (element && element!=parentElement)
449 +         {
450 +             if (element.nodeName == 'DIV' && element.className == 'SRChildren')
451 +             {
452 +                 return element;
453 +             }
454 +
455 +             if (element.nodeName == 'DIV' && element.hasChildNodes())
456 +             {
457 +                 element = element.firstChild;
458 +             }
459 +             else if (element.nextSibling)
460 +             {
461 +                 element = element.nextSibling;
462 +             }
463 +             else
464 +             {
465 +                 do
466 +                 {
467 +                     element = element.parentNode;
468 +                 }
469 +                 while (element && element!=parentElement && !element.nextSibling);
470 +
471 +                 if (element && element!=parentElement)
472 +                 {
473 +                     element = element.nextSibling;
474 +                 }
475 +             }
476 +         }
477 +     }
478 +
479 +     this.Toggle = function(id)
480 +     {
481 +         var element = this.FindChildElement(id);
482 +         if (element)
483 +         {
484 +             if (element.style.display == 'block')
485 +             {
486 +                 element.style.display = 'none';
487 +             }
488 +             else
489 +             {
490 +                 element.style.display = 'block';
491 +             }
492 +         }

```

```

493 +     }
494 +
495 +     // Searches for the passed string. If there is no parameter,
496 +     // it takes it from the URL query.
497 +     //
498 +     // Always returns true, since other documents may try to call it
499 +     // and that may or may not be possible.
500 +     this.Search = function(search)
501 +     {
502 +         if (!search) // get search word from URL
503 +         {
504 +             search = window.location.search;
505 +             search = search.substring(1); // Remove the leading '?'
506 +             search = unescape(search);
507 +         }
508 +
509 +         search = search.replace(/^ +/, ""); // strip leading spaces
510 +         search = search.replace(/ +$/, ""); // strip trailing spaces
511 +         search = search.toLowerCase();
512 +         search = convertToId(search);
513 +
514 +         var resultRows = document.getElementsByTagName("div");
515 +         var matches = 0;
516 +
517 +         var i = 0;
518 +         while (i < resultRows.length)
519 +         {
520 +             var row = resultRows.item(i);
521 +             if (row.className == "SRResult")
522 +             {
523 +                 var rowMatchName = row.id.toLowerCase();
524 +                 rowMatchName = rowMatchName.replace(/^sr\d*_/, ''); // strip 'sr123_'
525 +
526 +                 if (search.length<=rowMatchName.length &&
527 +                     rowMatchName.substr(0, search.length)==search)
528 +                 {
529 +                     row.style.display = 'block';
530 +                     matches++;
531 +                 }
532 +                 else
533 +                 {
534 +                     row.style.display = 'none';
535 +                 }
536 +             }
537 +             i++;
538 +         }
539 +         document.getElementById("Searching").style.display='none';
540 +         if (matches == 0) // no results
541 +         {
542 +             document.getElementById("NoMatches").style.display='block';
543 +         }
544 +         else // at least one result
545 +         {
546 +             document.getElementById("NoMatches").style.display='none';
547 +         }
548 +         this.lastMatchCount = matches;
549 +         return true;
550 +     }
551 +
552 +     // return the first item with index index or higher that is visible
553 +     this.NavNext = function(index)
554 +     {
555 +         var focusItem;
556 +         while (1)
557 +         {
558 +             var focusName = 'Item'+index;
559 +             focusItem = document.getElementById(focusName);
560 +             if (focusItem && focusItem.parentNode.parentNode.style.display=='block')
561 +             {

```

```

562 +         break;
563 +     }
564 +     else if (!focusItem) // last element
565 +     {
566 +         break;
567 +     }
568 +     focusItem=null;
569 +     index++;
570 + }
571 + return focusItem;
572 +
573 +
574 + this.NavPrev = function(index)
575 + {
576 +     var focusItem;
577 +     while (1)
578 +     {
579 +         var focusName = 'Item'+index;
580 +         focusItem = document.getElementById(focusName);
581 +         if (focusItem && focusItem.parentNode.parentNode.style.display=='block')
582 +         {
583 +             break;
584 +         }
585 +         else if (!focusItem) // last element
586 +         {
587 +             break;
588 +         }
589 +         focusItem=null;
590 +         index--;
591 +     }
592 +     return focusItem;
593 + }
594 +
595 + this.ProcessKeys = function(e)
596 + {
597 +     if (e.type == "keydown")
598 +     {
599 +         this.repeatOn = false;
600 +         this.lastKey = e.keyCode;
601 +     }
602 +     else if (e.type == "keypress")
603 +     {
604 +         if (!this.repeatOn)
605 +         {
606 +             if (this.lastKey) this.repeatOn = true;
607 +             return false; // ignore first keypress after keydown
608 +         }
609 +     }
610 +     else if (e.type == "keyup")
611 +     {
612 +         this.lastKey = 0;
613 +         this.repeatOn = false;
614 +     }
615 +     return this.lastKey!=0;
616 + }
617 +
618 + this.Nav = function(evt,itemIndex)
619 + {
620 +     var e = (evt) ? evt : window.event; // for IE
621 +     if (e.keyCode==13) return true;
622 +     if (!this.ProcessKeys(e)) return false;
623 +
624 +     if (this.lastKey==38) // Up
625 +     {
626 +         var newIndex = itemIndex-1;
627 +         var focusItem = this.NavPrev(newIndex);
628 +         if (focusItem)
629 +         {
630 +             var child = this.FindChildElement(focusItem.parentNode.parentNode.id);

```

```

631 +         if (child && child.style.display == 'block') // children visible
632 +     {
633 +         var n=0;
634 +         var tmpElem;
635 +         while (1) // search for last child
636 +     {
637 +         tmpElem = document.getElementById('Item'+newIndex+'_c'+n);
638 +         if (tmpElem)
639 +         {
640 +             focusItem = tmpElem;
641 +         }
642 +         else // found it!
643 +         {
644 +             break;
645 +         }
646 +         n++;
647 +     }
648 + }
649 + }
650 + if (focusItem)
651 + {
652 +     focusItem.focus();
653 + }
654 + else // return focus to search field
655 + {
656 +     parent.document.getElementById("MSearchField").focus();
657 + }
658 + }
659 + else if (this.lastKey==40) // Down
660 + {
661 +     var newIndex = itemIndex+1;
662 +     var focusItem;
663 +     var item = document.getElementById('Item'+itemIndex);
664 +     var elem = this.FindChildElement(item.parentNode.parentNode.id);
665 +     if (elem && elem.style.display == 'block') // children visible
666 +     {
667 +         focusItem = document.getElementById('Item'+itemIndex+'_c0');
668 +     }
669 +     if (!focusItem) focusItem = this.NavNext(newIndex);
670 +     if (focusItem) focusItem.focus();
671 + }
672 + else if (this.lastKey==39) // Right
673 + {
674 +     var item = document.getElementById('Item'+itemIndex);
675 +     var elem = this.FindChildElement(item.parentNode.parentNode.id);
676 +     if (elem) elem.style.display = 'block';
677 + }
678 + else if (this.lastKey==37) // Left
679 + {
680 +     var item = document.getElementById('Item'+itemIndex);
681 +     var elem = this.FindChildElement(item.parentNode.parentNode.id);
682 +     if (elem) elem.style.display = 'none';
683 + }
684 + else if (this.lastKey==27) // Escape
685 + {
686 +     parent.searchBox.CloseResultsWindow();
687 +     parent.document.getElementById("MSearchField").focus();
688 + }
689 + else if (this.lastKey==13) // Enter
690 + {
691 +     return true;
692 + }
693 + return false;
694 + }
695 +
696 + this.NavChild = function(evt,itemIndex,childIndex)
697 + {
698 +     var e = (evt) ? evt : window.event; // for IE
699 +     if (e.keyCode==13) return true;

```

```

700 +     if (!this.ProcessKeys(e)) return false;
701 +
702 +     if (this.lastKey==38) // Up
703 +     {
704 +         if (childIndex>0)
705 +         {
706 +             var newIndex = childIndex-1;
707 +             document.getElementById('Item'+itemIndex+'_c'+newIndex).focus();
708 +         }
709 +         else // already at first child, jump to parent
710 +         {
711 +             document.getElementById('Item'+itemIndex).focus();
712 +         }
713 +     }
714 +     else if (this.lastKey==40) // Down
715 +     {
716 +         var newIndex = childIndex+1;
717 +         var elem = document.getElementById('Item'+itemIndex+'_c'+newIndex);
718 +         if (!elem) // last child, jump to parent next parent
719 +         {
720 +             elem = this.NavNext(itemIndex+1);
721 +         }
722 +         if (elem)
723 +         {
724 +             elem.focus();
725 +         }
726 +     }
727 +     else if (this.lastKey==27) // Escape
728 +     {
729 +         parent.searchBox.CloseResultsWindow();
730 +         parent.document.getElementById("MSearchField").focus();
731 +     }
732 +     else if (this.lastKey==13) // Enter
733 +     {
734 +         return true;
735 +     }
736 +     return false;
737 + }
738 +
739 +
740 + function setKeyActions(elem,action)
741 + {
742 +     elem.setAttribute('onkeydown',action);
743 +     elem.setAttribute('onkeypress',action);
744 +     elem.setAttribute('onkeyup',action);
745 + }
746 +
747 + function setClassAttr(elem,attr)
748 + {
749 +     elem.setAttribute('class',attr);
750 +     elem.setAttribute('className',attr);
751 + }
752 +
753 + function createResults()
754 + {
755 +     var results = document.getElementById("SRResults");
756 +     for (var e=0; e<searchData.length; e++)
757 +     {
758 +         var id = searchData[e][0];
759 +         var srResult = document.createElement('div');
760 +         srResult.setAttribute('id','SR_'+id);
761 +         setClassAttr(srResult,'SRResult');
762 +         var srEntry = document.createElement('div');
763 +         setClassAttr(srEntry,'SREntry');
764 +         var srLink = document.createElement('a');
765 +         srLink.setAttribute('id','Item'+e);
766 +         setKeyActions(srLink,'return searchResults.Nav(event,'+e+')');
767 +         setClassAttr(srLink,'SRSymbol');
768 +         srLink.innerHTML = searchData[e][1][0];

```

```

769 +     srEntry.appendChild(srLink);
770 +     if (searchData[e][1].length==2) // single result
771 +     {
772 +         srLink.setAttribute('href',searchData[e][1][1][0]);
773 +         if (searchData[e][1][1][1])
774 +         {
775 +             srLink.setAttribute('target','_parent');
776 +         }
777 +         var srScope = document.createElement('span');
778 +         setClassAttr(srScope, 'SRScope');
779 +         srScope.innerHTML = searchData[e][1][1][2];
780 +         srEntry.appendChild(srScope);
781 +     }
782 +     else // multiple results
783 +     {
784 +         srLink.setAttribute('href','javascript:searchResults.Toggle("SR_'+id+')")');
785 +         var srChildren = document.createElement('div');
786 +         setClassAttr(srChildren, 'SRChildren');
787 +         for (var c=0; c<searchData[e][1].length-1; c++)
788 +         {
789 +             var srChild = document.createElement('a');
790 +             srChild.setAttribute('id','Item'+e+'_'+c+c);
791 +             setKeyActions(srChild,'return searchResults.NavChild(event,'+e+', '+c+')');
792 +             setClassAttr(srChild, 'SRScope');
793 +             srChild.setAttribute('href',searchData[e][1][c+1][0]);
794 +             if (searchData[e][1][c+1][1])
795 +             {
796 +                 srChild.setAttribute('target','_parent');
797 +             }
798 +             srChild.innerHTML = searchData[e][1][c+1][2];
799 +             srChildren.appendChild(srChild);
800 +         }
801 +         srEntry.appendChild(srChildren);
802 +     }
803 +     srResult.appendChild(srEntry);
804 +     results.appendChild(srResult);
805 + }
806 + }
807 +

```

▼ BIN docs/html/search/search_l.png

Unable to render code block

▼ BIN docs/html/search/search_m.png

Unable to render code block

▼ BIN docs/html/search/search_r.png

Unable to render code block

▼ 25 docs/html/search/variables_62.html

...	...	@@ -0,0 +1,25 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html><head><title></title>
	3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	4	+ <link rel="stylesheet" type="text/css" href="search.css"/>
	5	+ <script type="text/javascript" src="variables_62.js"></script>
	6	+ <script type="text/javascript" src="search.js"></script>
	7	+ </head>

```

8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>

```

▼ 4 ████████ docs/html/search/variables_62.js □

...	...	@@ -0,0 +1,4 @@
	1	+ var searchData=
	2	+ [
	3	+ ['bitsperpixel',['bitsPerPixel',['../structbitmap_information_header.html#ae25aec64837eed48f745ae7728af7dff',1,'bitmapInformationHeader']]],
	4	+];

▼ 25 ████████ docs/html/search/variables_63.html □

...	...	@@ -0,0 +1,25 @@
	1	+ !DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html><head><title></title>
	3	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	4	+ <link rel="stylesheet" type="text/css" href="search.css"/>
	5	+ <script type="text/javascript" src="variables_63.js"></script>
	6	+ <script type="text/javascript" src="search.js"></script>
	7	+ </head>
	8	+ <body class="SRPage">
	9	+ <div id="SRIndex">
	10	+ <div class="SRStatus" id="Loading">Loading...</div>
	11	+ <div id="SRResults"></div>
	12	+ <script type="text/javascript"><!--
	13	+ createResults();
	14	+ --></script>
	15	+ <div class="SRStatus" id="Searching">Searching...</div>
	16	+ <div class="SRStatus" id="NoMatches">No Matches</div>
	17	+ <script type="text/javascript"><!--
	18	+ document.getElementById("Loading").style.display="none";
	19	+ document.getElementById("NoMatches").style.display="none";
	20	+ var searchResults = new SearchResults("searchResults");
	21	+ searchResults.Search();
	22	+ --></script>
	23	+ </div>
	24	+ </body>
	25	+ </html>

▼ 6 ████████ docs/html/search/variables_63.js □

...	...	@@ -0,0 +1,6 @@
	1	+ var searchData=
	2	+ [
	3	+ ['compressiontype',['compressionType',['../structbitmap_information_header.html#a1a6659ee7987cc1be662ec93a6f2eef7',1,'bitmapInformationHeader']]],
	4	+ ['creator1',['creator1',['../structbitmap_header.html#ad1281577a12cb4314cf869877135231',1,'bitmapHeader']]],
	5	+ ['creator2',['creator2',['../structbitmap_header.html#aafdafe00204ad8448ab9cd98aa3040b2',1,'bitmapHeader']]]
	6	+];

25 docs/html/search/variables_66.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_66.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/variables_66.js

```
... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['filesize',[['fileSize',[.../structbitmap_header.html#ad06f4dbac80aa4d85163d3862ed34197',1,'bitmapHeader']]])
4 + ];
```

25 docs/html/search/variables_68.html

```
... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_68.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

✖ 5 docs/html/search/variables_68.js

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 + [
3 +   ['height',['height',['../structbitmap_information_header.html#a5c5209b385872825e8f9c629ac288a12'],1,'bitmapInformationHeader']]];
4 +   ['horizontalresolution',['horizontalResolution',['../structbitmap_information_header.html#a39272c25c46f5628cdefc3965f4f6e0d'],1,'t
5 + ];
```

25 docs/html/search/variables_6d.html

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_6d.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

4 docs/html/search/variables_6d.js

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['magic',['magic',['../structbitmap_magic.html#a477646205ecad5019613626f0b478694'],1,'bitmapMagic']]];
4 + ];
```

25 docs/html/search/variables_6e.html

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_6e.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
```

```
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 6 ━━━━━━ docs/html/search/variables_6e.js □

Load diff

▽ 25 ━━━━━━ docs/html/search/variables_6f.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_6f.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━━━ docs/html/search/variables_6f.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['offset',[ 'offset',[ '../structbitmap_header.html#a5e74a0bfe6340ad581369b48bce59dbe' ,1,'bitmapHeader']] ]
4 + ];
```

▽ 25 ━━━━━━ docs/html/search/variables_72.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_72.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
```

```
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/variables_72.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 +
3 + ['rawbitmapsize',[ 'rawBitmapSize',[ '../structbitmap_information_header.html#abd9001c6c1eefbef9c53f15ec6f3162a' ,1,'bitmapInformati
4 + ];
```

▽ 25 ━━━━ docs/html/search/variables_73.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_73.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 5 ━━━━ docs/html/search/variables_73.js □

```
... ... @@ -0,0 +1,5 @@
1 + var searchData=
2 +
3 + ['sampler',[ 'sampler',[ '../image_scaling_8cl.html#a9165c6046146d2d28cc268394d585f17' ,1,'image_scaling.cl']] ,
4 + ['size',[ 'size',[ '../structbitmap_information_header.html#afd30cb5246210713920211afb56f13f0' ,1,'bitmapInformationHeader']] ]
5 + ];
```

▽ 25 ━━━━ docs/html/search/variables_76.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_76.js"></script>
```

```
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/variables_76.js □

```
... ... @@ -0,0 +1,4 @@
1 + var searchData=
2 + [
3 +   ['verticalresolution',[ 'verticalResolution', ['../structbitmap_information_header.html#a9596ce6332941aafbff85b7e379e948f', 1,'bitmap
4 + ];
```

▽ 25 ━━━━ docs/html/search/variables_77.html □

```
... ... @@ -0,0 +1,25 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html><head><title></title>
3 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
4 + <link rel="stylesheet" type="text/css" href="search.css"/>
5 + <script type="text/javascript" src="variables_77.js"></script>
6 + <script type="text/javascript" src="search.js"></script>
7 + </head>
8 + <body class="SRPage">
9 + <div id="SRIndex">
10 + <div class="SRStatus" id="Loading">Loading...</div>
11 + <div id="SRResults"></div>
12 + <script type="text/javascript"><!--
13 + createResults();
14 + --></script>
15 + <div class="SRStatus" id="Searching">Searching...</div>
16 + <div class="SRStatus" id="NoMatches">No Matches</div>
17 + <script type="text/javascript"><!--
18 + document.getElementById("Loading").style.display="none";
19 + document.getElementById("NoMatches").style.display="none";
20 + var searchResults = new SearchResults("searchResults");
21 + searchResults.Search();
22 + --></script>
23 + </div>
24 + </body>
25 + </html>
```

▽ 4 ━━━━ docs/html/search/variables_77.js □

Load diff

```
... ... @@ -0,0 +1,195 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sgemm/assets/sgemm.cl File</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sgemm_8cl.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">sgemm.cl File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +
109 + <p><a href="sgemm_8cl_source.html">Go to the source code of this file.</a></p>
110 + <table class="memberdecls">
111 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
112 + Functions</h2></td></tr>
113 + <tr class="memitem:abfe7be25d42e6bb53f76001bdbab6b25"><td class="memItemLeft" align="right" valign="top">__kernel void&#160;</td><td class="memItemRight" valign="top">
114 + <tr class="memdesc:abfe7be25d42e6bb53f76001bdbab6b25"><td class="mdescLeft">&#160;</td><td class="mdescRight" style="vertical-align: top">SGEMM kernel function<br/>
115 + <tr class="separator:abfe7be25d42e6bb53f76001bdbab6b25"><td class="memSeparator" colspan="2" style="text-align: center; vertical-align: middle">&#160;</td></tr>
116 + </table>
117 + <h2 class="groupheader">Function Documentation</h2>
118 + <a class="anchor" id="abfe7be25d42e6bb53f76001bdbab6b25"></a>
119 + <div class="memitem">
120 +   <div class="memproto">
121 +     <table class="memname">
122 +       <tr>
123 +         <td class="memname">__kernel void sgemm </td>
124 +         <td>(</td>
125 +           <td class="paramtype">__global float *restrict&#160;</td>
126 +           <td class="paramname"><em>matrixA</em>, </td>
127 +         </tr>
128 +         <tr>
129 +           <td class="paramkey"></td>
130 +           <td></td>
131 +           <td class="paramtype">__global float *restrict const&#160;</td>
132 +           <td class="paramname"><em>matrixB</em>, </td>
133 +         </tr>
134 +         <tr>
```

```

135 +         <td class="paramkey"></td>
136 +         <td></td>
137 +         <td class="paramtype">__global float *restrict&#160;</td>
138 +         <td class="paramname"><em>matrixC</em>, </td>
139 +     </tr>
140 +     <tr>
141 +         <td class="paramkey"></td>
142 +         <td></td>
143 +         <td class="paramtype">const uint&#160;</td>
144 +         <td class="paramname"><em>matrixOrder</em>, </td>
145 +     </tr>
146 +     <tr>
147 +         <td class="paramkey"></td>
148 +         <td></td>
149 +         <td class="paramtype">const float&#160;</td>
150 +         <td class="paramname"><em>alpha</em>, </td>
151 +     </tr>
152 +     <tr>
153 +         <td class="paramkey"></td>
154 +         <td></td>
155 +         <td class="paramtype">const float&#160;</td>
156 +         <td class="paramname"><em>beta</em>#160;</td>
157 +     </tr>
158 +     <tr>
159 +         <td></td>
160 +         <td>)</td>
161 +         <td></td><td></td>
162 +     </tr>
163 +   </table>
164 + </div><div class="memdoc">
165 +
166 + <p>SGEMM kernel function. </p>
167 + <dl class="params"><dt>Parameters</dt><dd>
168 +   <table class="params">
169 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixA</td><td>First input matrix. </td></tr>
170 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixB</td><td>Second input matrix. </td></tr>
171 +     <tr><td class="paramdir">[in,out]</td><td class="paramname">matrixC</td><td>Third input matrix. The output is stored in this matrix. </td></tr>
172 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixOrder</td><td>Matrix order (number of rows and columns). Matrix A is row-major and matrix B is column-major. </td></tr>
173 +     <tr><td class="paramdir">[in]</td><td class="paramname">alpha</td><td>Scaling parameter. </td></tr>
174 +     <tr><td class="paramdir">[in]</td><td class="paramname">beta</td><td>Scaling parameter. </td></tr>
175 +   </table>
176 + </dd>
177 + </dl>
178 +
179 + <p>Definition at line <a class="el" href="sgemm_8cl_source.html#l00020">20</a> of file <a class="el" href="sgemm_8cl_source.html">sgemm_8cl.h</a>.
180 +
181 + </div>
182 + </div>
183 + </div><!-- contents -->
184 + </div><!-- doc-content -->
185 + <!-- start footer part -->
186 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
187 +   <ul>
188 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="sgemm_8cl.html">sgemm</a></li>
189 +     <li class="footer">
190 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
191 +     </li>
192 +   </ul>
193 + </div>
194 + </body>
195 + </html>

```

▽ 4 [docs/html/sgemm_8cl.js]

...	...	@@ -0,0 +1,4 @@
		+ var sgemm_8cl =
		+ [
		+ ["sgemm", "sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25", null]

4 +]; -

▽ 183 ━━━━ docs/html/sgemm_8cl_source.html □

```
... ... @@ -0,0 +1,183 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sgemm/assets/sgemm.cl Sou
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +       </div>
33 +     </td>
34 +   </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +      <ul class="tablist">
68 +        <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +        <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +      </ul>
71 +    </div>
72 +  </div><!-- top -->
73 +  <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +    <div id="nav-tree">
75 +      <div id="nav-tree-contents">
76 +        <div id="nav-sync" class="sync"></div>
77 +      </div>
78 +    </div>
79 +    <div id="splitbar" style="-moz-user-select:none;">
80 +      <span class="ui-resizable-handle"></span>
81 +    </div>
82 +  </div>
83 +  <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sgemm_8cl_source.html','');});
85 + </script>
86 +  <div id="doc-content">
87 +    <!-- window showing the filter options -->
88 +    <div id="MSearchSelectWindow"
89 +      onmouseover="return searchBox.OnSearchSelectShow()"
90 +      onmouseout="return searchBox.OnSearchSelectHide()"
91 +      onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +      <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 +    <!-- iframe showing the search results (closed by default) -->
95 +    <div id="MSearchResultsWindow">
96 +      <iframe src="javascript:void(0)" frameborder="0"
97 +        name="MSearchResults" id="MSearchResults">
98 +    </iframe>
99 +  </div>
100 +
101 +  <div class="header">
102 +    <div class="headertitle">
103 +      <div class="title">sgemm.cl</div>  </div>
104 +    </div><!--header-->
105 +  <div class="contents">
106 +    <a href="sgemm_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"></a><span class="comment" style="color: #800000;"> * This confidential and propri * This confidential and propri * authorised by a licensing ag * (C) COPYRIGHT 2013 ARM Li * ALL RIGHTS RESERVED</span> * The entire notice above must * copies and copies may only b * by a licensing agreement fro */</span></div> __global <span class="keywordtype" style="color: #0000ff;">code href="sgemm_8cl.html#abfe7be25d42e6bb53f76001bdbab6b25"code _global <span class="keywordtype" style="color: #0000ff;">code _global <span class="keywordtype" style="color: #0000ff;">code <span class="keyword" style="color: #0000ff;">const <span class="keyword" style="color: #0000ff;">const <span class="keyword" style="color: #0000ff;">const <span class="comment" style="color: #800000;">/* [Kernel size] */</span> <span class="comment" style="color: #800000;">*/</span><span class="comment" style="color: #800000;"> const</span> <span class="comment" style="color: #800000;"> <span class="comment" style="color: #800000;">const</span> <span class="comment" style="color: #800000;">*/</span><span class="comment" style="color: #800000;"> const</span> <span class="comment" style="color: #800000;"> <span class="comment" style="color: #800000;">const</span> <span class="comment" style="color: #800000;">*/</span><span class="comment" style="color: #800000;"> const</span> <span class="comment" style="color: #800000;"> <span class="comment" style="color: #800000;">const</span>/* [Kernel size] */</span> <span class="comment" style="color: #800000;">Move to a specific row i <span class="comment" style="color: #800000;">matrixA += i * matrixOrder;</div>

```

```

133 + <div class="line"><a name="100037"></a><span class="lineno"> 37</span>&#160;      <span class="comment"> /* Move to a specific column
134 + <div class="line"><a name="100038"></a><span class="lineno"> 38</span>&#160;      uint bOffset = j;</div>
135 + <div class="line"><a name="100039"></a><span class="lineno"> 39</span>&#160;</div>
136 + <div class="line"><a name="100040"></a><span class="lineno"> 40</span>&#160;      <span class="comment"> /* [Load column] */</span>
137 + <div class="line"><a name="100041"></a><span class="lineno"> 41</span>&#160;      <span class="comment"> /* */</span></div>
138 + <div class="line"><a name="100042"></a><span class="lineno"> 42</span>&#160;<span class="comment"> * Load 4 values from a column
139 + <div class="line"><a name="100043"></a><span class="lineno"> 43</span>&#160;<span class="comment"> * then multiply them together
140 + <div class="line"><a name="100044"></a><span class="lineno"> 44</span>&#160;<span class="comment"> * We only want the sum of
141 + <div class="line"><a name="100045"></a><span class="lineno"> 45</span>&#160;<span class="comment"> */</span></div>
142 + <div class="line"><a name="100046"></a><span class="lineno"> 46</span>&#160;      <span class="keywordflow">for</span> (<span class="class">
143 + <div class="line"><a name="100047"></a><span class="lineno"> 47</span>&#160;      {</div>
144 + <div class="line"><a name="100048"></a><span class="lineno"> 48</span>&#160;      matrixBColumn.x = matrixB[bOffset];</div>
145 + <div class="line"><a name="100049"></a><span class="lineno"> 49</span>&#160;      bOffset += matrixOrder;</div>
146 + <div class="line"><a name="100050"></a><span class="lineno"> 50</span>&#160;</div>
147 + <div class="line"><a name="100051"></a><span class="lineno"> 51</span>&#160;      matrixBColumn.y = matrixB[bOffset];</div>
148 + <div class="line"><a name="100052"></a><span class="lineno"> 52</span>&#160;      bOffset += matrixOrder;</div>
149 + <div class="line"><a name="100053"></a><span class="lineno"> 53</span>&#160;</div>
150 + <div class="line"><a name="100054"></a><span class="lineno"> 54</span>&#160;      matrixBColumn.z = matrixB[bOffset];</div>
151 + <div class="line"><a name="100055"></a><span class="lineno"> 55</span>&#160;      bOffset += matrixOrder;</div>
152 + <div class="line"><a name="100056"></a><span class="lineno"> 56</span>&#160;</div>
153 + <div class="line"><a name="100057"></a><span class="lineno"> 57</span>&#160;      matrixBColumn.w = matrixB[bOffset];</div>
154 + <div class="line"><a name="100058"></a><span class="lineno"> 58</span>&#160;      bOffset += matrixOrder;</div>
155 + <div class="line"><a name="100059"></a><span class="lineno"> 59</span>&#160;      <span class="comment"> /* [Load column] */</span>
156 + <div class="line"><a name="100060"></a><span class="lineno"> 60</span>&#160;</div>
157 + <div class="line"><a name="100061"></a><span class="lineno"> 61</span>&#160;      <span class="comment"> /* [Calculation] */</span>
158 + <div class="line"><a name="100062"></a><span class="lineno"> 62</span>&#160;      sum += vload4 (0, matrixA) * matrixBColumn;</div>
159 + <div class="line"><a name="100063"></a><span class="lineno"> 63</span>&#160;      matrixA += 4;</div>
160 + <div class="line"><a name="100064"></a><span class="lineno"> 64</span>&#160;      }</div>
161 + <div class="line"><a name="100065"></a><span class="lineno"> 65</span>&#160;      <span class="comment"> /* [Calculation] */</span>
162 + <div class="line"><a name="100066"></a><span class="lineno"> 66</span>&#160;</div>
163 + <div class="line"><a name="100067"></a><span class="lineno"> 67</span>&#160;      <span class="comment"> /* [Store] */</span></div>
164 + <div class="line"><a name="100068"></a><span class="lineno"> 68</span>&#160;      <span class="comment"> /* */</span></div>
165 + <div class="line"><a name="100069"></a><span class="lineno"> 69</span>&#160;<span class="comment"> * Sum the 4 results to get
166 + <div class="line"><a name="100070"></a><span class="lineno"> 70</span>&#160;<span class="comment"> * Then carry out the final
167 + <div class="line"><a name="100071"></a><span class="lineno"> 71</span>&#160;<span class="comment"> */</span></div>
168 + <div class="line"><a name="100072"></a><span class="lineno"> 72</span>&#160;      matrixC[i * matrixOrder + j] = alpha * (sum.x + s
169 + <div class="line"><a name="100073"></a><span class="lineno"> 73</span>&#160;      <span class="comment"> /* [Store] */</span></div>
170 + <div class="line"><a name="100074"></a><span class="lineno"> 74</span>&#160;}</div>
171 + </div><!-- fragment --></div><!-- contents -->
172 + </div><!-- doc-content -->
173 + <!-- start footer part -->
174 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
175 +   <ul>
176 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
177 +     <li class="footer">
178 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
179 +     </li>
180 +   </ul>
181 + </div>
182 + </body>
183 + </html>

```

216 docs/html/sgemm_8cpp.html

...	...	@@ -0,0 +1,216 @@
1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">	
2	+ <html xmlns="http://www.w3.org/1999/xhtml">	
3	+ <head>	
4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>	
5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>	
6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sgemm/sgemm.cpp File Reference</title>	
7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>	
8	+ <script type="text/javascript" src="jquery.js"></script>	
9	+ <script type="text/javascript" src="dynsections.js"></script>	
10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>	
11	+ <script type="text/javascript" src="resize.js"></script>	
12	+ <script type="text/javascript" src="navtree.js"></script>	
13	+ <script type="text/javascript">	

```

14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +                 onfocus="searchBox.OnSearchFieldFocus(true)"
57 +                 onblur="searchBox.OnSearchFieldFocus(false)"
58 +                 onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
68 +   <ul class="tablist">
69 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
70 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
71 +   </ul>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +       </div>
82 +   </div>

```

```

83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sgemm_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 +   <!-- window showing the filter options -->
88 +   <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 +   <!-- iframe showing the search results (closed by default) -->
95 +   <div id="MSearchResultsWindow">
96 +     <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +     </iframe>
99 +   </div>
100 +
101 +   <div class="header">
102 +     <div class="summary">
103 +       <a href="#func-members">Functions</a>  </div>
104 +     <div class="headertitle">
105 +       <div class="title">sgemm.cpp File Reference</div>  </div>
106 +   </div><!--header-->
107 +   <div class="contents">
108 +     <div class="textblock"><code>#include "<a class="el" href="common_8h_source.html">common.h</a>";</code><br/>
109 +     <code>#include "<a class="el" href="image_8h_source.html">image.h</a>";</code><br/>
110 +     <code>#include <CL/cl.h>;</code><br/>
111 +     <code>#include <iostream>;</code><br/>
112 +     <code>#include <fstream>;</code><br/>
113 +     <code>#include <sstream>;</code><br/>
114 +     <code>#include <cstddef>;</code><br/>
115 +     <code>#include <cmath>;</code><br/>
116 +     <code>#include <cstdlib>;</code><br/>
117 +   </div>
118 +   <p><a href="sgemm_8cpp_source.html">Go to the source code of this file.</a></p>
119 +   <table class="memberdecls">
120 +     <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
121 +       Functions</h2></td></tr>
122 +     <tr class="memitem:ad08e4e7aca2ad6900f5f5c84d88b6aff"><td class="memItemLeft" align="right" valign="top">void&#160;;</td><td class="memItemRight" align="left" valign="top"><a href="memdesc:ad08e4e7aca2ad6900f5f5c84d88b6aff">Initialize the input</a></td>
123 +     <tr class="memdesc:ad08e4e7aca2ad6900f5f5c84d88b6aff"><td class="memdescLeft" align="right" valign="top">&#160;;</td><td class="memdescRight" align="left" valign="top">Initialize the input</td>
124 +     <tr class="separator:ad08e4e7aca2ad6900f5f5c84d88b6aff"><td class="memSeparator" colspan="2" align="center" valign="middle">&#160;;</td></tr>
125 +     <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;;</td><td class="memItemRight" align="left" valign="top">Simple SGEMM OpenCL sample</td>
126 +     <tr class="memdesc:a840291bc02cba5474a4cb46a9b9566fe"><td class="memdescLeft" align="right" valign="top">&#160;;</td><td class="memdescRight" align="left" valign="top">Simple SGEMM OpenCL sample</td>
127 +     <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2" align="center" valign="middle">&#160;;</td></tr>
128 +   </table>
129 +   <h2 class="groupheader">Function Documentation</h2>
130 +   <a class="anchor" id="a840291bc02cba5474a4cb46a9b9566fe"></a>
131 +   <div class="memitem">
132 +     <div class="memproto">
133 +       <table class="memname">
134 +         <tr>
135 +           <td class="memname">int main </td>
136 +           <td>(</td>
137 +             <td class="paramtype">void&#160;;</td>
138 +             <td class="paramname"></td><td>)</td>
139 +           <td></td>
140 +         </tr>
141 +       </table>
142 +     </div><div class="memdoc">
143 +
144 +       <p>Simple SGEMM OpenCL sample. </p>
145 +       <p>A sample which calculates the following SGEMM equation: matrixC = alpha * (matrixA * matrixB) + beta * matrixC.</p>
146 +       <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
147 +
148 +       <p>Definition at line <a class="el" href="sgemm_8cpp_source.html#l00060">l00060</a> of file <a class="el" href="sgemm_8cpp_source.html">sgemm_8cpp_source.html</a>.</p>
149 +
150 +     </div>
151 +   </div>

```

```

152 + <a class="anchor" id="ad08e4e7aca2ad6900f5f5c84d88b6aff"></a>
153 + <div class="memitem">
154 + <div class="memproto">
155 +     <table class="memname">
156 +         <tr>
157 +             <td class="memname">void sgemmInitialize </td>
158 +             <td>(</td>
159 +             <td class="paramtype">int&#160;;</td>
160 +             <td class="paramname"><em>matrixOrder</em>, </td>
161 +         </tr>
162 +         <tr>
163 +             <td class="paramkey"></td>
164 +             <td></td>
165 +             <td class="paramtype">float *&#160;;</td>
166 +             <td class="paramname"><em>matrixA</em>, </td>
167 +         </tr>
168 +         <tr>
169 +             <td class="paramkey"></td>
170 +             <td></td>
171 +             <td class="paramtype">float *&#160;;</td>
172 +             <td class="paramname"><em>matrixB</em>, </td>
173 +         </tr>
174 +         <tr>
175 +             <td class="paramkey"></td>
176 +             <td></td>
177 +             <td class="paramtype">float *&#160;;</td>
178 +             <td class="paramname"><em>matrixC</em>&#160;;</td>
179 +         </tr>
180 +         <tr>
181 +             <td></td>
182 +             <td>)</td>
183 +             <td></td><td></td>
184 +         </tr>
185 +     </table>
186 + </div><div class="memdoc">
187 +
188 + <p>Initialize the input matrices with random values. </p>
189 + <dl class="params"><dt>Parameters</dt><dd>
190 +   <table class="params">
191 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixOrder</td><td>The order of the matrices (number of rows and columns)
192 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixA</td><td>First input matrix. </td></tr>
193 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixB</td><td>Second input matrix. </td></tr>
194 +     <tr><td class="paramdir">[in]</td><td class="paramname">matrixC</td><td>Third input matrix. </td></tr>
195 +   </table>
196 + </dd>
197 + </dl>
198 + <dl class="section return"><dt>Returns</dt><dd>matrixA, matrixB and matrixC with random values. </dd></dl>
199 +
200 + <p>Definition at line <a class="el" href="sgemm_8cpp_source.html#l00032">32</a> of file <a class="el" href="sgemm_8cpp_source.html">
201 +
202 + </div>
203 + </div>
204 + </div><!-- contents -->
205 + </div><!-- doc-content -->
206 + <!-- start footer part -->
207 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
208 +   <ul>
209 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="sgemm_8cpp.html">sgemm_8cpp</a></li>
210 +     <li class="footer">
211 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
212 +     </li>
213 +   </ul>
214 + </div>
215 + </body>
216 + </html>

```

```
... ... @@ -0,0 +1,5 @@
1 + var sgemm_8cpp =
2 + [
3 +     [ "main", "sgemm_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ],
4 +     [ "sgemmInitialize", "sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6aff", null ]
5 + ]; ⊖
```

335 docs/html/sgemm_8cpp_source.html □

```
... ... @@ -0,0 +1,335 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sgemm/sgemm.cpp Source Fi
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +     $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +     $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + <li><a href="index.html"><span>Home</span></a></li>
46 + <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 + <li class="current"><a href="files.html"><span>Files</span></a></li>
48 + <li>
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 + <span class="left">
51 + 
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
```

```

59      </span><span class="right">
60      <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67   <ul class="tablist">
68     <li><a href="files.html"><span>File&#160;List</span></a></li>
69     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70   </ul>
71 </div>
72 </div><!-- top -->
73 <div id="side-nav" class="ui-resizable side-nav-resizable">
74   <div id="nav-tree">
75     <div id="nav-tree-contents">
76       <div id="nav-sync" class="sync"></div>
77     </div>
78   </div>
79   <div id="splitbar" style="-moz-user-select:none;">
80     <div class="ui-resizable-handle">
81   </div>
82 </div>
83 <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sgemm_8cpp_source.html','');});
85 </script>
86 <div id="doc-content">
87 <!-- window showing the filter options -->
88 <div id="MSearchSelectWindow"
89   onmouseover="return searchBox.OnSearchSelectShow()"
90   onmouseout="return searchBox.OnSearchSelectHide()"
91   onkeydown="return searchBox.OnSearchSelectKey(event)">
92   <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 <!-- iframe showing the search results (closed by default) -->
95 <div id="MSearchResultsWindow">
96   <iframe src="javascript:void(0)" frameborder="0"
97     name="MSearchResults" id="MSearchResults">
98   </iframe>
99 </div>
100 +
101 <div class="header">
102   <div class="headertitle">
103     <div class="title">sgemm.cpp</div> </div>
104   </div><!--header-->
105 <div class="contents">
106   <a href="sgemm_8cpp.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"></a><span class="lineno"> 1</span><span class="comment"> * This confidential and propri
107   <div class="line"><a name="100002"></a><span class="lineno"> 2</span>&#160;<span class="comment"> * This confidential and propri
108   <div class="line"><a name="100003"></a><span class="lineno"> 3</span>&#160;<span class="comment"> * authorised by a licensing ag
109   <div class="line"><a name="100004"></a><span class="lineno"> 4</span>&#160;<span class="comment"> * (C) COPYRIGHT 2013 ARM Li
110   <div class="line"><a name="100005"></a><span class="lineno"> 5</span>&#160;<span class="comment"> * ALL RIGHTS RESERVED<
111   <div class="line"><a name="100006"></a><span class="lineno"> 6</span>&#160;<span class="comment"> * The entire notice above must
112   <div class="line"><a name="100007"></a><span class="lineno"> 7</span>&#160;<span class="comment"> * copies and copies may only b
113   <div class="line"><a name="100008"></a><span class="lineno"> 8</span>&#160;<span class="comment"> * by a licensing agreement fro
114   <div class="line"><a name="100009"></a><span class="lineno"> 9</span>&#160;<span class="comment"> */</span></div>
115   <div class="line"><a name="100010"></a><span class="lineno">10</span>&#160;</div>
116   <div class="line"><a name="100011"></a><span class="lineno">11</span>&#160;<span class="preprocessor">#include &quot;<a class="
117   <div class="line"><a name="100012"></a><span class="lineno">12</span>&#160;<span class="preprocessor">#include &quot;<a class="
118   <div class="line"><a name="100013"></a><span class="lineno">13</span>&#160;</div>
119   <div class="line"><a name="100014"></a><span class="lineno">14</span>&#160;<span class="preprocessor">#include &lt;CL/cl.h&gt;<
120   <div class="line"><a name="100015"></a><span class="lineno">15</span>&#160;<span class="preprocessor">#include &lt;iostream&gt;<
121   <div class="line"><a name="100016"></a><span class="lineno">16</span>&#160;<span class="preprocessor">#include &lt;fstream&gt;<
122   <div class="line"><a name="100017"></a><span class="lineno">17</span>&#160;<span class="preprocessor">#include &lt;sstream&gt;<
123   <div class="line"><a name="100018"></a><span class="lineno">18</span>&#160;<span class="preprocessor">#include &lt;cstddef&gt;<
124   <div class="line"><a name="100019"></a><span class="lineno">19</span>&#160;<span class="preprocessor">#include &lt;cmath&gt;<sp
125   <div class="line"><a name="100020"></a><span class="lineno">20</span>&#160;<span class="preprocessor">#include &lt;cstdlib&gt;<
126   <div class="line"><a name="100021"></a><span class="lineno">21</span>&#160;</div>
127   <div class="line"><a name="100022"></a><span class="lineno">22</span>&#160;<span class="keyword">using namespace std;</span>
```

```
+ <div class="line"><a name="100023"></a><span class="lineno"> 23</span>#160;</div>
+ <div class="line"><a name="100032"></a><span class="lineno"><a class="code" href="sgemm_8cpp.html#ad08e4e7aca2ad6900f5f5c84d88b6af1" 33</span>#160;{</div>
+ <div class="line"><a name="100033"></a><span class="lineno"> 34</span>#160;    <span class="keywordflow">for</span> (<span class="lineno"> 35</span>#160;    {</div>
+ <div class="line"><a name="100034"></a><span class="lineno"> 36</span>#160;        <span class="keywordflow">for</span> (<span class="lineno"> 37</span>#160;        {</div>
+ <div class="line"><a name="100035"></a><span class="lineno"> 38</span>#160;            <span class="keywordtype">int</span> index</div>
+ <div class="line"><a name="100036"></a><span class="lineno"> 39</span>#160;</div>
+ <div class="line"><a name="100040"></a><span class="lineno"> 40</span>#160;        <span class="comment">/* Keep the values</span>
+ <div class="line"><a name="100041"></a><span class="lineno"> 41</span>#160;        <span class="keywordtype">float</span> randomeNumber; </div>
+ <div class="line"><a name="100042"></a><span class="lineno"> 42</span>#160;
+ <div class="line"><a name="100043"></a><span class="lineno"> 43</span>#160;</div>
+ <div class="line"><a name="100044"></a><span class="lineno"> 44</span>#160;        randomeNumber = rand() / (float) RAND_MAX;
+ <div class="line"><a name="100045"></a><span class="lineno"> 45</span>#160;        matrixB[index] = randomeNumber; </div>
+ <div class="line"><a name="100046"></a><span class="lineno"> 46</span>#160;</div>
+ <div class="line"><a name="100047"></a><span class="lineno"> 47</span>#160;        randomeNumber = rand() / (float) RAND_MAX;
+ <div class="line"><a name="100048"></a><span class="lineno"> 48</span>#160;        matrixC[index] = randomeNumber; </div>
+ <div class="line"><a name="100049"></a><span class="lineno"> 49</span>#160;    }</div>
+ <div class="line"><a name="100050"></a><span class="lineno"> 50</span>#160;    }</div>
+ <div class="line"><a name="100051"></a><span class="lineno"> 51</span>#160;}</div>
+ <div class="line"><a name="100052"></a><span class="lineno"> 52</span>#160;</div>
+ <div class="line"><a name="100060"></a><span class="lineno"><a class="code" href="sgemm_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe" 61</span>#160;{</div>
+ <div class="line"><a name="100061"></a><span class="lineno"> 62</span>#160;    cl_context context = 0; </div>
+ <div class="line"><a name="100063"></a><span class="lineno"> 63</span>#160;    cl_command_queue commandQueue = 0; </div>
+ <div class="line"><a name="100064"></a><span class="lineno"> 64</span>#160;    cl_program program = 0; </div>
+ <div class="line"><a name="100065"></a><span class="lineno"> 65</span>#160;    cl_device_id device = 0; </div>
+ <div class="line"><a name="100066"></a><span class="lineno"> 66</span>#160;    cl_kernel kernel = 0; </div>
+ <div class="line"><a name="100067"></a><span class="lineno"> 67</span>#160;    <span class="keyword">const</span> <span class="lineno">
+ <div class="line"><a name="100068"></a><span class="lineno"> 68</span>#160;    cl_mem memoryObjects[numberOfMemoryObjects] = {0, <span class="lineno">
+ <div class="line"><a name="100069"></a><span class="lineno"> 69</span>#160;    cl_int errorNumber; </div>
+ <div class="line"><a name="100070"></a><span class="lineno"> 70</span>#160;</div>
+ <div class="line"><a name="100071"></a><span class="lineno"> 71</span>#160;    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#acd459" 72</span>#160;    {</div>
+ <div class="line"><a name="100072"></a><span class="lineno"> 73</span>#160;        <a class="code" href="common_8cpp.html#acd459" 74</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot; </span>
+ <div class="line"><a name="100073"></a><span class="lineno"> 75</span>#160;        <span class="keywordflow">return</span> 1;</div>
+ <div class="line"><a name="100074"></a><span class="lineno"> 76</span>#160;    }</div>
+ <div class="line"><a name="100075"></a><span class="lineno"> 77</span>#160;</div>
+ <div class="line"><a name="100076"></a><span class="lineno"> 78</span>#160;    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#acd459" 79</span>#160;    {</div>
+ <div class="line"><a name="100077"></a><span class="lineno"> 80</span>#160;        <a class="code" href="common_8cpp.html#acd459" 81</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot; </span>
+ <div class="line"><a name="100078"></a><span class="lineno"> 82</span>#160;        <span class="keywordflow">return</span> 1;</div>
+ <div class="line"><a name="100079"></a><span class="lineno"> 83</span>#160;    }</div>
+ <div class="line"><a name="100080"></a><span class="lineno"> 84</span>#160;</div>
+ <div class="line"><a name="100081"></a><span class="lineno"> 85</span>#160;    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#acd459" 86</span>#160;    {</div>
+ <div class="line"><a name="100082"></a><span class="lineno"> 87</span>#160;        <a class="code" href="common_8cpp.html#acd459" 88</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot; </span>
+ <div class="line"><a name="100083"></a><span class="lineno"> 89</span>#160;        <span class="keywordflow">return</span> 1;</div>
+ <div class="line"><a name="100084"></a><span class="lineno"> 90</span>#160;    }</div>
+ <div class="line"><a name="100085"></a><span class="lineno"> 91</span>#160;</div>
+ <div class="line"><a name="100086"></a><span class="lineno"> 92</span>#160;    kernel = clCreateKernel(program, <span class="stringliteral">" </span>
+ <div class="line"><a name="100087"></a><span class="lineno"> 93</span>#160;    <span class="keywordflow">if</span> (!<a class="code" href="common_8cpp.html#acd459" 94</span>#160;    {</div>
+ <div class="line"><a name="100088"></a><span class="lineno"> 95</span>#160;        <a class="code" href="common_8cpp.html#acd459" 96</span>#160;        cerr &lt;&lt; <span class="stringliteral">&quot; </span>
+ <div class="line"><a name="100089"></a><span class="lineno"> 97</span>#160;        <span class="keywordflow">return</span> 1;</div>
+ <div class="line"><a name="100090"></a><span class="lineno"> 98</span>#160;    }</div>
+ <div class="line"><a name="100091"></a><span class="lineno"> 99</span>#160;</div>
+ <div class="line"><a name="100092"></a><span class="lineno"> 100</span>#160;    <span class="comment">/* Kernel variables. */</span>
+ <div class="line"><a name="100093"></a><span class="lineno"> 101</span>#160;    <span class="keywordtype">unsigned</span> <span class="lineno">
+ <div class="line"><a name="100094"></a><span class="lineno"> 102</span>#160;    <span class="keywordtype">float</span> alpha = 1; </div>
+ <div class="line"><a name="100095"></a><span class="lineno"> 103</span>#160;    <span class="keywordtype">float</span> beta = 0.1; </div>
+ <div class="line"><a name="100096"></a><span class="lineno"> 104</span>#160;</div>
+ <div class="line"><a name="100097"></a><span class="lineno"> 105</span>#160;    <span class="comment">/* Create the matrices. */</span>
+ <div class="line"><a name="100098"></a><span class="lineno"> 106</span>#160;    <span class="keyword">const</span> <span class="lineno">
```



```

266 + <div class="line"><a name="100176"></a><span class="lineno"> 176</span>&#160;<span class="comment"> * Each kernel outputs one
267 + <div class="line"><a name="100177"></a><span class="lineno"> 177</span>&#160;<span class="comment"> * therefore the total numbe
268 + <div class="line"><a name="100178"></a><span class="lineno"> 178</span>&#160;<span class="comment"> * To accomplish this we us
269 + <div class="line"><a name="100179"></a><span class="lineno"> 179</span>&#160;<span class="comment"> */</span></div>
270 + <div class="line"><a name="100180"></a><span class="lineno"> 180</span>&#160; <span class="keywordtype">size_t</span> globalWork
271 + <div class="line"><a name="100181"></a><span class="lineno"> 181</span>&#160; <span class="comment"> /* [Kernel size] */</span>
272 + <div class="line"><a name="100182"></a><span class="lineno"> 182</span>&#160;</div>
273 + <div class="line"><a name="100183"></a><span class="lineno"> 183</span>&#160; <span class="comment"> /* Enqueue the kernel */</span>
274 + <div class="line"><a name="100184"></a><span class="lineno"> 184</span>&#160; <span class="keywordflow">if</span> (<a class="c
275 + <div class="line"><a name="100185"></a><span class="lineno"> 185</span>&#160;
276 + <div class="line"><a name="100186"></a><span class="lineno"> 186</span>&#160;
277 + <div class="line"><a name="100187"></a><span class="lineno"> 187</span>&#160;
278 + <div class="line"><a name="100188"></a><span class="lineno"> 188</span>&#160;
279 + <div class="line"><a name="100189"></a><span class="lineno"> 189</span>&#160;
280 + <div class="line"><a name="100190"></a><span class="lineno"> 190</span>&#160;</div>
281 + <div class="line"><a name="100191"></a><span class="lineno"> 191</span>&#160;
282 + <div class="line"><a name="100192"></a><span class="lineno"> 192</span>&#160;
283 + <div class="line"><a name="100193"></a><span class="lineno"> 193</span>&#160;
284 + <div class="line"><a name="100194"></a><span class="lineno"> 194</span>&#160;
285 + <div class="line"><a name="100195"></a><span class="lineno"> 195</span>&#160;
286 + <div class="line"><a name="100196"></a><span class="lineno"> 196</span>&#160;
287 + <div class="line"><a name="100197"></a><span class="lineno"> 197</span>&#160;
288 + <div class="line"><a name="100198"></a><span class="lineno"> 198</span>&#160;</div>
289 + <div class="line"><a name="100199"></a><span class="lineno"> 199</span>&#160;
290 + <div class="line"><a name="100200"></a><span class="lineno"> 200</span>&#160;
291 + <div class="line"><a name="100201"></a><span class="lineno"> 201</span>&#160;
292 + <div class="line"><a name="100202"></a><span class="lineno"> 202</span>&#160;
293 + <div class="line"><a name="100203"></a><span class="lineno"> 203</span>&#160;
294 + <div class="line"><a name="100204"></a><span class="lineno"> 204</span>&#160;
295 + <div class="line"><a name="100205"></a><span class="lineno"> 205</span>&#160;
296 + <div class="line"><a name="100206"></a><span class="lineno"> 206</span>&#160;
297 + <div class="line"><a name="100207"></a><span class="lineno"> 207</span>&#160;
298 + <div class="line"><a name="100208"></a><span class="lineno"> 208</span>&#160;</div>
299 + <div class="line"><a name="100209"></a><span class="lineno"> 209</span>&#160;
300 + <div class="line"><a name="100210"></a><span class="lineno"> 210</span>&#160;
301 + <div class="line"><a name="100211"></a><span class="lineno"> 211</span>&#160;
302 + <div class="line"><a name="100212"></a><span class="lineno"> 212</span>&#160;
303 + <div class="line"><a name="100213"></a><span class="lineno"> 213</span>&#160;
304 + <div class="line"><a name="100214"></a><span class="lineno"> 214</span>&#160;
305 + <div class="line"><a name="100215"></a><span class="lineno"> 215</span>&#160;
306 + <div class="line"><a name="100216"></a><span class="lineno"> 216</span>&#160;
307 + <div class="line"><a name="100217"></a><span class="lineno"> 217</span>&#160;</div>
308 + <div class="line"><a name="100218"></a><span class="lineno"> 218</span>&#160;
309 + <div class="line"><a name="100219"></a><span class="lineno"> 219</span>&#160;</div>
310 + <div class="line"><a name="100220"></a><span class="lineno"> 220</span>&#160;
311 + <div class="line"><a name="100221"></a><span class="lineno"> 221</span>&#160;
312 + <div class="line"><a name="100222"></a><span class="lineno"> 222</span>&#160;
313 + <div class="line"><a name="100223"></a><span class="lineno"> 223</span>&#160;
314 + <div class="line"><a name="100224"></a><span class="lineno"> 224</span>&#160;
315 + <div class="line"><a name="100225"></a><span class="lineno"> 225</span>&#160;
316 + <div class="line"><a name="100226"></a><span class="lineno"> 226</span>&#160;
317 + <div class="line"><a name="100227"></a><span class="lineno"> 227</span>&#160;</div>
318 + <div class="line"><a name="100228"></a><span class="lineno"> 228</span>&#160;
319 + <div class="line"><a name="100229"></a><span class="lineno"> 229</span>&#160;
320 + <div class="line"><a name="100230"></a><span class="lineno"> 230</span>&#160;</div>
321 + <div class="line"><a name="100231"></a><span class="lineno"> 231</span>&#160;
322 + <div class="line"><a name="100232"></a><span class="lineno"> 232</span>&#160;</div>
323 + </div><!-- fragment --></div><!-- contents -->
324 + </div><!-- doc-content -->
325 + <!-- start footer part -->
326 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
327 +   <ul>
328 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class
329 +       <li class="footer">
330 +         <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
331 +       </li>
332 +     </ul>
333 +   </div>
334 + </body>

```

118 docs/html/sgemm_8dox.html

```
... ... @@ -0,0 +1,118 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/sgemm.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sgemm_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +       onmouseover="return searchBar.OnSearchSelectShow()"
90 +       onmouseout="return searchBar.OnSearchSelectHide()"
91 +       onkeydown="return searchBar.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBar.OnSelectItem(0)"><span class="SelectionMark">&#160;</span>All</a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +           name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">tutorials/sgemm.dox File Reference</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +   <ul>
111 +     <li class="navelem"><a class="el" href="sgemm_8dox.html">sgemm.dox</a></li>
112 +     <li class="footer">
113 +       <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
114 +     </li>
115 +   </ul>
116 + </div>
117 + </body>
118 + </html>
```

226 docs/html/sgemm tutorial.html

Load diff

181 docs/html/sobel_8cl.html

... @@ -0,0 +1,181 @@

```
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel/assets/sobel.cl File</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 +   $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 +   $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 +   <tbody>
28 +     <tr style="height: 56px;">
29 +       <td id="projectlogo"></td>
30 +       <td style="padding-left: 0.5em;">
31 +         <div id="projectname">Mali OpenCL SDK v1.1.0
32 +         </div>
33 +       </td>
34 +     </tr>
35 +   </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +   <ul class="tablist">
68 +     <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +     <li><a href="globals.html"><span>File&#160;Members</span></a></li>
```

```
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     class="ui-resizable-handle">
81 +   </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_8cl.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 +   onmouseover="return searchBox.OnSearchSelectShow()"
90 +   onmouseout="return searchBox.OnSearchSelectHide()"
91 +   onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 +   name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="summary">
103 +     <a href="#func-members">Functions</a>  </div>
104 +   <div class="headertitle">
105 +     <div class="title">sobel.cl File Reference</div>  </div>
106 +   </div><!--header-->
107 + <div class="contents">
108 +
109 + <p><a href="sobel_8cl_source.html">Go to the source code of this file.</a></p>
110 + <table class="memberdecls">
111 + <tr class="heading"><td colspan="2"><h2 class="groupheader"><a name="func-members"></a>
112 + Functions</h2></td></tr>
113 + <tr class="memitem:ad999d1681236d38b8c3e05c610a99850"><td class="memItemLeft" align="right" valign="top">__kernel void&#160;</td><td class="memItemRight" valign="top">
114 + <tr class="memdesc:ad999d1681236d38b8c3e05c610a99850"><td class="mdescLeft">&#160;</td><td class="mdescRight" style="vertical-align: top;">Sobel filter kernel +<br/>
115 + <tr class="separator:ad999d1681236d38b8c3e05c610a99850"><td class="memSeparator" colspan="2">&#160;</td></tr>
116 + </table>
117 + <h2 class="groupheader">Function Documentation</h2>
118 + <a class="anchor" id="ad999d1681236d38b8c3e05c610a99850"></a>
119 + <div class="memitem">
120 + <div class="memproto">
121 +   <table class="memname">
122 +     <tr>
123 +       <td class="memname">__kernel void sobel </td>
124 +       <td>(</td>
125 +         <td class="paramtype">__global const uchar *restrict&#160;</td>
126 +         <td class="paramname"><em>inputImage</em>, </td>
127 +       </tr>
128 +       <tr>
129 +         <td class="paramkey"></td>
130 +         <td></td>
131 +         <td class="paramtype">const int&#160;</td>
132 +         <td class="paramname"><em>width</em>, </td>
133 +       </tr>
134 +       <tr>
135 +         <td class="paramkey"></td>
136 +         <td></td>
137 +         <td class="paramtype">__global char *restrict&#160;</td>
138 +         <td class="paramname"><em>outputImageDX</em>, </td>
```

```

139 +         </tr>
140 +         <tr>
141 +             <td class="paramkey"></td>
142 +             <td></td>
143 +             <td class="paramtype">__global char *restrict&#160;</td>
144 +             <td class="paramname"><em>outputImageDY</em>&#160;</td>
145 +         </tr>
146 +         <tr>
147 +             <td></td>
148 +             <td>)</td>
149 +             <td></td><td></td>
150 +         </tr>
151 +     </table>
152 + </div><div class="memdoc">
153 +
154 + <p>Sobel filter kernel function. </p>
155 + <dl class="params"><dt>Parameters</dt><dd>
156 +     <table class="params">
157 +         <tr><td class="paramdir">[in]</td><td class="paramname">inputImage</td><td>Input image data in row-major format. </td></tr>
158 +         <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>Width of the image passed in as inputImage. </td></tr>
159 +         <tr><td class="paramdir">[out]</td><td class="paramname">outputImageDX</td><td>Output image of the calculated gradient in the X direction. </td></tr>
160 +         <tr><td class="paramdir">[out]</td><td class="paramname">outputImageDY</td><td>Output image of the calculated gradient in the Y direction. </td></tr>
161 +     </table>
162 +   </dd>
163 + </dl>
164 +
165 + <p>Definition at line <a class="el" href="sobel_8cl_source.html#l00018">18</a> of file <a class="el" href="sobel_8cl_source.html">sobel_8cl.h</a>.
166 +
167 + </div>
168 + </div>
169 + </div><!-- contents -->
170 + </div><!-- doc-content -->
171 + <!-- start footer part -->
172 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
173 +     <ul>
174 +         <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="sobel_8cl_source.html">sobel_8cl.h</a></li>
175 +         <li class="footer">
176 +             <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
177 +         </li>
178 +     </ul>
179 + </div>
180 + </body>
181 + </html>

```

▼ 4 docs/html/sobel_8cl.js

...	...	@@ -0,0 +1,4 @@
	1	+ var sobel_8cl =
	2	+ [
	3	+ ["sobel", "sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850", null]
	4	+]; -

▼ 233 docs/html/sobel_8cl_source.html

...	...	@@ -0,0 +1,233 @@
	1	+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
	2	+ <html xmlns="http://www.w3.org/1999/xhtml">
	3	+ <head>
	4	+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
	5	+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
	6	+ <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel/assets/sobel.cl Source Code</title>
	7	+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
	8	+ <script type="text/javascript" src="jquery.js"></script>
	9	+ <script type="text/javascript" src="dynsections.js"></script>
	10	+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
	11	+ <script type="text/javascript" src="resize.js"></script>
	12	+ <script type="text/javascript" src="navtree.js"></script>
	13	+ <script type="text/javascript">

```

14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 +   <ul class="tablist">
45 +     <li><a href="index.html"><span>Home</span></a></li>
46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>
47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>
48 +     <li>
49 +       <div id="MSearchBox" class="MSearchBoxInactive">
50 +         <span class="left">
51 +           
55 +           <input type="text" id="MTextField" value="Search" accesskey="S"
56 +             onfocus="searchBox.OnSearchFieldFocus(true)"
57 +             onblur="searchBox.OnSearchFieldFocus(false)"
58 +             onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +         </span><span class="right">
60 +           <a id="MSearchClose" href="javascript:searchBox.CloseResultsWindow()">
67 +     <ul class="tablist">
68 +       <li><a href="files.html"><span>File&#160;List</span></a></li>
69 +       <li><a href="globals.html"><span>File&#160;Members</span></a></li>
70 +     </ul>
71 +   </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 +   <div id="nav-tree">
75 +     <div id="nav-tree-contents">
76 +       <div id="nav-sync" class="sync"></div>
77 +     </div>
78 +   </div>
79 +   <div id="splitbar" style="-moz-user-select:none;">
80 +     <div class="ui-resizable-handle">
81 +     </div>
82 +   </div>

```

```
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_8cl_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 +   <!-- window showing the filter options -->
88 +   <div id="MSearchSelectWindow"
89 +     onmouseover="return searchBox.OnSearchSelectShow()"
90 +     onmouseout="return searchBox.OnSearchSelectHide()"
91 +     onkeydown="return searchBox.OnSearchSelectKey(event)">
92 +     <a class="SelectItem" href="javascript:void(0)" onclick="searchBox.OnSelectItem(0)"><span class="SelectionMark">All</span></a>
93 +
94 +   <!-- iframe showing the search results (closed by default) -->
95 +   <div id="MSearchResultsWindow">
96 +     <iframe src="javascript:void(0)" frameborder="0"
97 +       name="MSearchResults" id="MSearchResults">
98 +   </iframe>
99 + </div>
100 +
101 + <div class="header">
102 +   <div class="headertitle">
103 +     <div class="title">sobel.cl</div>  </div>
104 +   </div><!--header-->
105 + <div class="contents">
106 +   <a href="sobel_8cl.html">Go to the documentation of this file.</a><div class="fragment"><div class="line"><a name="100001"></a><span class="lineno"> 1</span><span class="comment"> * This confidential and propri</span>
107 +   <div class="line"><a name="100002"></a><span class="lineno"> 2</span><span class="comment"> * This confidential and propri</span>
108 +   <div class="line"><a name="100003"></a><span class="lineno"> 3</span><span class="comment"> * authorised by a licensing ag</span>
109 +   <div class="line"><a name="100004"></a><span class="lineno"> 4</span><span class="comment"> *      (C) COPYRIGHT 2013 ARM Li</span>
110 +   <div class="line"><a name="100005"></a><span class="lineno"> 5</span><span class="comment"> *          ALL RIGHTS RESERVED</span>
111 +   <div class="line"><a name="100006"></a><span class="lineno"> 6</span><span class="comment"> * The entire notice above must</span>
112 +   <div class="line"><a name="100007"></a><span class="lineno"> 7</span><span class="comment"> * copies and copies may only b</span>
113 +   <div class="line"><a name="100008"></a><span class="lineno"> 8</span><span class="comment"> * by a licensing agreement fro</span>
114 +   <div class="line"><a name="100009"></a><span class="lineno"> 9</span><span class="comment"> */</span></div>
115 +   <div class="line"><a name="100010"></a><span class="lineno"> 10</span>&#160;</div>
116 +   <div class="line"><a name="100018"></a><span class="lineno"> 11</span><a class="code" href="sobel_8cl.html#ad999d1681236d38b8c3e05c610a99850'>
117 +   <div class="line"><a name="100019"></a><span class="lineno"> 12</span>&#160;           <span class="keyword">const</span>
118 +   <div class="line"><a name="100020"></a><span class="lineno"> 13</span>&#160;           <span class="comment">__global</span> <span class="keywordtype">
119 +   <div class="line"><a name="100021"></a><span class="lineno"> 14</span>&#160;           <span class="comment">__global</span> <span class="keywordtype">
120 +   <div class="line"><a name="100022"></a><span class="lineno"> 15</span>&#160;           </div>
121 +   <div class="line"><a name="100023"></a><span class="lineno"> 16</span>&#160;           <span class="comment">/* [Kernel size] */</span>
122 +   <div class="line"><a name="100024"></a><span class="lineno"> 17</span>&#160;           <span class="comment">*/</span></div>
123 +   <div class="line"><a name="100025"></a><span class="lineno"> 18</span>&#160;           <span class="comment">* Each kernel calculates 1</span>
124 +   <div class="line"><a name="100026"></a><span class="lineno"> 19</span>&#160;           <span class="comment">* column is in the range [0,</span>
125 +   <div class="line"><a name="100027"></a><span class="lineno"> 20</span>&#160;           <span class="comment">* row is in the range [0,</span>
126 +   <div class="line"><a name="100028"></a><span class="lineno"> 21</span>&#160;           <span class="comment">*]/</span></div>
127 +   <div class="line"><a name="100029"></a><span class="lineno"> 22</span>&#160;           <span class="comment">*/</span></div>
128 +   <div class="line"><a name="100030"></a><span class="lineno"> 23</span>&#160;           <span class="keyword">const</span> <span class="comment">K</span>
129 +   <div class="line"><a name="100031"></a><span class="lineno"> 24</span>&#160;           <span class="keyword">const</span> <span class="comment">K</span>
130 +   <div class="line"><a name="100032"></a><span class="lineno"> 25</span>&#160;           <span class="comment">*/ Offset calculates the po</span>
131 +   <div class="line"><a name="100033"></a><span class="lineno"> 26</span>&#160;           <span class="keyword">const</span> <span class="comment">K</span>
132 +   <div class="line"><a name="100034"></a><span class="lineno"> 27</span>&#160;           <span class="comment">*/ [Kernel size] */</span>
133 +   <div class="line"><a name="100035"></a><span class="lineno"> 28</span>&#160;           </div>
134 +   <div class="line"><a name="100036"></a><span class="lineno"> 29</span>&#160;           <span class="comment">/* [Load row] */</span></div>
135 +   <div class="line"><a name="100037"></a><span class="lineno"> 30</span>&#160;           <span class="comment">*/</span></div>
136 +   <div class="line"><a name="100038"></a><span class="lineno"> 31</span>&#160;           <span class="comment">* First row of input.</span>
137 +   <div class="line"><a name="100039"></a><span class="lineno"> 32</span>&#160;           <span class="comment">* In a scalar Sobel calcul</span>
138 +   <div class="line"><a name="100040"></a><span class="lineno"> 33</span>&#160;           <span class="comment">* In the vector case we lo</span>
139 +   <div class="line"><a name="100041"></a><span class="lineno"> 34</span>&#160;           <span class="comment">* leftLoad, middleLoad and</span>
140 +   <div class="line"><a name="100042"></a><span class="lineno"> 35</span>&#160;           <span class="comment">* The data they load overl</span>
141 +   <div class="line"><a name="100043"></a><span class="lineno"> 36</span>&#160;           <span class="comment">* So we're actually lo</span>
142 +   <div class="line"><a name="100044"></a><span class="lineno"> 37</span>&#160;           <span class="comment">*/</span></div>
143 +   <div class="line"><a name="100045"></a><span class="lineno"> 38</span>&#160;           uchar16 leftLoad = vload16(0, inputImage + (offse</span>
144 +   <div class="line"><a name="100046"></a><span class="lineno"> 39</span>&#160;           uchar16 middleLoad = vload16(0, inputImage + (offse</span>
145 +   <div class="line"><a name="100047"></a><span class="lineno"> 40</span>&#160;           uchar16 rightLoad = vload16(0, inputImage + (offse</span>
146 +   <div class="line"><a name="100048"></a><span class="lineno"> 41</span>&#160;           <span class="comment">/* [Load row] */</span></div>
147 +   <div class="line"><a name="100049"></a><span class="lineno"> 42</span>&#160;           <span class="comment">*/</span></div>
148 +   <div class="line"><a name="100050"></a><span class="lineno"> 43</span>&#160;           <span class="comment">/* [Convert data] */</span>
149 +   <div class="line"><a name="100051"></a><span class="lineno"> 44</span>&#160;           <span class="comment">*/</span></div>
150 +   <div class="line"><a name="100052"></a><span class="lineno"> 45</span>&#160;           <span class="comment">* Convert the data from ur</span>
151 +   <div class="line"><a name="100053"></a><span class="lineno"> 46</span>&#160;           <span class="comment">* The calculations can ove</span>
```



```

221 + </div><!-- fragment --></div><!-- contents -->
222 + </div><!-- doc-content -->
223 + <!-- start footer part -->
224 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
225 +   <ul>
226 +     <li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li><li class="navelem"><a class="el" href="dir_6f9635d4fbfa321d4c00f29df5cd540c.html">samples</a></li>
227 +   <li class="footer">
228 +     <a href="http://www.arm.com/">(C) ARM Ltd. 2013</a>
229 +   </li>
230 + </ul>
231 + </div>
232 + </body>
233 + </html>

```

▼ 160 docs/html/sobel_8cpp.html □

...	...	@@ -0,0 +1,160 @@
		1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
		2 + <html xmlns="http://www.w3.org/1999/xhtml">
		3 + <head>
		4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
		5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
		6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel/sobel.cpp File Reference</title>
		7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
		8 + <script type="text/javascript" src="jquery.js"></script>
		9 + <script type="text/javascript" src="dynsections.js"></script>
		10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
		11 + <script type="text/javascript" src="resize.js"></script>
		12 + <script type="text/javascript" src="navtree.js"></script>
		13 + <script type="text/javascript">
		14 + \$(document).ready(initResizable);
		15 + </script>
		16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
		17 + <script type="text/javascript" src="search/search.js"></script>
		18 + <script type="text/javascript">
		19 + \$(document).ready(function() { searchBox.OnSelectItem(0); });
		20 + </script>
		21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
		22 + </head>
		23 + <body>
		24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
		25 + <div id="titlearea">
		26 + <table cellspacing="0" cellpadding="0">
		27 + <tbody>
		28 + <tr style="height: 56px;">
		29 + <td id="projectlogo"></td>
		30 + <td style="padding-left: 0.5em;">
		31 + <div id="projectname">Mali OpenCL SDK v1.1.0
		32 + </div>
		33 + </td>
		34 + </tr>
		35 + </tbody>
		36 + </table>
		37 + </div>
		38 + <!-- end header part -->
		39 + <!-- Generated by Doxygen 1.8.2 -->
		40 + <script type="text/javascript">
		41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
		42 + </script>
		43 + <div id="navrow1" class="tabs">
		44 + <ul class="tablist">
		45 + Home
		46 + Help and Tutorials
		47 + <li class="current">Files
		48 +
		49 + <div id="MSearchBox" class="MSearchBoxInactive">
		50 +
		51 +
55 + <input type="text" id="MSearchField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="summary">
103 + Functions </div>
104 + <div class="headertitle">
105 + <div class="title">sobel.cpp File Reference</div> </div>
106 + </div><!--header-->
107 + <div class="contents">
108 + <div class="textblock"><code>#include "common.h"</code>

109 + <code>#include "image.h"</code>

110 + <code>#include <CL/cl.h></code>

111 + <code>#include <iostream></code>

112 + <code>#include <fstream></code>

113 + <code>#include <iostream></code>

114 + <code>#include <cmath></code>

115 + <code>#include <math.h></code>

116 + </div>
117 + <p>Go to the source code of this file.</p>
118 + <table class="memberdecls">
119 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
120 + Functions</h2></td></tr>

```

```

121 + <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int </td><td class="memItemRight" align="left" valign="top">Simple Sobel filter C</td></tr>
122 + <tr class="memdesc:a840291bc02cba5474a4cb46a9b9566fe"><td class="mdescLeft"> </td><td class="mdescRight">Simple Sobel filter C</td></tr>
123 + <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2"> </td></tr>
124 + </table>
125 + <h2 class="groupheader">Function Documentation</h2>
126 +
127 + <div class="memitem">
128 + <div class="memproto">
129 + <table class="memname">
130 + <tr>
131 + <td class="memname">int main </td>
132 + <td>(</td>
133 + <td class="paramtype">void </td>
134 + <td class="paramname"></td><td>)</td>
135 + <td></td>
136 + </tr>
137 + </table>
138 + </div><div class="memdoc">
139 +
140 + <p>Simple Sobel filter OpenCL sample. </p>
141 + <p>A sample which loads a bitmap and then passes it to the GPU. An OpenCL kernel which does Sobel filtering is then run on the data. The exit code of the application, non-zero if a problem occurred. </p>
142 + <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
143 +
144 + <p>Definition at line 34 of file sobel_8.cpp.</p>
145 +
146 + </div>
147 + </div>
148 + </div><!-- contents -->
149 + </div><!-- doc-content -->
150 + <!-- start footer part -->
151 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
152 +
153 + <li class="navelem">samples<li class="navelem">sobel_8.cpp
154 + <li class="footer">
155 + (C) ARM Ltd. 2013
156 +
157 +
158 + </div>
159 + </body>
160 + </html>

```

#### 4 docs/html/sobel\_8cpp.js

|     |     |                                                                         |
|-----|-----|-------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,4 @@                                                         |
|     | 1   | + var sobel_8cpp =                                                      |
|     | 2   | + [                                                                     |
|     | 3   | + [ "main", "sobel_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ] |
|     | 4   | + ]; ⊖                                                                  |

#### 354 docs/html/sobel\_8cpp\_source.html

|     |     |                                                                                                                                                 |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,354 @@                                                                                                                               |
|     | 1   | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">                     |
|     | 2   | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                                                   |
|     | 3   | + <head>                                                                                                                                        |
|     | 4   | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                                         |
|     | 5   | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                                           |
|     | 6   | + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel/sobel.cpp Source File</title> |
|     | 7   | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                                      |
|     | 8   | + <script type="text/javascript" src="jquery.js"></script>                                                                                      |
|     | 9   | + <script type="text/javascript" src="dynsections.js"></script>                                                                                 |
|     | 10  | + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                                                   |
|     | 11  | + <script type="text/javascript" src="resize.js"></script>                                                                                      |
|     | 12  | + <script type="text/javascript" src="navtree.js"></script>                                                                                     |
|     | 13  | + <script type="text/javascript">                                                                                                               |
|     | 14  | + \$(document).ready(initResizable);                                                                                                            |
|     | 15  | + </script>                                                                                                                                     |
|     | 16  | + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                                             |

```

17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_8cpp_source.html','');});
85 + </script>

```

```
+ <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">sobel.cpp</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + Go to the documentation of this file.<div class="fragment"><div class="line"> 1 * This confidential and propri
107 + <div class="line"> 2 * This confidential and propri
108 + <div class="line"> 3 * authorised by a licensing ag
109 + <div class="line"> 4 * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line"> 5 * ALL RIGHTS RESERVED<
111 + <div class="line"> 6 * The entire notice above must
112 + <div class="line"> 7 * copies and copies may only b
113 + <div class="line"> 8 * by a licensing agreement fro
114 + <div class="line"> 9 */</div>
115 + <div class="line"> 10 </div>
116 + <div class="line"> 11 #include "<a class="c
117 + <div class="line"> 12 #include "<a class="c
118 + <div class="line"> 13 </div>
119 + <div class="line"> 14 #include <lt;CL/cl.h><
120 + <div class="line"> 15 #include <lt;iostream><
121 + <div class="line"> 16 #include <lt;fstream><
122 + <div class="line"> 17 #include <lt;sstream><
123 + <div class="line"> 18 #include <lt;cstddef><
124 + <div class="line"> 19 #include <lt;cmath></sp
125 + <div class="line"> 20 </div>
126 + <div class="line"> 21 using namespace std;</d
127 + <div class="line"> 22 </div>
128 + <div class="line"><a class="code" href="sobel_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe
129 + <div class="line"> 35 {</div>
130 + <div class="line"> 36 /*</div>
131 + <div class="line"> 37 * Name of the bitmap to lo
132 + <div class="line"> 38 * Its width must be o
133 + <div class="line"> 39 */</div>
134 + <div class="line"> 40 string filename
135 + <div class="line"> 41 </div>
136 + <div class="line"> 42 cl_context context = 0;</div>
137 + <div class="line"> 43 cl_command_queue commandQueue = 0;</div>
138 + <div class="line"> 44 cl_program program = 0;</div>
139 + <div class="line"> 45 cl_device_id device = 0;</div>
140 + <div class="line"> 46 cl_kernel kernel = 0;</div>
141 + <div class="line"> 47 const <span class="k
142 + <div class="line"> 48 cl_mem memoryObjects[numberOfMemoryObjects] = {0,
143 + <div class="line"> 49 cl_int errorNumber;</div>
144 + <div class="line"> 50 </div>
145 + <div class="line"> 51 if (!<a class="c
146 + <div class="line"> 52 {</div>
147 + <div class="line"> 53 <a class="code" href="common_8cpp.html#acd455
148 + <div class="line"> 54 cerr <lt;< &qu
149 + <div class="line"> 55 return 1;</c
150 + <div class="line"> 56 }</div>
151 + <div class="line"> 57 </div>
152 + <div class="line"> 58 if (!<a class="c
153 + <div class="line"> 59 {</div>
154 + <div class="line"> 60 <a class="code" href="common_8cpp.html#acd455
```





```

293 + <div class="line"> 199 */</div>
294 + <div class="line"> 200 </div>
295 + <div class="line"> 201 /* To visualise the data we
296 + <div class="line"> 202 unsigned <span c
297 + <div class="line"> 203 unsigned <span c
298 + <div class="line"> 204 for (<span class
299 + <div class="line"> 205 {</div>
300 + <div class="line"> 206 absDX[i] = abs(outputDx[i]);</div>
301 + <div class="line"> 207 absDY[i] = abs(outputDy[i]);</div>
302 + <div class="line"> 208 }</div>
303 + <div class="line"> 209 </div>
304 + <div class="line"> 210 /* Unmap the memory. */
305 + <div class="line"> 211 bool unmapMemory
306 + <div class="line"> 212 unmapMemoryObjectsSuccess &= <a class="code"
307 + <div class="line"> 213 unmapMemoryObjectsSuccess &= <a class="code"
308 + <div class="line"> 214 if (!unmapMemory
309 + <div class="line"> 215 {</div>
310 + <div class="line"> 216 <a class="code" href="common_8cpp.html#acd459e
311 + <div class="line"> 217 cerr <lt; "
312 + <div class="line"> 218 return 1;</di
313 + <div class="line"> 219 }</div>
314 + <div class="line"> 220 </div>
315 + <div class="line"> 221 /* Release OpenCL objects.
316 + <div class="line"> 222 <a class="code" href="common_8cpp.html#acd459e74c
317 + <div class="line"> 223 </div>
318 + <div class="line"> 224 /* Convert the two output I
319 + <div class="line"> 225 unsigned <span c
320 + <div class="line"> 226 <a class="code" href="image_8cpp.html#a9390e4ddc6
321 + <div class="line"> 227 <a class="code" href="image_8cpp.html#ad7fed8ed57
322 + <div class="line"> 228 </div>
323 + <div class="line"> 229 <a class="code" href="image_8cpp.html#a9390e4ddc6
324 + <div class="line"> 230 <a class="code" href="image_8cpp.html#ad7fed8ed57
325 + <div class="line"> 231 </div>
326 + <div class="line"> 232 /* Calculate the total grad
327 + <div class="line"> 233 unsigned <span c
328 + <div class="line"> 234 for (<span class
329 + <div class="line"> 235 </div>
330 + <div class="line"> 236 totalOutput[index] = sqrt(pow(absDX[index], 2
331 + <div class="line"> 237 }</div>
332 + <div class="line"> 238 <a class="code" href="image_8cpp.html#a9390e4ddc6
333 + <div class="line"> 239 <a class="code" href="image_8cpp.html#ad7fed8ed57
334 + <div class="line"> 240 </div>
335 + <div class="line"> 241 delete [] absDX;</di
336 + <div class="line"> 242 delete [] absDY;</di
337 + <div class="line"> 243 delete [] rgbOut;</di
338 + <div class="line"> 244 delete [] totalOutput
339 + <div class="line"> 245 </div>
340 + <div class="line"> 246 return 0;</div>
341 + <div class="line"> 247 }</div>
342 + </div><!-- fragment --></div><!-- contents -->
343 + </div><!-- doc-content -->
344 + <!-- start footer part -->
345 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
346 +
347 + <li class="navelem">samples<li class="navelem"><a class
348 + <li class="footer">
349 + (C) ARM Ltd. 2013
350 +
351 +
352 + </div>
353 + </body>
354 + </html>

```

```

3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/sobel.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
```

```

72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;"
80 + class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">tutorials/sobel.dox File Reference</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +
111 + <li class="navelem">sobel.dox
112 + <li class="footer">
113 + (C) ARM Ltd. 2013
114 +
115 +
116 + </div>
117 + </body>
118 + </html>

```

### 181 docs/html/sobel\_no\_vectors\_8c1.html

| ... | ... | @@ -0,0 +1,181 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 +   &lt;head&gt; 4 +     &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 +     &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 +     &lt;title&gt;Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors/assets/s 7 +     &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 +     &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 +     &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 +    &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 +    &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 +    &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 +    &lt;script type="text/javascript"&gt; 14 +      \$(document).ready(initResizable); 15 +    &lt;/script&gt; 16 +    &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 +    &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; </pre> |

```

18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_no_vectors_8cl.html','');});
85 + </script>
86 + <div id="doc-content">
```

```

87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="summary">
103 + Functions </div>
104 + <div class="headertitle">
105 + <div class="title">sobel_no_vectors.cl File Reference</div> </div>
106 + </div><!--header-->
107 + <div class="contents">
108 +
109 + <p>Go to the source code of this file.</p>
110 + <table class="memberdecls">
111 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
112 + Functions</h2></td></tr>
113 + <tr class="memitem:aba83b870a7ef709e9a5608496084ec3a"><td class="memItemLeft" align="right" valign="top">__kernel void </td><td class="memItemRight" valign="top">
114 + Sobel filter kernel function which doesn't use vectors. </td>
115 + <tr class="separator:aba83b870a7ef709e9a5608496084ec3a"><td class="memSeparator" colspan="2"> </td></tr>
116 + </table>
117 + <h2 class="groupheader">Function Documentation</h2>
118 +
119 + <div class="memitem">
120 + <div class="memproto">
121 + <table class="memname">
122 + <tr>
123 + <td class="memname">__kernel void sobel_no_vectors </td>
124 + <td>(</td>
125 + <td class="paramtype">__global const uchar *restrict </td>
126 + <td class="paramname">inputImage, </td>
127 + </tr>
128 + <tr>
129 + <td class="paramkey"></td>
130 + <td></td>
131 + <td class="paramtype">const int </td>
132 + <td class="paramname">width, </td>
133 + </tr>
134 + <tr>
135 + <td class="paramkey"></td>
136 + <td></td>
137 + <td class="paramtype">__global char *restrict </td>
138 + <td class="paramname">outputImageDX, </td>
139 + </tr>
140 + <tr>
141 + <td class="paramkey"></td>
142 + <td></td>
143 + <td class="paramtype">__global char *restrict </td>
144 + <td class="paramname">outputImageDY </td>
145 + </tr>
146 + <tr>
147 + <td></td>
148 + <td>)</td>
149 + <td></td><td></td></td>
150 + </tr>
151 + </table>
152 + </div><div class="memdoc">
153 +
154 + <p>Sobel filter kernel function which doesn't use vectors. </p>
155 + <dl class="params"><dt>Parameters</dt><dd>
```

```

156 + <table class="params">
157 + <tr><td class="paramdir">[in]</td><td class="paramname">inputImage</td><td>Input image data in row-major format. </td></tr>
158 + <tr><td class="paramdir">[in]</td><td class="paramname">width</td><td>Width of the image passed in as inputImage. </td></tr>
159 + <tr><td class="paramdir">[out]</td><td class="paramname">outputImageDX</td><td>Output image of the calculated gradient in the X direction. </td></tr>
160 + <tr><td class="paramdir">[out]</td><td class="paramname">outputImageDY</td><td>Output image of the calculated gradient in the Y direction. </td></tr>
161 + </table>
162 + </dd>
163 + </dl>
164 +
165 + <p>Definition at line 18 of file sobel_no_vectors_8cl.h.
166 +
167 + </div>
168 + </div>
169 + </div><!-- contents -->
170 + </div><!-- doc-content -->
171 + <!-- start footer part -->
172 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
173 +
174 + <li class="navelem">samples<li class="navelem">dir_6f9635d4fbfa321d4c00f29df5cd540c
175 + <li class="footer">
176 + (C) ARM Ltd. 2013
177 +
178 +
179 + </div>
180 + </body>
181 + </html>

```

#### 4 docs/html/sobel\_no\_vectors\_8cl.js

|     |     |                                                                                               |
|-----|-----|-----------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,4 @@                                                                               |
|     | 1   | + var sobel_no_vectors_8cl =                                                                  |
|     | 2   | + [                                                                                           |
|     | 3   | + [ "sobel_no_vectors", "sobel_no_vectors_8cl.html#aba83b870a7ef709e9a5608496084ec3a", null ] |
|     | 4   | + ]; <span style="color:red;">-</span>                                                        |

#### 229 docs/html/sobel\_no\_vectors\_8cl\_source.html

|     |     |                                                                                                                                                              |
|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,229 @@                                                                                                                                            |
|     | 1   | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">                                  |
|     | 2   | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                                                                |
|     | 3   | + <head>                                                                                                                                                     |
|     | 4   | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                                                      |
|     | 5   | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                                                        |
|     | 6   | + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors/assets/sobel_no_vectors</title> |
|     | 7   | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                                                   |
|     | 8   | + <script type="text/javascript" src="jquery.js"></script>                                                                                                   |
|     | 9   | + <script type="text/javascript" src="dynsections.js"></script>                                                                                              |
|     | 10  | + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                                                                |
|     | 11  | + <script type="text/javascript" src="resize.js"></script>                                                                                                   |
|     | 12  | + <script type="text/javascript" src="navtree.js"></script>                                                                                                  |
|     | 13  | + <script type="text/javascript">                                                                                                                            |
|     | 14  | + \$(document).ready(initResizable);                                                                                                                         |
|     | 15  | + </script>                                                                                                                                                  |
|     | 16  | + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                                                          |
|     | 17  | + <script type="text/javascript" src="search/search.js"></script>                                                                                            |
|     | 18  | + <script type="text/javascript">                                                                                                                            |
|     | 19  | + \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                                                             |
|     | 20  | + </script>                                                                                                                                                  |
|     | 21  | + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                                                               |
|     | 22  | + </head>                                                                                                                                                    |
|     | 23  | + <body>                                                                                                                                                     |
|     | 24  | + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->                                                                                    |
|     | 25  | + <div id="titlearea">                                                                                                                                       |
|     | 26  | + <table cellspacing="0" cellpadding="0">                                                                                                                    |
|     | 27  | + <tbody>                                                                                                                                                    |
|     | 28  | + <tr style="height: 56px;">                                                                                                                                 |
|     | 29  | + <td id="projectlogo"></td>                                                                                                 |
|     | 30  | + <td style="padding-left: 0.5em;">                                                                                                                          |

```
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle"></div>
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_no_vectors_8cl_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
```

```

100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">sobel_no_vectors.cl</div> </div>
104 + </div><!--header-->
105 +
106 + Go to the documentation of this file.<div class="fragment"><div class="line">1 * This confidential and propri
107 + <div class="line">2 * This confidential and propri
108 + <div class="line">3 * authorised by a licensing ag
109 + <div class="line">4 * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line">5 * ALL RIGHTS RESERVED<
111 + <div class="line">6 * The entire notice above must
112 + <div class="line">7 * copies and copies may only b
113 + <div class="line">8 * by a licensing agreement fro
114 + <div class="line">9 */</div>
115 + <div class="line">10 </div>
116 + <div class="line"><a class="code" href="sobel_no_vectors_8cl.html#aba83b870a7ef709e9a56
117 + <div class="line">19 *
118 + <div class="line">20 */</div>
119 + <div class="line">21 *
120 + <div class="line">22 {</div>
121 + <div class="line">23 /* [Kernel size] */
122 + <div class="line">24 */</div>
123 + <div class="line">25 * Each kernel calculates a
124 + <div class="line">26 * column is in the range [0,
125 + <div class="line">27 * row is in the range [0,
126 + <div class="line">28 */</div>
127 + <div class="line">29 const <span class="k
128 + <div class="line">30 const <span class="k
129 + <div class="line">31 </div>
130 + <div class="line">32 /* Offset calculates the po
131 + <div class="line">33 const <span class="k
132 + <div class="line">34 /* [Kernel size] */
133 + <div class="line">35 </div>
134 + <div class="line">36 /* [Load row] */</d
135 + <div class="line">37 */</div>
136 + <div class="line">38 * First row of input.
137 + <div class="line">39 * Load 1 value for leftLoad
138 + <div class="line">40 */</div>
139 + <div class="line">41 uchar leftLoad = *(inputImage + (offset + 0));</c
140 + <div class="line">42 uchar middleLoad = *(inputImage + (offset + 1));<c
141 + <div class="line">43 uchar rightLoad = *(inputImage + (offset + 2));<c
142 + <div class="line">44 /* [Load row] */</d
143 + <div class="line">45 </div>
144 + <div class="line">46 /* [Convert data] */
145 + <div class="line">47 */</div>
146 + <div class="line">48 * Convert the data from ur
147 + <div class="line">49 * The calculations can ove
148 + <div class="line">50 * Additionally, the values
149 + <div class="line">51 */</div>
150 + <div class="line">52 short leftData =
151 + <div class="line">53 short middleData =
152 + <div class="line">54 short rightData =
153 + <div class="line">55 /* [Convert data] */
154 + <div class="line">56 </div>
155 + <div class="line">57 /* [Calculation] */
156 + <div class="line">58 */</div>
157 + <div class="line">59 * Calculate the results fo
158 + <div class="line">60 * Looking at the Sobel mas
159 + <div class="line">61 * the dX calculation is th
160 + <div class="line">62 * The dY calculation is th
161 + <div class="line">63 * This is what is being ca
162 + <div class="line">64 * unnecessary calculations
163 + <div class="line">65 * This pattern repeats for
164 + <div class="line">66 */</div>
165 + <div class="line">67 short dx = right
166 + <div class="line">68 short dy = right
167 + <div class="line">69 /* [Calculation] */
168 + <div class="line">70 </div>

```

```

169 + <div class="line"> 71 /*</div>
170 + <div class="line"> 72 * Second row of input.
171 + <div class="line"> 73 * By adding the 'widt
172 + <div class="line"> 74 * middleData is not loaded
173 + <div class="line"> 75 */</div>
174 + <div class="line"> 76 leftLoad = *(inputImage + (offset + width * 1 +
175 + <div class="line"> 77 rightLoad = *(inputImage + (offset + width * 1 +
176 + <div class="line"> 78 </div>
177 + <div class="line"> 79 leftData = convert_short(leftLoad);</div>
178 + <div class="line"> 80 rightData = convert_short(rightLoad);</div>
179 + <div class="line"> 81 </div>
180 + <div class="line"> 82 /*</div>
181 + <div class="line"> 83 * Calculate the results fo
182 + <div class="line"> 84 * The dX calculation is th
183 + <div class="line"> 85 * There is no dY calculati
184 + <div class="line"> 86 */</div>
185 + <div class="line"> 87 dx += (rightData - leftData) * (<span class="keyw
186 + <div class="line"> 88 </div>
187 + <div class="line"> 89 /* Third row of input. */<
188 + <div class="line"> 90 leftLoad = *(inputImage + (offset + width * 2 +
189 + <div class="line"> 91 middleLoad = *(inputImage + (offset + width * 2 +
190 + <div class="line"> 92 rightLoad = *(inputImage + (offset + width * 2 +
191 + <div class="line"> 93 </div>
192 + <div class="line"> 94 leftData = convert_short(leftLoad);</div>
193 + <div class="line"> 95 middleData = convert_short(middleLoad);</div>
194 + <div class="line"> 96 rightData = convert_short(rightLoad);</div>
195 + <div class="line"> 97 </div>
196 + <div class="line"> 98 /*</div>
197 + <div class="line"> 99 * Calculate the results fo
198 + <div class="line"> 100 * The dX calculation is th
199 + <div class="line"> 101 * The dY calculation is th
200 + <div class="line"> 102 */</div>
201 + <div class="line"> 103 dx += rightData - leftData; </div>
202 + <div class="line"> 104 dy -= rightData + leftData + middleData * (short)
203 + <div class="line"> 105 </div>
204 + <div class="line"> 106 /* [Store] */</div>
205 + <div class="line"> 107 /*</div>
206 + <div class="line"> 108 * Store the results.
207 + <div class="line"> 109 * The range of outputs fro
208 + <div class="line"> 110 * In order to output this
209 + <div class="line"> 111 * This gives the range [-1
210 + <div class="line"> 112 * (signed/unsigned, separa
211 + <div class="line"> 113 * In this sample we're
212 + <div class="line"> 114 */</div>
213 + <div class="line"> 115 *(outputImageDX + offset + width + 1) = convert_o
214 + <div class="line"> 116 *(outputImageDY + offset + width + 1) = convert_o
215 + <div class="line"> 117 /* [Store] */</div>
216 + <div class="line"> 118 }</div>
217 + </div><!-- fragment --></div><!-- contents -->
218 + </div><!-- doc-content -->
219 + <!-- start footer part -->
220 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
221 +
222 + <li class="navelem">samples<li class="navelem"><a class
223 + <li class="footer">
224 + (C) ARM Ltd. 2013
225 +
226 +
227 + </div>
228 + </body>
229 + </html>

```

## 160 docs/html/sobel\_no\_vectors\_8cpp.html

|     |     |                                                                                                                           |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,160 @@                                                                                                         |
| 1   | +   | <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
| 2   | +   | <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
| 3   | +   | <head>                                                                                                                    |

```
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors/sobel_no_
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
```

```

73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('sobel_no_vectors_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="summary">
103 + Functions </div>
104 + <div class="headertitle">
105 + <div class="title">sobel_no_vectors.cpp File Reference</div> </div>
106 + </div><!--header-->
107 + <div class="contents">
108 + <div class="textblock"><code>#include "common.h"</code>

109 + <code>#include "image.h"</code>

110 + <code>#include <CL/cl.h></code>

111 + <code>#include <iostream></code>

112 + <code>#include <fstream></code>

113 + <code>#include <sstream></code>

114 + <code>#include <cstddef></code>

115 + <code>#include <cmath></code>

116 + </div>
117 + <p>Go to the source code of this file.</p>
118 + <table class="memberdecls">
119 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
120 + Functions</h2></td></tr>
121 + <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int </td><td class="memItemRight" valign="top">
122 + <td class="mdescLeft"> </td><td class="mdescRight">Simple Sobel filter C
123 + <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2"> </td></tr>
124 + </table>
125 + <h2 class="groupheader">Function Documentation</h2>
126 +
127 + <div class="memitem">
128 + <div class="memproto">
129 + <table class="memname">
130 + <tr>
131 + <td class="memname">int main </td>
132 + <td>(</td>
133 + <td class="paramtype">void </td>
134 + <td class="paramname"></td><td>)</td>
135 + <td></td>
136 + </tr>
137 + </table>
138 + </div><div class="memdoc">
139 +
140 + <p>Simple Sobel filter OpenCL sample which doesn't use vectors. </p>
141 + <p>A sample which loads a bitmap and then passes it to the GPU. An OpenCL kernel which does Sobel filtering is then run on the data

```

```

142 + <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
143 +
144 + <p>Definition at line 36 of file <a class="el" href="sobel_no_
145 +
146 + </div>
147 + </div>
148 + </div><!-- contents -->
149 + </div><!-- doc-content -->
150 + <!-- start footer part -->
151 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
152 +
153 + <li class="navelem">samples<li class="navelem"><a class=
154 + <li class="footer">
155 + (C) ARM Ltd. 2013
156 +
157 +
158 + </div>
159 + </body>
160 + </html>

```

▼ 4 ■■■■■ docs/html/sobel\_no\_vectors\_8cpp.js □

|     |     |                                                                                                                                                                                   |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,4 @@                                                                                                                                                                   |
|     |     | <pre> 1 + var sobel_no_vectors_8cpp = 2 + [ 3 +   [ "main", "sobel_no_vectors_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null ] 4 + ]; <span style="color:red">-</span> </pre> |

▼ 345 ■■■■■ docs/html/sobel\_no\_vectors\_8cpp\_source.html □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,345 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 + &lt;head&gt; 4 + &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 + &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 + &lt;title&gt;Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/sobel_no_vectors/sobel_no_ 7 + &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 + &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 + &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 + &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 + &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 + &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 + &lt;script type="text/javascript"&gt; 14 +   \$(document).ready(initResizable); 15 + &lt;/script&gt; 16 + &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 + &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; 18 + &lt;script type="text/javascript"&gt; 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + &lt;/script&gt; 21 + &lt;link href="doxygen.css" rel="stylesheet" type="text/css" /&gt; 22 + &lt;/head&gt; 23 + &lt;body&gt; 24 + &lt;div id="top"&gt;&lt;!-- do not remove this div, it is closed by doxygen! --&gt; 25 + &lt;div id="titlearea"&gt; 26 + &lt;table cellspacing="0" cellpadding="0"&gt; 27 +   &lt;tbody&gt; 28 +     &lt;tr style="height: 56px;"&gt; 29 +       &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt; 30 +       &lt;td style="padding-left: 0.5em;"&gt; 31 +         &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0 32 +       &lt;/div&gt; 33 +     &lt;/td&gt; 34 +   &lt;/tr&gt; 35 + &lt;/tbody&gt; 36 + &lt;/table&gt; 37 + &lt;/div&gt; </pre> |

```

38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + </div>
84 + <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('sobel_no_vectors_8cpp_source.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 + onmouseover="return searchBox.OnSearchSelectShow()"
91 + onmouseout="return searchBox.OnSearchSelectHide()"
92 + onkeydown="return searchBox.OnSearchSelectKey(event)">
93 + All
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">sobel_no_vectors.cpp</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + Go to the documentation of this file.<div class="fragment"><div class="line">

```





```
+ <div class="line"> 153#160; return 1;</c
246 + <div class="line"> 154#160; }</div>
247 + <div class="line"> 155#160;</div>
248 + <div class="line"> 156#160; /* Wait for completion */</
249 + <div class="line"> 157#160; if (!<a class="c
250 + <div class="line"> 158#160; {</div>
251 + <div class="line"> 159#160; <a class="code" href="common_8cpp.html#acd459
252 + <div class="line"> 160#160; cerr << &qu
253 + <div class="line"> 161#160; return 1;</c
254 + <div class="line"> 162#160; }</div>
255 + <div class="line"> 163#160;</div>
256 + <div class="line"> 164#160; /* Print the profiling info
257 + <div class="line"> 165#160; <a class="code" href="common_8cpp.html#a33ff00135
258 + <div class="line"> 166#160; /* Release the event object
259 + <div class="line"> 167#160; if (!<a class="c
260 + <div class="line"> 168#160; {</div>
261 + <div class="line"> 169#160; <a class="code" href="common_8cpp.html#acd459
262 + <div class="line"> 170#160; cerr << &qu
263 + <div class="line"> 171#160; return 1;</c
264 + <div class="line"> 172#160; }</div>
265 + <div class="line"> 173#160;</div>
266 + <div class="line"> 174#160; /* Map the arrays holding t
267 + <div class="line"> 175#160; bool mapMemoryOb
268 + <div class="line"> 176#160; cl_char* outputDx = (cl_char*)clEnqueueMapBuffer(
269 + <div class="line"> 177#160; mapMemoryObjectsSuccess &= <a class="code" href=
270 + <div class="line"> 178#160; cl_char* outputDy = (cl_char*)clEnqueueMapBuffer(
271 + <div class="line"> 179#160; mapMemoryObjectsSuccess &= <a class="code" href=
272 + <div class="line"> 180#160; if (!mapMemoryOb
273 + <div class="line"> 181#160; {</div>
274 + <div class="line"> 182#160; <a class="code" href="common_8cpp.html#acd459e
275 + <div class="line"> 183#160; cerr << &qu
276 + <div class="line"> 184#160; return 1;</c
277 + <div class="line"> 185#160; }</div>
278 + <div class="line"> 186#160;</div>
279 + <div class="line"> 187#160; /*</div>
280 + <div class="line"> 188#160; * In order to better visua
281 + <div class="line"> 189#160; * value of the gradients a
282 + <div class="line"> 190#160; * This is work which could
283 + <div class="line"> 191#160; * on what type of output y
284 + <div class="line"> 192#160; */</div>
285 + <div class="line"> 193#160;</div>
286 + <div class="line"> 194#160; /* To visualise the data we
287 + <div class="line"> 195#160; unsigned <span c
288 + <div class="line"> 196#160; unsigned <span c
289 + <div class="line"> 197#160; for (<span class="c
290 + <div class="line"> 198#160; {</div>
291 + <div class="line"> 199#160; absDX[i] = abs(outputDx[i]);</div>
292 + <div class="line"> 200#160; absDY[i] = abs(outputDy[i]);</div>
293 + <div class="line"> 201#160; }</div>
294 + <div class="line"> 202#160;</div>
295 + <div class="line"> 203#160; /* Unmap the memory. */</sp
296 + <div class="line"> 204#160; bool unmapMemory
297 + <div class="line"> 205#160; unmapMemoryObjectsSuccess &= <a class="code"
298 + <div class="line"> 206#160; unmapMemoryObjectsSuccess &= <a class="code"
299 + <div class="line"> 207#160; if (!unmapMemory
300 + <div class="line"> 208#160; {</div>
301 + <div class="line"> 209#160; <a class="code" href="common_8cpp.html#acd459e
302 + <div class="line"> 210#160; cerr << &qu
303 + <div class="line"> 211#160; return 1;</c
304 + <div class="line"> 212#160; }</div>
305 + <div class="line"> 213#160;</div>
306 + <div class="line"> 214#160; /* Release OpenCL objects.
307 + <div class="line"> 215#160; <a class="code" href="common_8cpp.html#acd459e74c
308 + <div class="line"> 216#160;</div>
309 + <div class="line"> 217#160; /* Convert the two output I
310 + <div class="line"> 218#160; unsigned <span c
311 + <div class="line"> 219#160; <a class="code" href="image_8cpp.html#a9390e4ddc
312 + <div class="line"> 220#160; <a class="code" href="image_8cpp.html#ad7fed8ed57
313 + <div class="line"> 221#160;</div>
```

```

314 + <div class="line"> 222
315 + <div class="line"> 223
316 + <div class="line"> 224 </div> /* Calculate the total grad
317 + <div class="line"> 225 unsigned absDX
318 + <div class="line"> 226 for (index <=totalOutput[index] = sqrt((pow(absDX[index], 2)));
321 + <div class="line"> 229 }</div>
322 + <div class="line"> 230
323 + <div class="line"> 231
324 + <div class="line"> 232 for (<=<=totalOutput[index] += absDY[index];
326 + <div class="line"> 234 delete [absDX];</div>
327 + <div class="line"> 235 delete [absDY];
328 + <div class="line"> 236 delete [rgbOut];
329 + <div class="line"> 237 delete [totalOutput];
330 + <div class="line"> 238 </div> return 0;</div>
331 + <div class="line"> 239 return 0;</div>
332 + <div class="line"> 240 }</div>
333 + </div><!-- fragment --></div><!-- contents -->
334 + </div><!-- doc-content -->
335 + <!-- start footer part -->
336 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
337 +
338 + <li class="navelem">samples<li class="navelem">samples
339 + <li class="footer">
340 + (C) ARM Ltd. 2013
341 +
342 +
343 + </div>
344 + </body>
345 + </html>

```

▼ BIN docs/html/sobel\_input.bmp

Binary file not shown.

▼ BIN docs/html/sobel\_output.bmp

Binary file not shown.

▼ 262 docs/html/sobel\_tutorial.html

| ... | ... | @@ -0,0 +1,262 @@                                                                                                           |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------|
| 1   |     | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
| 2   |     | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
| 3   |     | + <head>                                                                                                                    |
| 4   |     | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                     |
| 5   |     | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                       |
| 6   |     | + <title>Mali OpenCL SDK v1.1.0: Sobel Filter</title>                                                                       |
| 7   |     | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                  |
| 8   |     | + <script type="text/javascript" src="jquery.js"></script>                                                                  |
| 9   |     | + <script type="text/javascript" src="dynsections.js"></script>                                                             |
| 10  |     | + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                               |
| 11  |     | + <script type="text/javascript" src="resize.js"></script>                                                                  |
| 12  |     | + <script type="text/javascript" src="navtree.js"></script>                                                                 |
| 13  |     | + <script type="text/javascript">                                                                                           |
| 14  |     | + \$(document).ready(initResizable);                                                                                        |
| 15  |     | + </script>                                                                                                                 |
| 16  |     | + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                         |
| 17  |     | + <script type="text/javascript" src="search/search.js"></script>                                                           |
| 18  |     | + <script type="text/javascript">                                                                                           |
| 19  |     | + \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                            |
| 20  |     | + </script>                                                                                                                 |
| 21  |     | + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                              |
| 22  |     | + </head>                                                                                                                   |
| 23  |     | + <body>                                                                                                                    |

```

24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + <li class="current">Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('sobel_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>

```



```

162 + <div class="line"> const int offset = row * width + column;</div>
163 + </div><!-- fragment --><p> And when we enqueue the kernel in sobel.cpp, we reduce the work
164 + <div class="fragment"><div class="line"> /*</div>
165 + <div class="line"> * Each instance of the kernel operates on a 16 * 1 portion of the image.</div>
166 + <div class="line"> * Therefore, the global work size must be width / 16 by height / 1 work items.
167 + <div class="line"> */</div>
168 + <div class="line"> size_t globalWorksize[2] = {width / 16, height / 1};</div>
169 + </div><!-- fragment -->
170 + <p class="startli">Loading the input data</p>
171 + <p class="startli">Mali-T600 series GPUs have 128-bit vector registers and can do arithmetic on vector types. Therefore, we use OpenCL's vector load operations to load the input data.
172 + <p class="startli">Here we do vector loads from one row of the data: </p>
173 + <div class="fragment"><div class="line"> /*</div>
174 + <div class="line"> * First row of input.</div>
175 + <div class="line"> * In a scalar Sobel calculation you would load 1 value for leftLoad, middleLoad and rightLoad. In the vector case we load 16 values for each.</div>
176 + <div class="line"> * leftLoad, middleLoad and rightLoad load 16-bytes of data from the first row.
177 + <div class="line"> * The data they load overlaps. e.g. for the first column and row, leftLoad is 0->15
178 + <div class="line"> * So we're actually loading 18-bytes of data from the first row.</div>
179 + <div class="line"> */</div>
180 + <div class="line"> uchar16 leftLoad = vload16(0, inputImage + (offset + 0));</div>
181 + <div class="line"> uchar16 middleLoad = vload16(0, inputImage + (offset + 1));</div>
182 + <div class="line"> uchar16 rightLoad = vload16(0, inputImage + (offset + 2));</div>
183 + </div><!-- fragment -->
184 + <p class="startli">Converting the data</p>
185 + <p class="startli">On a Mali-T600 series GPU, expanding and contracting data types is a free operation. Here, we convert the data from 16-bit unsigned shorts to 8-bit signed chars.
186 + <div class="fragment"><div class="line"> /*</div>
187 + <div class="line"> * Convert the data from unsigned chars to shorts (8-bit unsigned to 16-bit signed).
188 + <div class="line"> * The calculations can overflow 8-bits so we require larger intermediate storage.
189 + <div class="line"> * Additionally, the values can become negative so we need a signed type.</div>
190 + <div class="line"> */</div>
191 + <div class="line"> short16 leftData = convert_short16(leftLoad);</div>
192 + <div class="line"> short16 middleData = convert_short16(middleLoad);</div>
193 + <div class="line"> short16 rightData = convert_short16(rightLoad);</div>
194 + </div><!-- fragment -->
195 + <p class="startli">Doing the calculation</p>
196 + <p class="startli">Then we carry out the calculation on 16 pixels. Each vector calculation can be done as a single operation on a Mali-T600 series GPU.
197 + <div class="fragment"><div class="line"> /*</div>
198 + <div class="line"> * Calculate the results for the first row.</div>
199 + <div class="line"> * Looking at the Sobel masks above for the first line of input,</div>
200 + <div class="line"> * the dX calculation is the sum of 1 * leftData, 0 * middleData, and -1 * rightData.</div>
201 + <div class="line"> * The dY calculation is the sum of 1 * leftData, 2 * middleData, and 1 * rightData.</div>
202 + <div class="line"> * This is what is being calculated below, except we have removed the</div>
203 + <div class="line"> * unnecessary calculations (multiplications by 1 or 0) and we are calculating 16 values at once.</div>
204 + <div class="line"> * This pattern repeats for the other 2 rows of data.</div>
205 + <div class="line"> */</div>
206 + <div class="line"> short16 dx = rightData - leftData;</div>
207 + <div class="line"> short16 dy = rightData + leftData + middleData * (short)2;</div>
208 + </div><!-- fragment --><p> We do this for the other two rows, accumulating the results in dx and dy.</p>
209 +
210 + <p class="startli">Storing the results</p>
211 + <p class="startli">Finally we contract and store the data. We use a vector store to write out all 16 results at once: </p>
212 + <div class="fragment"><div class="line"> /*</div>
213 + <div class="line"> * Store the results.</div>
214 + <div class="line"> * The range of outputs from our Sobel calculations is [-1020, 1020].</div>
215 + <div class="line"> * In order to output this as an 8-bit signed char we must divide it by 8 (or shift right by 3).</div>
216 + <div class="line"> * This gives the range [-128, 128]. Depending on what type of output you require,
217 + <div class="line"> * (signed/unsigned, separate/combined gradients) it is possible to do more of the calculations here.
218 + <div class="line"> * In this sample we're assuming that the application requires signed uncombined gradients.
219 + <div class="line"> */</div>
220 + <div class="line"> vstore16(convert_char16(dx >> 3), 0, outputImageDX + offset + width + 1);</div>
221 + <div class="line"> vstore16(convert_char16(dy >> 3), 0, outputImageDY + offset + width + 1);</div>
222 + </div><!-- fragment --><p> Because the data is returned as two separate gradient images we combine them on the CPU before writing them to the file.
223 +
224 +
225 + <h1>
226 + Running the Sample</h1>
227 + <ol type="1">
228 + <p class="startli">From a command prompt in the root of the SDK, run:</p>
229 + <div class="fragment"><div class="line">cd samples/
230 +

```

```

231 + </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
232 + </div><!-- fragment --><p class="startli">This compiles the Sobel sample code and copies all the files it needs to run to the bin folder</p>
233 +
234 + Copy this folder to the board.
235 + <p class="startli">Navigate to the folder on the board and run the Sobel binary:</p>
236 + <div class="fragment"><div class="line">./sobel_8cl</div>
237 + </div><!-- fragment -->
238 + <p class="startli">You should see output similar to:</p>
239 + <div class="fragment"><div class="line">Profiling information:</div>
240 + <div class="line">Queued time: 0.067ms</div>
241 + <div class="line">Wait time: 0.057835ms</div>
242 + <div class="line">Run time: 0.164923ms</div>
243 + </div><!-- fragment --><p class="startli">An output image should be created on the board called output.bmp.</p>
244 +
245 +
246 + <p>Find solutions for Common Issues.</p>
247 + <h1>
248 + More Information</h1>
249 + <p>For more information have a look at the code in sobel.cpp and sobel_8cl.</p>
250 + </div></div><!-- contents -->
251 + </div><!-- doc-content -->
252 + <!-- start footer part -->
253 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
254 +
255 + <li class="navelem">Tutorials
256 + <li class="footer">
257 + (C) ARM Ltd. 2013
258 +
259 +
260 + </div>
261 + </body>
262 + </html>

```

## 118 docs/html/structbitmap\_header-members.html

| ... | ... | @@ -0,0 +1,118 @@                                                                                                             |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------|
|     |     | 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
|     |     | 2 + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
|     |     | 3 + <head>                                                                                                                    |
|     |     | 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                     |
|     |     | 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                       |
|     |     | 6 + <title>Mali OpenCL SDK v1.1.0: Member List</title>                                                                        |
|     |     | 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                  |
|     |     | 8 + <script type="text/javascript" src="jquery.js"></script>                                                                  |
|     |     | 9 + <script type="text/javascript" src="dynsections.js"></script>                                                             |
|     |     | 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                              |
|     |     | 11 + <script type="text/javascript" src="resize.js"></script>                                                                 |
|     |     | 12 + <script type="text/javascript" src="navtree.js"></script>                                                                |
|     |     | 13 + <script type="text/javascript">                                                                                          |
|     |     | 14 +   \$(document).ready(initResizable);                                                                                     |
|     |     | 15 + </script>                                                                                                                |
|     |     | 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                        |
|     |     | 17 + <script type="text/javascript" src="search/search.js"></script>                                                          |
|     |     | 18 + <script type="text/javascript">                                                                                          |
|     |     | 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                         |
|     |     | 20 + </script>                                                                                                                |
|     |     | 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                             |
|     |     | 22 + </head>                                                                                                                  |
|     |     | 23 + <body>                                                                                                                   |
|     |     | 24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->                                                  |
|     |     | 25 + <div id="titlearea">                                                                                                     |
|     |     | 26 + <table cellspacing="0" cellpadding="0">                                                                                  |
|     |     | 27 +   <tbody>                                                                                                                |
|     |     | 28 +     <tr style="height: 56px;">                                                                                           |
|     |     | 29 +       <td id="projectlogo"></td>                                                         |
|     |     | 30 +       <td style="padding-left: 0.5em;">                                                                                  |
|     |     | 31 +         <div id="projectname">Mali OpenCL SDK v1.1.0                                                                     |
|     |     | 32 +       </div>                                                                                                             |

```
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;"
74 + class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_header.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">bitmapHeader Member List</div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 +
101 + <p>This is the complete list of members for bitmapHeader, including all inherited
```

```

102 + <table class="directory">
103 + <tr class="even"><td class="entry">creator1<
104 + <tr><td class="entry">creator2</td><td class=
105 + <tr class="even"><td class="entry">fileSize<
106 + <tr><td class="entry">offset</td><td class="e
107 + </table></div><!-- contents -->
108 + </div><!-- doc-content -->
109 + <!-- start footer part -->
110 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
111 +
112 + <li class="footer">
113 + (C) ARM Ltd. 2013
114 +
115 +
116 + </div>
117 + </body>
118 + </html>
```

◀ ▶

## ▼ 209 docs/html/structbitmap\_header.html

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,209 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 + &lt;head&gt; 4 + &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 + &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 + &lt;title&gt;Mali OpenCL SDK v1.1.0: bitmapHeader Struct Reference&lt;/title&gt; 7 + &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 + &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 + &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 + &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 + &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 + &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 + &lt;script type="text/javascript"&gt; 14 +   \$(document).ready(initResizable); 15 + &lt;/script&gt; 16 + &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 + &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; 18 + &lt;script type="text/javascript"&gt; 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + &lt;/script&gt; 21 + &lt;link href="doxygen.css" rel="stylesheet" type="text/css" /&gt; 22 + &lt;/head&gt; 23 + &lt;body&gt; 24 + &lt;div id="top"&gt;&lt;!-- do not remove this div, it is closed by doxygen! --&gt; 25 + &lt;div id="titlearea"&gt; 26 + &lt;table cellspacing="0" cellpadding="0"&gt; 27 +   &lt;tbody&gt; 28 +     &lt;tr style="height: 56px;"&gt; 29 +       &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt; 30 +       &lt;td style="padding-left: 0.5em;"&gt; 31 +         &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0 32 +       &lt;/div&gt; 33 +     &lt;/td&gt; 34 +   &lt;/tr&gt; 35 + &lt;/tbody&gt; 36 + &lt;/table&gt; 37 + &lt;/div&gt; 38 + &lt;!-- end header part --&gt; 39 + &lt;!-- Generated by Doxygen 1.8.2 --&gt; 40 + &lt;script type="text/javascript"&gt; 41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search'); 42 + &lt;/script&gt; 43 + &lt;div id="navrow1" class="tabs"&gt; 44 +   &lt;ul class="tablist"&gt; 45 +     &lt;li&gt;&lt;a href="index.html"&gt;&lt;span&gt;Home&lt;/span&gt;&lt;/a&gt;&lt;/li&gt; 46 +     &lt;li&gt;&lt;a href="pages.html"&gt;&lt;span&gt;Help&amp;#160;and&amp;#160;Tutorials&lt;/span&gt;&lt;/a&gt;&lt;/li&gt; 47 +     &lt;li&gt;&lt;a href="files.html"&gt;&lt;span&gt;Files&lt;/span&gt;&lt;/a&gt;&lt;/li&gt;</pre> |

```

48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
61 +
62 + </div>
63 +
64 +
65 + </div>
66 + </div><!-- top -->
67 + <div id="side-nav" class="ui-resizable side-nav-resizable">
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle"></div>
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_header.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="summary">
97 + Public Attributes |
98 + List of all members </div>
99 + <div class="headertitle">
100 + <div class="title">bitmapHeader Struct Reference</div> </div>
101 + </div><!--header-->
102 + <div class="contents">
103 +
104 + <p>Bitmap header.
105 + More...</p>
106 +
107 + <p><code>#include <image.h></code></p>
108 + <table class="memberdecls">
109 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
110 + Public Attributes</h2></td></tr>
111 + <tr class="memitem:ad06f4dbac80aa4d85163d3862ed34197"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">
112 + Total size of the bitmap header</td></tr>
113 + <tr class="separator:ad06f4dbac80aa4d85163d3862ed34197"><td class="memSeparator" colspan="2" style="text-align: center;"> </td></tr>
114 + <tr class="memitem:ad1281577a12cb4314cfe869877135231"><td class="memItemLeft" align="right" valign="top">uint16_t </td><td class="memItemRight" align="left" valign="top">
115 + Reserved field which must be zero</td></tr>
116 + <tr class="separator:ad1281577a12cb4314cfe869877135231"><td class="memSeparator" colspan="2" style="text-align: center;"> </td></tr>

```

```
117 + <tr class="memitem:aafdafe00204ad8448ab9cd98aa3040b2"><td class="memItemLeft" align="right" valign="top">uint16_t </td><td class="memItemRight" align="left" valign="top">Reserved field which can be application defined. </td></tr>
118 + <tr class="memdesc:aafdafe00204ad8448ab9cd98aa3040b2"><td class="mdescLeft"> </td><td class="mdescRight">Reserved field which can be application defined. </td></tr>
119 + <tr class="separator:aafdafe00204ad8448ab9cd98aa3040b2"><td class="memSeparator" colspan="2"> </td></tr>
120 + <tr class="memitem:a5e74a0bfe6340ad581369b48bce59dbe"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">Offset in bytes to the first pixel of the bitmap. </td></tr>
121 + <tr class="memdesc:a5e74a0bfe6340ad581369b48bce59dbe"><td class="mdescLeft"> </td><td class="mdescRight">Offset in bytes to the first pixel of the bitmap. </td></tr>
122 + <tr class="separator:a5e74a0bfe6340ad581369b48bce59dbe"><td class="memSeparator" colspan="2"> </td></tr>
123 + </table>
124 + <h2 class="groupheader">Detailed Description</h2>
125 + <div class="textblock"><p>Bitmap header. </p>
126 + <p>See the BMP file format specification for more details. </p>
127 +
128 + <p>Definition at line 35 of file image_8h_source.h.

129 + </div><h2 class="groupheader">Member Data Documentation</h2>
130 +
131 + <div class="memitem">
132 + <div class="memproto">
133 + <table class="memname">
134 + <tr>
135 + <td class="memname">uint16_t bitmapHeader::creator1</td>
136 + </tr>
137 + </table>
138 + </div><div class="memdoc">
139 +
140 + <p>Reserved field which can be application defined. </p>
141 +
142 + <p>Definition at line 38 of file image_8h_source.h.

143 +
144 + </div>
145 + </div>
146 +
147 + <div class="memitem">
148 + <div class="memproto">
149 + <table class="memname">
150 + <tr>
151 + <td class="memname">uint16_t bitmapHeader::creator2</td>
152 + </tr>
153 + </table>
154 + </div><div class="memdoc">
155 +
156 + <p>Reserved field which can be application defined. </p>
157 +
158 + <p>Definition at line 39 of file image_8h_source.h.

159 +
160 + </div>
161 + </div>
162 +
163 + <div class="memitem">
164 + <div class="memproto">
165 + <table class="memname">
166 + <tr>
167 + <td class="memname">uint32_t bitmapHeader::fileSize</td>
168 + </tr>
169 + </table>
170 + </div><div class="memdoc">
171 +
172 + <p>Total size of the bitmap in bytes. </p>
173 +
174 + <p>Definition at line 37 of file image_8h_source.h.

175 +
176 + </div>
177 + </div>
178 +
179 + <div class="memitem">
180 + <div class="memproto">
181 + <table class="memname">
182 + <tr>
183 + <td class="memname">uint32_t bitmapHeader::offset</td>
184 + </tr>
185 + </table>
```

```

186 + </div><div class="memdoc">
187 +
188 + <p>Offset in bytes to the beginning of the image data block. </p>
189 +
190 + <p>Definition at line 40 of file image.h.
191 +
192 + </div>
193 + </div>
194 + <hr/>The documentation for this struct was generated from the following file:
195 + /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.h.
196 +
197 + </div><!-- contents -->
198 + </div><!-- doc-content -->
199 + <!-- start footer part -->
200 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
201 +
202 + <li class="navelem">bitmapHeader
203 + <li class="footer">
204 + (C) ARM Ltd. 2013
205 +
206 +
207 + </div>
208 + </body>
209 + </html>

```

▼ 7 docs/html/structbitmap\_header.js □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,7 @@                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|     |     | <pre> 1 + var structbitmap_header = 2 + [ 3 +   [ "creator1", "structbitmap_header.html#ad1281577a12cb4314cf869877135231", null ], 4 +   [ "creator2", "structbitmap_header.html#aafdafe00204ad8448ab9cd98aa3040b2", null ], 5 +   [ "fileSize", "structbitmap_header.html#ad06f4dbac80aa4d85163d3862ed34197", null ], 6 +   [ "offset", "structbitmap_header.html#a5e74a0bfe6340ad581369b48bce59dbe", null ] 7 + ]; <span style="color:red">-</span> </pre> |

▼ 125 docs/html/structbitmap\_information\_header-members.html □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,125 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 + &lt;head&gt; 4 + &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 + &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 + &lt;title&gt;Mali OpenCL SDK v1.1.0: Member List&lt;/title&gt; 7 + &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 + &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 + &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 + &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 + &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 + &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 + &lt;script type="text/javascript"&gt; 14 +   \$(document).ready(initResizable); 15 + &lt;/script&gt; 16 + &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 + &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; 18 + &lt;script type="text/javascript"&gt; 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + &lt;/script&gt; 21 + &lt;link href="doxygen.css" rel="stylesheet" type="text/css" /&gt; 22 + &lt;/head&gt; 23 + &lt;body&gt; 24 + &lt;div id="top"&gt;&lt;!-- do not remove this div, it is closed by doxygen! --&gt; 25 + &lt;div id="titlearea"&gt; 26 + &lt;table cellspacing="0" cellpadding="0"&gt; 27 +   &lt;tbody&gt; 28 +     &lt;tr style="height: 56px;"&gt; 29 +       &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt; </pre> |

```

30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_information_header.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">bitmapInformationHeader Member List</div> </div>
98 + </div><!--header-->
```

```

99 + <div class="contents">
100 +
101 + <p>This is the complete list of members for bitmapInformationHeader,
102 + <table class="directory">
103 + <tr class="even"><td class="entry">bit
104 + <tr><td class="entry">compressionType
105 + <tr class="even"><td class="entry">he
106 + <tr><td class="entry">horizontalReso
107 + <tr class="even"><td class="entry">n
108 + <tr><td class="entry">numberOfColors<
109 + <tr class="even"><td class="entry">n
110 + <tr><td class="entry">rawBitmapSize<
111 + <tr class="even"><td class="entry">s
112 + <tr><td class="entry">verticalResolu
113 + <tr class="even"><td class="entry">wi
114 + </table></div><!-- contents -->
115 + </div><!-- doc-content -->
116 + <!-- start footer part -->
117 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
118 +
119 + <li class="footer">
120 + (C) ARM Ltd. 2013
121 +
122 +
123 + </div>
124 + </body>
125 + </html>
```

## 320 docs/html/structbitmap\_information\_header.html

```

... ... @@ -0,0 +1,320 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: bitmapInformationHeader Struct Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
```

```
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;"
74 + class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_information_header.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="summary">
97 + Public Attributes |
98 + List of all members </div>
99 + <div class="headertitle">
100 + <div class="title">bitmapInformationHeader Struct Reference</div> </div>
101 + </div><!--header-->
102 + <div class="contents">
103 +
104 + <p>Bitmap information header.
105 + More...</p>
106 + </div>
```

```

107 + <p><code>#include image.h></code></p>
108 + <table class="memberdecls">
109 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
110 + Public Attributes</h2></td></tr>
111 + <tr class="memitem:afdf30cb5246210713920211afb56f13f0"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
112 + <tr class="separator:afdf30cb5246210713920211afb56f13f0"><td class="memSeparator" colspan="2"> </td></tr>
113 + <tr class="memitem:abb2a108b489900502eb06b3982b0dc02"><td class="memItemLeft" align="right" valign="top">int32_t </td><td class="memItemRight" align="left" valign="top">compressionType</td></tr>
114 + <tr class="separator:abb2a108b489900502eb06b3982b0dc02"><td class="memSeparator" colspan="2"> </td></tr>
115 + <tr class="memitem:a5c5209b385872825e8f9c629ac288a12"><td class="memItemLeft" align="right" valign="top">int32_t </td><td class="memItemRight" align="left" valign="top">height</td></tr>
116 + <tr class="separator:a5c5209b385872825e8f9c629ac288a12"><td class="memSeparator" colspan="2"> </td></tr>
117 + <tr class="memitem:a92ce2fb0499b65ccb0dccbec12b44c4c"><td class="memItemLeft" align="right" valign="top">uint16_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
118 + <tr class="separator:a92ce2fb0499b65ccb0dccbec12b44c4c"><td class="memSeparator" colspan="2"> </td></tr>
119 + <tr class="memitem:ae25aec64837eed48f745ae7728af7dff"><td class="memItemLeft" align="right" valign="top">uint16_t </td><td class="memItemRight" align="left" valign="top">compressionType</td></tr>
120 + <tr class="separator:ae25aec64837eed48f745ae7728af7dff"><td class="memSeparator" colspan="2"> </td></tr>
121 + <tr class="memitem:a1a6659ee7987cc1be662ec93a6f2eef7"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
122 + <tr class="separator:a1a6659ee7987cc1be662ec93a6f2eef7"><td class="memSeparator" colspan="2"> </td></tr>
123 + <tr class="memitem:abd9001c6c1eefbef9c53f15ec6f3162a"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">compressionType</td></tr>
124 + <tr class="separator:abd9001c6c1eefbef9c53f15ec6f3162a"><td class="memSeparator" colspan="2"> </td></tr>
125 + <tr class="memitem:a39272c25c46f5628cdefc3965f4f6e0d"><td class="memItemLeft" align="right" valign="top">int32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
126 + <tr class="separator:a39272c25c46f5628cdefc3965f4f6e0d"><td class="memSeparator" colspan="2"> </td></tr>
127 + <tr class="memitem:a9596ce6332941aafbff85b7e379e948f"><td class="memItemLeft" align="right" valign="top">int32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
128 + <tr class="separator:a9596ce6332941aafbff85b7e379e948f"><td class="memSeparator" colspan="2"> </td></tr>
129 + <tr class="memitem:ab8a3e77e6b66d1361d65523a99104f5f"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
130 + <tr class="separator:ab8a3e77e6b66d1361d65523a99104f5f"><td class="memSeparator" colspan="2"> </td></tr>
131 + <tr class="memitem:aa6296b037bae6831a6c53f6115c29769"><td class="memItemLeft" align="right" valign="top">uint32_t </td><td class="memItemRight" align="left" valign="top">bitsPerPixel</td></tr>
132 + <tr class="separator:aa6296b037bae6831a6c53f6115c29769"><td class="memSeparator" colspan="2"> </td></tr>
133 + </table>
134 + <h2 class="groupheader">Detailed Description</h2>
135 + <div class="textblock"><p>Bitmap information header. </p>
136 + <p>See the BMP file format specification for more details. </p>
137 +
138 + <p>Definition at line 47 of file image.h.
139 + </div><h2 class="groupheader">Member Data Documentation</h2>
140 +
141 + <div class="memitem">
142 + <div class="memproto">
143 + <table class="memname">
144 + <tr>
145 + <td class="memname">uint16_t bitmapInformationHeader::bitsPerPixel</td>
146 + </tr>
147 + </table>
148 + </div><div class="memdoc">
149 + <p>Number of bits per pixel in the image. </p>
150 +
151 + <p>Definition at line 53 of file image.h.
152 +
153 + </div>
154 + </div>
155 +
156 + <div class="memitem">
157 + <div class="memproto">
158 + <table class="memname">
159 + <tr>
160 + <td class="memname">uint32_t bitmapInformationHeader::compressionType</td>
161 + </tr>
162 + </table>
163 + </div><div class="memdoc">
164 + <p>Compression type. Use 0 for uncompressed. </p>
165 +
166 + <p>Definition at line 54 of file image.h.
167 +
168 + </div>
169 + </div>
170 +
171 + <div class="memitem">
172 + <div class="memproto">
173 + <table class="memname">
174 + <tr>
175 + <td class="memname">int32_t bitmapInformationHeader::height</td>

```

```
176 + </tr>
177 + </table>
178 + </div><div class="memdoc">
179 + <p>Height of the image. </p>
180 +
181 + <p>Definition at line 51 of file image_8h_source.h.
```

182 +

```
183 + </div>
184 + </div>
185 +
186 + <div class="memitem">
187 + <div class="memproto">
188 + <table class="memname">
189 + <tr>
190 + <td class="memname">int32_t bitmapInformationHeader::horizontalResolution</td>
191 + </tr>
192 + </table>
193 + </div><div class="memdoc">
194 + <p>Resolution is in pixels per meter. </p>
195 +
196 + <p>Definition at line 56 of file image_8h_source.h.
```

197 +

```
198 + </div>
199 + </div>
200 +
201 + <div class="memitem">
202 + <div class="memproto">
203 + <table class="memname">
204 + <tr>
205 + <td class="memname">uint16_t bitmapInformationHeader::numberOfColorPlanes</td>
206 + </tr>
207 + </table>
208 + </div><div class="memdoc">
209 + <p>The number of colour planes. The only legal value is 1. </p>
210 +
211 + <p>Definition at line 52 of file image_8h_source.h.
```

212 +

```
213 + </div>
214 + </div>
215 +
216 + <div class="memitem">
217 + <div class="memproto">
218 + <table class="memname">
219 + <tr>
220 + <td class="memname">uint32_t bitmapInformationHeader::numberOfColors</td>
221 + </tr>
222 + </table>
223 + </div><div class="memdoc">
224 + <p>Number of colours in the image, can be left as 0. </p>
225 +
226 + <p>Definition at line 58 of file image_8h_source.h.
```

227 +

```
228 + </div>
229 + </div>
230 +
231 + <div class="memitem">
232 + <div class="memproto">
233 + <table class="memname">
234 + <tr>
235 + <td class="memname">uint32_t bitmapInformationHeader::numberOfImportantColors</td>
236 + </tr>
237 + </table>
238 + </div><div class="memdoc">
239 + <p>Generally ignored by applications. </p>
240 +
241 + <p>Definition at line 59 of file image_8h_source.h.
```

242 +

```
243 + </div>
244 + </div>
```

```
245 +
246 + <div class="memitem">
247 + <div class="memproto">
248 + <table class="memname">
249 + <tr>
250 + <td class="memname">uint32_t bitmapInformationHeader::rawBitmapSize</td>
251 + </tr>
252 + </table>
253 + </div><div class="memdoc">
254 + <p>Size of the image data including padding (does not include the size of the headers). </p>
255 +
256 + <p>Definition at line 55 of file image.h.
257 +
258 + </div>
259 + </div>
260 +
261 + <div class="memitem">
262 + <div class="memproto">
263 + <table class="memname">
264 + <tr>
265 + <td class="memname">uint32_t bitmapInformationHeader::size</td>
266 + </tr>
267 + </table>
268 + </div><div class="memdoc">
269 + <p>Size of the information headers in bytes. </p>
270 +
271 + <p>Definition at line 49 of file image.h.
272 +
273 + </div>
274 + </div>
275 +
276 + <div class="memitem">
277 + <div class="memproto">
278 + <table class="memname">
279 + <tr>
280 + <td class="memname">int32_t bitmapInformationHeader::verticalResolution</td>
281 + </tr>
282 + </table>
283 + </div><div class="memdoc">
284 + <p>Resolution is in pixels per meter. </p>
285 +
286 + <p>Definition at line 57 of file image.h.
287 +
288 + </div>
289 + </div>
290 +
291 + <div class="memitem">
292 + <div class="memproto">
293 + <table class="memname">
294 + <tr>
295 + <td class="memname">int32_t bitmapInformationHeader::width</td>
296 + </tr>
297 + </table>
298 + </div><div class="memdoc">
299 + <p>Width of the image. </p>
300 +
301 + <p>Definition at line 50 of file image.h.
302 +
303 + </div>
304 + </div>
305 + <hr/>The documentation for this struct was generated from the following file:
306 + /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.h
307 +
308 + </div><!-- contents -->
309 + </div><!-- doc-content -->
310 + <!-- start footer part -->
311 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
312 +
313 + <li class="navelem">bitmapInformationHeader
```

```
314 + <li class="footer">
315 + (C) ARM Ltd. 2013
316 +
317 +
318 + </div>
319 + </body>
320 + </html>
```

#### 14 docs/html/structbitmap\_information\_header.js

```
... ... @@ -0,0 +1,14 @@
1 + var structbitmap_information_header =
2 + [
3 + ["bitsPerPixel", "structbitmap_information_header.html#ae25aec64837eed48f745ae7728af7dff", null],
4 + ["compressionType", "structbitmap_information_header.html#a1a6659ee7987cc1be662ec93a6f2eef7", null],
5 + ["height", "structbitmap_information_header.html#a5c5209b385872825e8f9c629ac288a12", null],
6 + ["horizontalResolution", "structbitmap_information_header.html#a39272c25c46f5628cdefc3965f4f6e0d", null],
7 + ["numberOfColorPlanes", "structbitmap_information_header.html#a92ce2fb0499b65ccb0dccbec12b44c4c", null],
8 + ["numberOfColors", "structbitmap_information_header.html#ab8a3e77e6b66d1361d65523a99104f5f", null],
9 + ["numberOfImportantColors", "structbitmap_information_header.html#aa6296b037bae6831a6c53f6115c29769", null],
10 + ["rawBitmapSize", "structbitmap_information_header.html#abd9001c6c1eefbef9c53f15ec6f3162a", null],
11 + ["size", "structbitmap_information_header.html#afd30cb5246210713920211afb56f13f0", null],
12 + ["verticalResolution", "structbitmap_information_header.html#a9596ce6332941aafbbf85b7e379e948f", null],
13 + ["width", "structbitmap_information_header.html#abb2a108b489900502eb06b3982b0dc02", null]
14 +]; -
```

#### 115 docs/html/structbitmap\_magic-members.html

```
... ... @@ -0,0 +1,115 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: Member List</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
```

```

40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search",false,'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_magic.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">bitmapMagic Member List</div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 +
101 + <p>This is the complete list of members for bitmapMagic, including all inherited m
102 + <table class="directory">
103 + <tr class="even"><td class="entry">magic</td>
104 + </table></div><!-- contents -->
105 + </div><!-- doc-content -->
106 + <!-- start footer part -->
107 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
108 +

```

```
109 + <li class="footer">
110 + (C) ARM Ltd. 2013
111 +
112 +
113 + </div>
114 + </body>
115 + </html>
```

149 docs/html/structbitmap\_magic.html

```
@@ -0,0 +1,149 @@
+
+ <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
+ <html xmlns="http://www.w3.org/1999/xhtml">
+ <head>
+ <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
+ <meta http-equiv="X-UA-Compatible" content="IE=9"/>
+ <title>Mali OpenCL SDK v1.1.0: bitmapMagic Struct Reference</title>
+ <link href="tabs.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="jquery.js"></script>
+ <script type="text/javascript" src="dynsections.js"></script>
+ <link href="navtree.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="resize.js"></script>
+ <script type="text/javascript" src="navtree.js"></script>
+ <script type="text/javascript">
+ $(document).ready(initResizable);
+ </script>
+ <link href="search/search.css" rel="stylesheet" type="text/css"/>
+ <script type="text/javascript" src="search/search.js"></script>
+ <script type="text/javascript">
+ $(document).ready(function() { searchBox.OnSelectItem(0); });
+ </script>
+ <link href="doxygen.css" rel="stylesheet" type="text/css" />
+ </head>
+ <body>
+ <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
+ <div id="titlearea">
+ <table cellspacing="0" cellpadding="0">
+ <tbody>
+ <tr style="height: 56px;">
+ <td id="projectlogo"></td>
+ <td style="padding-left: 0.5em;">
+ <div id="projectname">Mali OpenCL SDK v1.1.0
+ </div>
+ </td>
+ </tr>
+ </tbody>
+ </table>
+ </div>
+ <!-- end header part -->
+ <!-- Generated by Doxygen 1.8.2 -->
+ <script type="text/javascript">
+ var searchBox = new SearchBox("searchBox", "search", false, 'Search');
+ </script>
+ <div id="navrow1" class="tabs">
+ <ul class="tablist">
+ Home
+ Help and Tutorials
+ Files
+
+ <div id="MSearchBox" class="MSearchBoxInactive">
+
+
+ <input type="text" id="MSearchField" value="Search" accesskey="S"
+ onfocus="searchBox.OnSearchFieldFocus(true)"
+ onblur="searchBox.OnSearchFieldFocus(false)">
+
+ </div>
+
+
+ </div>
```

```

58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('structbitmap_magic.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="summary">
97 + Public Attributes |
98 + List of all members </div>
99 + <div class="headertitle">
100 + <div class="title">bitmapMagic Struct Reference</div> </div>
101 + </div><!--header-->
102 + <div class="contents">
103 +
104 + <p>Bitmap magic file header numbers.
105 + More...</p>
106 +
107 + <p><code>#include <image.h></code></p>
108 + <table class="memberdecls">
109 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
110 + Public Attributes</h2></td></tr>
111 + <tr class="memitem:a477646205ecad5019613626f0b478694"><td class="memItemLeft" align="right" valign="top">unsigned char </td><
112 + <tr class="separator:a477646205ecad5019613626f0b478694"><td class="memSeparator" colspan="2"> </td></tr>
113 + </table>
114 + <h2 class="groupheader">Detailed Description</h2>
115 + <div class="textblock"><p>Bitmap magic file header numbers. </p>
116 + <p>See the BMP file format specification for more details. </p>
117 +
118 + <p>Definition at line 26 of file image_8h_source.h.
119 + </div><h2 class="groupheader">Member Data Documentation</h2>
120 +
121 + <div class="memitem">
122 + <div class="memproto">
123 + <table class="memname">
124 + <tr>
125 + <td class="memname">unsigned char bitmapMagic::magic[2]</td>
126 + </tr>

```

```

127 + </table>
128 + </div><div class="memdoc">
129 +
130 + <p>Definition at line 28 of file image.h.
131 +
132 + </div>
133 + </div>
134 + <hr/>The documentation for this struct was generated from the following file:
135 + /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/common/image.h
136 +
137 + </div><!-- contents -->
138 + </div><!-- doc-content -->
139 + <!-- start footer part -->
140 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
141 +
142 + <li class="navelem">bitmapMagic
143 + <li class="footer">
144 + (C) ARM Ltd. 2013
145 +
146 +
147 + </div>
148 + </body>
149 + </html>

```

▼ 4 docs/html/structbitmap\_magic.js □

|     |     |                                                                                  |
|-----|-----|----------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,4 @@                                                                  |
|     | 1   | + var structbitmap_magic =                                                       |
|     | 2   | + [                                                                              |
|     | 3   | + [ "magic", "structbitmap_magic.html#a477646205ecad5019613626f0b478694", null ] |
|     | 4   | + ]; ⊖                                                                           |

▼ 119 docs/html/support.html □

|     |     |                                                                                                                             |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,119 @@                                                                                                           |
|     | 1   | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
|     | 2   | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
|     | 3   | + <head>                                                                                                                    |
|     | 4   | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                     |
|     | 5   | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                       |
|     | 6   | + <title>Mali OpenCL SDK v1.1.0: Support</title>                                                                            |
|     | 7   | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                  |
|     | 8   | + <script type="text/javascript" src="jquery.js"></script>                                                                  |
|     | 9   | + <script type="text/javascript" src="dynsections.js"></script>                                                             |
|     | 10  | + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                               |
|     | 11  | + <script type="text/javascript" src="resize.js"></script>                                                                  |
|     | 12  | + <script type="text/javascript" src="navtree.js"></script>                                                                 |
|     | 13  | + <script type="text/javascript">                                                                                           |
|     | 14  | + \$(document).ready(initResizable);                                                                                        |
|     | 15  | + </script>                                                                                                                 |
|     | 16  | + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                         |
|     | 17  | + <script type="text/javascript" src="search/search.js"></script>                                                           |
|     | 18  | + <script type="text/javascript">                                                                                           |
|     | 19  | + \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                            |
|     | 20  | + </script>                                                                                                                 |
|     | 21  | + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                              |
|     | 22  | + </head>                                                                                                                   |
|     | 23  | + <body>                                                                                                                    |
|     | 24  | + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->                                                   |
|     | 25  | + <div id="titlearea">                                                                                                      |
|     | 26  | + <table cellspacing="0" cellpadding="0">                                                                                   |
|     | 27  | + <tbody>                                                                                                                   |
|     | 28  | + <tr style="height: 56px;">                                                                                                |
|     | 29  | + <td id="projectlogo"></td>                                                                |
|     | 30  | + <td style="padding-left: 0.5em;">                                                                                         |
|     | 31  | + <div id="projectname">Mali OpenCL SDK v1.1.0                                                                              |
|     | 32  | + </div>                                                                                                                    |
|     | 33  | + </td>                                                                                                                     |

```

34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + <li class="current">Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('support.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">Support </div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>Getting support for the Mali OpenCL SDK v1.1.0.</p>
101 + <h1>
102 + Local Help</h1>

```

```

103 + <p>Have a look at the list of Common Issues to see if there is a solution to your problem
104 + <h1>
105 + Mali Developer Forums</h1>
106 + <p>For all support queries please visit the Mali Developers Forum
107 + <p>This is the Mali OpenCL SDK vv1.1.0.0a36a7 for Linux. Please quote this version when requesting support. </p>
108 + </div></div><!-- contents -->
109 + </div><!-- doc-content -->
110 + <!-- start footer part -->
111 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
112 +
113 + <li class="footer">
114 + (C) ARM Ltd. 2013
115 +
116 +
117 + </div>
118 + </body>
119 + </html>

```

◀ ▶

## 118 docs/html/support\_8dox.html

| ... | ... | @@ -0,0 +1,118 @@                                                                                                           |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------|
|     | 1   | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
|     | 2   | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
|     | 3   | + <head>                                                                                                                    |
|     | 4   | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                     |
|     | 5   | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                       |
|     | 6   | + <title>Mali OpenCL SDK v1.1.0: support.dox File Reference</title>                                                         |
|     | 7   | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                  |
|     | 8   | + <script type="text/javascript" src="jquery.js"></script>                                                                  |
|     | 9   | + <script type="text/javascript" src="dynsections.js"></script>                                                             |
|     | 10  | + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                               |
|     | 11  | + <script type="text/javascript" src="resize.js"></script>                                                                  |
|     | 12  | + <script type="text/javascript" src="navtree.js"></script>                                                                 |
|     | 13  | + <script type="text/javascript">                                                                                           |
|     | 14  | + \$(document).ready(initResizable);                                                                                        |
|     | 15  | + </script>                                                                                                                 |
|     | 16  | + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                         |
|     | 17  | + <script type="text/javascript" src="search/search.js"></script>                                                           |
|     | 18  | + <script type="text/javascript">                                                                                           |
|     | 19  | + \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                            |
|     | 20  | + </script>                                                                                                                 |
|     | 21  | + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                              |
|     | 22  | + </head>                                                                                                                   |
|     | 23  | + <body>                                                                                                                    |
|     | 24  | + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->                                                   |
|     | 25  | + <div id="titlearea">                                                                                                      |
|     | 26  | + <table cellspacing="0" cellpadding="0">                                                                                   |
|     | 27  | + <tbody>                                                                                                                   |
|     | 28  | + <tr style="height: 56px;">                                                                                                |
|     | 29  | + <td id="projectlogo"></td>                                                                |
|     | 30  | + <td style="padding-left: 0.5em;">                                                                                         |
|     | 31  | + <div id="projectname">Mali OpenCL SDK v1.1.0                                                                              |
|     | 32  | + </div>                                                                                                                    |
|     | 33  | + </td>                                                                                                                     |
|     | 34  | + </tr>                                                                                                                     |
|     | 35  | + </tbody>                                                                                                                  |
|     | 36  | + </table>                                                                                                                  |
|     | 37  | + </div>                                                                                                                    |
|     | 38  | + <!-- end header part -->                                                                                                  |
|     | 39  | + <!-- Generated by Doxygen 1.8.2 -->                                                                                       |
|     | 40  | + <script type="text/javascript">                                                                                           |
|     | 41  | + var searchBox = new SearchBox("searchBox", "search", false, 'Search');                                                    |
|     | 42  | + </script>                                                                                                                 |
|     | 43  | + <div id="navrow1" class="tabs">                                                                                           |
|     | 44  | + <ul class="tablist">                                                                                                      |
|     | 45  | + <li><a href="index.html"><span>Home</span></a></li>                                                                       |
|     | 46  | + <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>                                               |
|     | 47  | + <li class="current"><a href="files.html"><span>Files</span></a></li>                                                      |

```

48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
61 +
62 + </div>
63 +
64 +
65 + </div>
66 + <div id="navrow2" class="tabs2">
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle"></div>
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('support_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">support.dox File Reference</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +
111 + <li class="navelem">support.dox
112 + <li class="footer">
113 + (C) ARM Ltd. 2013
114 +
115 +
116 + </div>

```

```
117 + </body>
118 + </html>
```

BIN docs/html/sync\_off.png

Unable to render code block

BIN docs/html/sync\_on.png

Unable to render code block

BIN docs/html/tab\_a.png

Unable to render code block

BIN docs/html/tab\_b.png

Unable to render code block

BIN docs/html/tab\_h.png

Unable to render code block

BIN docs/html/tab\_s.png

Unable to render code block

60 docs/html/tabs.css

```
...
...
@@ -0,0 +1,60 @@
1 + .tabs, .tabs2, .tabs3 {
2 + background-image: url('tab_b.png');
3 + width: 100%;
4 + z-index: 101;
5 + font-size: 13px;
6 + font-family: 'Lucida Grande', Geneva, Helvetica, Arial, sans-serif;
7 +
8 +
9 + .tabs2 {
10 + font-size: 10px;
11 +
12 + .tabs3 {
13 + font-size: 9px;
14 +
15 +
16 + .tablist {
17 + margin: 0;
18 + padding: 0;
19 + display: table;
20 +
21 +
22 + .tablist li {
23 + float: left;
24 + display: table-cell;
25 + background-image: url('tab_b.png');
26 + line-height: 36px;
27 + list-style: none;
```

```

28 + }
29 +
30 + .tablist a {
31 + display: block;
32 + padding: 0 20px;
33 + font-weight: bold;
34 + background-image:url('tab_s.png');
35 + background-repeat:no-repeat;
36 + background-position:right;
37 + color: #283A5D;
38 + text-shadow: 0px 1px 1px rgba(255, 255, 255, 0.9);
39 + text-decoration: none;
40 + outline: none;
41 + }
42 +
43 + .tabs3 .tablist a {
44 + padding: 0 10px;
45 + }
46 +
47 + .tablist a:hover {
48 + background-image: url('tab_h.png');
49 + background-repeat:repeat-x;
50 + color: #fff;
51 + text-shadow: 0px 1px 1px rgba(0, 0, 0, 1.0);
52 + text-decoration: none;
53 + }
54 +
55 + .tablist li.current a {
56 + background-image: url('tab_a.png');
57 + background-repeat:repeat-x;
58 + color: #fff;
59 + text-shadow: 0px 1px 1px rgba(0, 0, 0, 1.0);
60 + }

```

▽ 149 ■■■■■■■ docs/html/template\_8cl.html □

| ... | ... | @@ -0,0 +1,149 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 + &lt;head&gt; 4 + &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 + &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 + &lt;title&gt;Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template/assets/template. 7 + &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 + &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 + &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 + &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 + &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 + &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 + &lt;script type="text/javascript"&gt; 14 +   \$(document).ready(initResizable); 15 + &lt;/script&gt; 16 + &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 + &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; 18 + &lt;script type="text/javascript"&gt; 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); }); 20 + &lt;/script&gt; 21 + &lt;link href="doxygen.css" rel="stylesheet" type="text/css" /&gt; 22 + &lt;/head&gt; 23 + &lt;body&gt; 24 + &lt;div id="top"&gt;&lt;!-- do not remove this div, it is closed by doxygen! --&gt; 25 + &lt;div id="titlearea"&gt; 26 + &lt;table cellspacing="0" cellpadding="0"&gt; 27 +   &lt;tbody&gt; 28 +     &lt;tr style="height: 56px;"&gt; 29 +       &lt;td id="projectlogo"&gt;&lt;img alt="Logo" src="logo.png"/&gt;&lt;/td&gt; 30 +       &lt;td style="padding-left: 0.5em;"&gt; 31 +         &lt;div id="projectname"&gt;Mali OpenCL SDK v1.1.0 32 +       &lt;/div&gt; </pre> |

```
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;">
80 + <div class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + </div>
84 + <script type="text/javascript">
85 + $(document).ready(function(){initNavTree('template_8cl.html','');});
86 + </script>
87 + <div id="doc-content">
88 + <!-- window showing the filter options -->
89 + <div id="MSearchSelectWindow"
90 + onmouseover="return searchBox.OnSearchSelectShow()"
91 + onmouseout="return searchBox.OnSearchSelectHide()"
92 + onkeydown="return searchBox.OnSearchSelectKey(event)">
93 + All
94 + </div>
95 + <!-- iframe showing the search results (closed by default) -->
96 + <div id="MSearchResultsWindow">
97 + <iframe src="javascript:void(0)" frameborder="0"
98 + name="MSearchResults" id="MSearchResults">
99 + </iframe>
100 + </div>
101 + <div class="header">
```

```

102 + <div class="summary">
103 + Functions </div>
104 + <div class="headertitle">
105 + <div class="title">template.cl File Reference</div> </div>
106 + </div><!--header-->
107 + <div class="contents">
108 +
109 + <p>Go to the source code of this file.</p>
110 + <table class="memberdecls">
111 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
112 + Functions</h2></td></tr>
113 + <tr class="memitem:a3fd9dfc155a2b110d8632041d0961625"><td class="memItemLeft" align="right" valign="top">__kernel void </td><td class="memItemRight" valign="top">
114 + Template empty kernel</td></tr>
115 + <tr class="separator:a3fd9dfc155a2b110d8632041d0961625"><td class="memSeparator" colspan="2"> </td></tr>
116 + </table>
117 + <h2 class="groupheader">Function Documentation</h2>
118 +
119 + <div class="memitem">
120 + <div class="memproto">
121 + <table class="memname">
122 + <tr>
123 + <td class="memname">__kernel void template </td>
124 + <td>(</td>
125 + <td class="paramname"></td><td>)</td>
126 + <td></td>
127 + </tr>
128 + </table>
129 + </div><div class="memdoc">
130 +
131 + <p>Template empty kernel. </p>
132 +
133 + <p>Definition at line 14 of file template_8cl_source.h.
134 +
135 + </div>
136 + </div>
137 + </div><!-- contents -->
138 + </div><!-- doc-content -->
139 + <!-- start footer part -->
140 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
141 +
142 + <li class="navelem">samples<li class="navelem">dir_6f9635d4fbfa321d4c00f29df5cd540c
143 + <li class="footer">
144 + (C) ARM Ltd. 2013
145 +
146 +
147 + </div>
148 + </body>
149 + </html>

```

◀ ▶

#### 4 docs/html/template\_8cl.js

|     |     |                                                                                 |
|-----|-----|---------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,4 @@                                                                 |
|     | 1   | + var template_8cl =                                                            |
|     | 2   | + [                                                                             |
|     | 3   | +   [ "template", "template_8cl.html#a3fd9dfc155a2b110d8632041d0961625", null ] |
|     | 4   | + ]; <span style="color:red">-</span>                                           |

#### 131 docs/html/template\_8cl\_source.html

|     |     |                                                                                                                                       |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,131 @@                                                                                                                     |
|     | 1   | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">           |
|     | 2   | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                                         |
|     | 3   | + <head>                                                                                                                              |
|     | 4   | + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                               |
|     | 5   | + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                                 |
|     | 6   | + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template/assets/template. |
|     | 7   | + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                            |
|     | 8   | + <script type="text/javascript" src="jquery.js"></script>                                                                            |

```

9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>

```

```

78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;"
80 + class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('template_8cl_source.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">template.cl</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + Go to the documentation of this file.<div class="fragment"><div class="line">
107 + <div class="line"> 2 * This confidential and propri
108 + <div class="line"> 3 * authorised by a licensing ag
109 + <div class="line"> 4 * (C) COPYRIGHT 2013 ARM Li
110 + <div class="line"> 5 * ALL RIGHTS RESERVED<,
111 + <div class="line"> 6 * The entire notice above must
112 + <div class="line"> 7 * copies and copies may only b
113 + <div class="line"> 8 * by a licensing agreement fro
114 + <div class="line"> 9 */</div>
115 + <div class="line"> 10 </div>
116 + <div class="line"><a class="code" href="template_8cl.html#a3fd9dfc155a2b110d8632041d09616
117 + <div class="line"> 15 {</div>
118 + <div class="line"> 16 }</div>
119 + </div><!-- fragment --></div><!-- contents -->
120 + </div><!-- doc-content -->
121 + <!-- start footer part -->
122 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
123 +
124 + <li class="navelem">samples<li class="navelem"><a class
125 + <li class="footer">
126 + (C) ARM Ltd. 2013
127 +
128 +
129 + </div>
130 + </body>
131 + </html>
```

## ▼ 156 docs/html/template\_8cpp.html

| ... | ... | @@ -0,0 +1,156 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> 2 + <html xmlns="http://www.w3.org/1999/xhtml"> 3 + <head> 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/> 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/> 6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template/template.cpp File 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/> 8 + <script type="text/javascript" src="jquery.js"></script> 9 + <script type="text/javascript" src="dynsections.js"></script> 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/> |

```
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;"
```

```

80 + class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('template_8cpp.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="summary">
103 + Functions </div>
104 + <div class="headertitle">
105 + <div class="title">template.cpp File Reference</div> </div>
106 + </div><!--header-->
107 + <div class="contents">
108 + <div class="textblock"><code>#include ";common.h";</code>

109 + <code>#include ";image.h";</code>

110 + <code>#include <CL/cl.h>;</code>

111 + <code>#include <iostream>;</code>

112 + </div>
113 + <p>Go to the source code of this file.</p>
114 + <table class="memberdecls">
115 + <tr class="heading"><td colspan="2"><h2 class="groupheader">
116 + Functions</h2></td></tr>
117 + <tr class="memitem:a840291bc02cba5474a4cb46a9b9566fe"><td class="memItemLeft" align="right" valign="top">int&#160;;</td><td class="memItemRight" nowrap="nowrap">
118 + <td class="mdescLeft">&#160;;</td><td class="mdescRight" nowrap="nowrap">Simple template OpenCL sample
119 + <tr class="separator:a840291bc02cba5474a4cb46a9b9566fe"><td class="memSeparator" colspan="2">&#160;;</td></tr>
120 + </table>
121 + <h2 class="groupheader">Function Documentation</h2>
122 +
123 + <div class="memitem">
124 + <div class="memproto">
125 + <table class="memname">
126 + <tr>
127 + <td class="memname">int main </td>
128 + <td>(</td>
129 + <td class="paramtype">void&#160;;</td>
130 + <td class="paramname"></td><td>)</td>
131 + <td></td>
132 + </tr>
133 + </table>
134 + </div><div class="memdoc">
135 +
136 + <p>Simple template OpenCL sample. </p>
137 + <p>The basic code to run a kernel with no arguments. </p>
138 + <dl class="section return"><dt>Returns</dt><dd>The exit code of the application, non-zero if a problem occurred. </dd></dl>
139 +
140 + <p>Definition at line 24 of file template_8cpp.h.</p>
141 +
142 + </div>
143 + </div>
144 + </div><!-- contents -->
145 + </div><!-- doc-content -->
146 + <!-- start footer part -->
147 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
148 +

```

```
149 + <li class="navelem">samples<li class="navelem">samples
150 + <li class="footer">
151 + (C) ARM Ltd. 2013
152 +
153 +
154 + </div>
155 + </body>
156 + </html>
```

▼ 4 docs/html/template\_8cpp.js □

```
... ... @@ -0,0 +1,4 @@
1 + var template_8cpp =
2 + [
3 + ["main", "template_8cpp.html#a840291bc02cba5474a4cb46a9b9566fe", null]
4 +]; -
```

▼ 248 docs/html/template\_8cpp\_source.html □

```
... ... @@ -0,0 +1,248 @@
1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
2 + <html xmlns="http://www.w3.org/1999/xhtml">
3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: /home/jenkins/workspace/opencl_sdk_daily/Architecture/x86/OS/linux/samples/template/template.cpp Sou
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help&#160;and&#160;Tutorials
47 + <li class="current">Files
48 + </pre>
```

```

49+ <div id="MSearchBox" class="MSearchBoxInactive">
50+
51+
55+ <input type="text" id="MSearchField" value="Search" accesskey="S"
56+ onfocus="searchBox.OnSearchFieldFocus(true)"
57+ onblur="searchBox.OnSearchFieldFocus(false)"
58+ onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+
60+
61+
62+ </div>
63+
64+
65+ </div>
66+ <div id="navrow2" class="tabs2">
67+ <ul class="tablist">
68+ File List
69+ File Members
70+
71+ </div>
72+ </div><!-- top -->
73+ <div id="side-nav" class="ui-resizable side-nav-resizable">
74+ <div id="nav-tree">
75+ <div id="nav-tree-contents">
76+ <div id="nav-sync" class="sync"></div>
77+ </div>
78+ </div>
79+ <div id="splitbar" style="-moz-user-select:none;">
80+ <div class="ui-resizable-handle"></div>
81+ </div>
82+ </div>
83+ <script type="text/javascript">
84+ $(document).ready(function(){initNavTree('template_8cpp_source.html','');});
85+ </script>
86+ <div id="doc-content">
87+ <!-- window showing the filter options -->
88+ <div id="MSearchSelectWindow"
89+ onmouseover="return searchBox.OnSearchSelectShow()"
90+ onmouseout="return searchBox.OnSearchSelectHide()"
91+ onkeydown="return searchBox.OnSearchSelectKey(event)">
92+ All
93+
94+ <!-- iframe showing the search results (closed by default) -->
95+ <div id="MSearchResultsWindow">
96+ <iframe src="javascript:void(0)" frameborder="0"
97+ name="MSearchResults" id="MSearchResults">
98+ </iframe>
99+ </div>
100+
101+ <div class="header">
102+ <div class="headertitle">
103+ <div class="title">template.cpp</div> </div>
104+ </div><!--header-->
105+ <div class="contents">
106+ Go to the documentation of this file.<div class="fragment"><div class="line">
107+ <div class="line"> 2 * This confidential and propri
108+ <div class="line"> 3 * authorised by a licensing ag
109+ <div class="line"> 4 * (C) COPYRIGHT 2013 ARM Li
110+ <div class="line"> 5 * ALL RIGHTS RESERVED<
111+ <div class="line"> 6 * The entire notice above must
112+ <div class="line"> 7 * copies and copies may only b
113+ <div class="line"> 8 * by a licensing agreement fro
114+ <div class="line"> 9 */</div>
115+ <div class="line">10 </div>
116+ <div class="line">11 #include "<a class="c
117+ <div class="line">12 #include "<a class="c

```



```

187 + <div class="line"> 87 const //
188 + <div class="line"> 88 size_t globalWorkSize;
189 + <div class="line"> 89 /* [Set the kernel work size]
190 + <div class="line"> 90 </div> */
191 + <div class="line"> 91 /* [Enqueue the kernel] */
192 + <div class="line"> 92 /* An event to associate with the kernel execution. cl_event
193 + <div class="line"> 93 event = 0;
194 + <div class="line"> 94 </div>
195 + <div class="line"> 95 if (cerr << "*"return 1;
196 + <div class="line"> 96 }</div>
197 + <div class="line"> 97 /* [Enqueue the kernel] */
198 + <div class="line"> 98 /* [Wait for kernel execution]
199 + <div class="line"> 99 if (cerr << "*"return 1;
200 + <div class="line">100 }</div>
201 + <div class="line">101 /* [Enqueue the kernel] */
202 + <div class="line">102 </div>
203 + <div class="line">103 /* [Wait for kernel execution]
204 + <div class="line">104 if (cerr << "*"return 1;
205 + <div class="line">105 }</div>
206 + <div class="line">106 /* [Wait for kernel execution]
207 + <div class="line">107 if (cerr << "*"return 1;
208 + <div class="line">108 }</div>
209 + <div class="line">109 /* [Wait for kernel execution]
210 + <div class="line">110 /* [Wait for kernel execution]
211 + <div class="line">111 </div>
212 + <div class="line">112 </div>
213 + <div class="line">113 /* After execution. */
214 + <div class="line">114 </div>
215 + <div class="line">115 /* [Print the profiling information]
216 + <div class="line">116 /* Release the event object. */
217 + <div class="line">117 if (cerr << "*"return 1;
218 + <div class="line">118 }</div>
219 + <div class="line">119 /* Print the profiling information */
220 + <div class="line">120 /* Add code here to retrieve the event object. */
221 + <div class="line">121 /* Release OpenCL objects*/
222 + <div class="line">122 /* Release OpenCL objects*/
223 + <div class="line">123 /* Add code here to retrieve the event object. */
224 + <div class="line">124 /* Print the profiling information */
225 + <div class="line">125 </div>
226 + <div class="line">126 </div>
227 + <div class="line">127 /* Add code here to retrieve the event object. */
228 + <div class="line">128 </div>
229 + <div class="line">129 </div>
230 + <div class="line">130 /* Release OpenCL objects*/
231 + <div class="line">131 /* Release OpenCL objects*/
232 + <div class="line">132 /* Release OpenCL objects*/
233 + <div class="line">133 </div>
234 + <div class="line">134 return 0;</div>
235 + <div class="line">135 }</div>
236 + </div><!-- fragment --></div><!-- contents -->
237 + </div><!-- doc-content -->
238 + <!-- start footer part -->
239 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
240 +
241 + <li class="navelem">samples<li class="navelem">samples
242 + <li class="footer">
243 + (C) ARM Ltd. 2013
244 +
245 +
246 + </div>
247 + </body>
248 + </html>

```

118 docs/html/template\_8dox.html

... ... @@ -0,0 +1,118 @@

|   |                                                                                                                             |
|---|-----------------------------------------------------------------------------------------------------------------------------|
| 1 | + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
| 2 | + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |

```

3 + <head>
4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>
5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>
6 + <title>Mali OpenCL SDK v1.1.0: tutorials/template.dox File Reference</title>
7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>
8 + <script type="text/javascript" src="jquery.js"></script>
9 + <script type="text/javascript" src="dynsections.js"></script>
10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>
11 + <script type="text/javascript" src="resize.js"></script>
12 + <script type="text/javascript" src="navtree.js"></script>
13 + <script type="text/javascript">
14 + $(document).ready(initResizable);
15 + </script>
16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>
17 + <script type="text/javascript" src="search/search.js"></script>
18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + Help and Tutorials
47 + <li class="current">Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
67 + <ul class="tablist">
68 + File List
69 + File Members
70 +
71 + </div>
```

```

72 + </div><!-- top -->
73 + <div id="side-nav" class="ui-resizable side-nav-resizable">
74 + <div id="nav-tree">
75 + <div id="nav-tree-contents">
76 + <div id="nav-sync" class="sync"></div>
77 + </div>
78 + </div>
79 + <div id="splitbar" style="-moz-user-select:none;"
80 + class="ui-resizable-handle">
81 + </div>
82 + </div>
83 + <script type="text/javascript">
84 + $(document).ready(function(){initNavTree('template_8dox.html','');});
85 + </script>
86 + <div id="doc-content">
87 + <!-- window showing the filter options -->
88 + <div id="MSearchSelectWindow"
89 + onmouseover="return searchBox.OnSearchSelectShow()"
90 + onmouseout="return searchBox.OnSearchSelectHide()"
91 + onkeydown="return searchBox.OnSearchSelectKey(event)">
92 + All
93 +
94 + <!-- iframe showing the search results (closed by default) -->
95 + <div id="MSearchResultsWindow">
96 + <iframe src="javascript:void(0)" frameborder="0"
97 + name="MSearchResults" id="MSearchResults">
98 + </iframe>
99 + </div>
100 +
101 + <div class="header">
102 + <div class="headertitle">
103 + <div class="title">tutorials/template.dox File Reference</div> </div>
104 + </div><!--header-->
105 + <div class="contents">
106 + </div><!-- contents -->
107 + </div><!-- doc-content -->
108 + <!-- start footer part -->
109 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110 +
111 + <li class="navelem">template.dox
112 + <li class="footer">
113 + (C) ARM Ltd. 2013
114 +
115 +
116 + </div>
117 + </body>
118 + </html>

```

270 docs/html/template\_tutorial.html

| ... | ... | @@ -0,0 +1,270 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 +   &lt;head&gt; 4 +     &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 +     &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 +     &lt;title&gt;Mali OpenCL SDK v1.1.0: Template&lt;/title&gt; 7 +     &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 +     &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 +     &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 +    &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 +    &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 +    &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 +    &lt;script type="text/javascript"&gt; 14 +      \$(document).ready(initResizable); 15 +    &lt;/script&gt; 16 +    &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 +    &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; </pre> |

```

18 + <script type="text/javascript">
19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + <li class="current">Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <div class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('template_tutorial.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All

```

```

87 +
88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">Template </div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>A skeleton file that can be used as a starting point for OpenCL development.</p>
101 + <h1>
102 + Check-list</h1>
103 + <p>Check-list for an OpenCL application:</p>
104 + <ol type="1">
105 + Set up OpenCL environment
106 + Set up memory/data
107 + Execute the kernel instances
108 + After execution
109 +
110 + <h1>
111 + Walkthrough</h1>
112 + <h2>
113 + Set up OpenCL environment</h2>
114 + <p>template.cpp uses the common.cpp library to
115 + <ol type="1">
116 + <p class="startli">Create a context</p>
117 + <p class="startli">Create an OpenCL context on the first available platform: </p>
118 + <div class="fragment"><div class="line"> if (!
119 + <div class="line"> {</div>
120 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object
121 + <div class="line"> cerr << "Failed to create an OpenCL context. " <<
122 + <div class="line"> return 1;</div>
123 + <div class="line"> }</div>
124 + </div><!-- fragment -->
125 + <p class="startli">Create a command-queue</p>
126 + <p class="startli">Create a command-queue to queue operations on the device: </p>
127 + <div class="fragment"><div class="line"> if (!
128 + <div class="line"> {</div>
129 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object
130 + <div class="line"> cerr << "Failed to create the OpenCL command queue. " <<
131 + <div class="line"> return 1;</div>
132 + <div class="line"> }</div>
133 + </div><!-- fragment -->
134 + <p class="startli">Create a program</p>
135 + <p class="startli">Create an OpenCL program from a given file and compile it: </p>
136 + <div class="fragment"><div class="line"> if (!
137 + <div class="line"> {</div>
138 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object
139 + <div class="line"> cerr << "Failed to create OpenCL program."" <<
140 + <div class="line"> return 1;</div>
141 + <div class="line"> }</div>
142 + </div><!-- fragment -->
143 + <p class="startli">Create a kernel</p>
144 + <p class="startli">Create a kernel object for the kernel function
145 + <div class="fragment"><div class="line"> kernel = clCreateKernel(program, "template");
146 + <div class="line"> if (!
147 + <div class="line"> {</div>
148 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL object
149 + <div class="line"> cerr << "Failed to create OpenCL kernel. " <<
150 + <div class="line"> return 1;</div>
151 + <div class="line"> }</div>
152 + </div><!-- fragment -->
153 +
154 + <h2>
155 + Set up memory/data</h2>
```

```

156 + <ol type="1">
157 + <p class="startli">Create memory buffers</p>
158 + <p class="startli">Request memory buffers for any data that you need to access from the device. For more information have a look at
159 +
160 + <p class="startli">Initialise the input data</p>
161 + <p class="startli">If you need to initialise the data from the CPU side, then you need to:</p>
162 + <ol type="a">
163 + Map the buffer to a local pointer
164 + Initialise the data using the mapped pointer
165 + Un-map the data
166 +
167 + <p class="startli">For more information have a look at the Hello World tutorial.
168 +
169 + <p class="startli">Set up kernel arguments</p>
170 + <p class="startli">Pass the memory buffers and/or other variables to the kernel as arguments.</p>
171 + <p class="startli">For more information have a look at the Hello World tutorial.
172 +
173 +
174 + <h2>
175 + Execute the kernel instances</h2>
176 + <ol type="1">
177 + <p class="startli">Define the number of kernel instances</p>
178 + <p class="startli">The <code>globalWorkSize</code> determines how many kernel instances are run.</p>
179 + <div class="fragment"><div class="line"> const int workDimensions
180 + <div class="line"> size_t globalWorkSize[workDimensions] = {1};</div>
181 + </div><!-- fragment --><p> For another example have a look at the Hello World tu
182 +
183 + <p class="startli">Enqueue the kernel</p>
184 + <p class="startli">Enqueue the kernel for execution. To retrieve profiling information, we define a <code>cl_event</code> and pass
185 + <div class="fragment"><div class="line"> /* An event to associate with the kernel. Allows us to retrieve p
186 + <div class="line"> cl_event event = 0;</div>
187 + <div class="line"></div>
188 + <div class="line"> if (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14564
189 + <div class="line"> {</div>
190 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objec
191 + <div class="line"> cerr << "Failed enqueueing the kernel. " << __FILE__ <<
192 + <div class="line"> return 1;</div>
193 + <div class="line"> }</div>
194 + </div><!-- fragment -->
195 + <p class="startli">Wait for kernel execution</p>
196 + <p class="startli">Wait until all the kernel instances have finished executing: </p>
197 + <div class="fragment"><div class="line"> if (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14564
198 + <div class="line"> {</div>
199 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objec
200 + <div class="line"> cerr << "Failed waiting for kernel execution to finish. " <<
201 + <div class="line"> return 1;</div>
202 + <div class="line"> }</div>
203 + </div><!-- fragment --><p> Note: This may not be required depending on the application.</p>
204 +
205 +
206 + <h2>
207 + After execution</h2>
208 + <ol type="1">
209 + <p class="startli">Print profiling information</p>
210 + <p class="startli">Print the profiling information for the event (queueing, waiting and running time): </p>
211 + <div class="fragment"><div class="line"> <a class="code" href="common_8cpp.html#a33ff0013574626bb47147495e02b5d08" title="Print
212 + <div class="line"> /* Release the event object. */</div>
213 + <div class="line"> if (!<a class="code" href="common_8cpp.html#a73727ed6f5d821d8c97756404e14564
214 + <div class="line"> {</div>
215 + <div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Release any OpenCL objec
216 + <div class="line"> cerr << "Failed releasing the event object. " <<
217 + <div class="line"> return 1;</div>
218 + <div class="line"> }</div>
219 + </div><!-- fragment -->
220 + <p class="startli">Retrieve results</p>
221 + <p class="startli">To access the results from the CPU side, you need to:</p>
222 + <ol type="a">
223 + Map the output buffer to a local pointer
224 + Read the results using the mapped pointer

```

```

225 + Un-map the data
226 +
227 + <p class="startli">For more information have a look at the Hello World tutorial.
228 +
229 + <p class="startli">Release OpenCL objects</p>
230 + <p class="startli">Release any OpenCL objects that have been created.</p>
231 + <div class="fragment"><div class="line"> <a class="code" href="common_8cpp.html#acd459e74d0cef3c4616c7ce1a5a47f4d" title="Releas
232 + </div><!-- fragment -->
233 +
234 + <h1>
235 + Running the Sample</h1>
236 + <p>This sample does nothing apart from printing profiling information.</p>
237 + <ol type="1">
238 + <p class="startli">From a command prompt in the root of the SDK, run:</p>
239 + <div class="fragment"><div class="line">cd samples/template</div>
240 + </div><!-- fragment --> <div class="fragment"><div class="line">make install</div>
241 + </div><!-- fragment --><p class="startli">This compiles the template sample code and copies all the files it needs to run to the bi
242 +
243 + Copy this folder to the board.
244 + <p class="startli">Navigate to the folder on the board and run the template binary:</p>
245 + <div class="fragment"><div class="line">./template</div>
246 + </div><!-- fragment -->
247 + <p class="startli">You should see output similar to:</p>
248 + <div class="fragment"><div class="line">Profiling information:</div>
249 + <div class="line">Queued time: 0.062ms</div>
250 + <div class="line">Wait time: 0.071535ms</div>
251 + <div class="line">Run time: 0.001398ms</div>
252 + </div><!-- fragment -->
253 +
254 + <p>Find solutions for Common Issues.</p>
255 + <h1>
256 + More Information</h1>
257 + <p>For more information have a look at the code in template.cpp and <a class="el" href=
258 + </div></div><!-- contents -->
259 + </div><!-- doc-content -->
260 + <!-- start footer part -->
261 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
262 +
263 + <li class="navelem">Tutorials
264 + <li class="footer">
265 + (C) ARM Ltd. 2013
266 +
267 +
268 + </div>
269 + </body>
270 + </html>

```

## ▼ 153 docs/html/tutorials.html □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,153 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|     |     | <pre> 1 + &lt;!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"&gt; 2 + &lt;html xmlns="http://www.w3.org/1999/xhtml"&gt; 3 + &lt;head&gt; 4 + &lt;meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/&gt; 5 + &lt;meta http-equiv="X-UA-Compatible" content="IE=9"/&gt; 6 + &lt;title&gt;Mali OpenCL SDK v1.1.0: Tutorials&lt;/title&gt; 7 + &lt;link href="tabs.css" rel="stylesheet" type="text/css"/&gt; 8 + &lt;script type="text/javascript" src="jquery.js"&gt;&lt;/script&gt; 9 + &lt;script type="text/javascript" src="dynsections.js"&gt;&lt;/script&gt; 10 + &lt;link href="navtree.css" rel="stylesheet" type="text/css"/&gt; 11 + &lt;script type="text/javascript" src="resize.js"&gt;&lt;/script&gt; 12 + &lt;script type="text/javascript" src="navtree.js"&gt;&lt;/script&gt; 13 + &lt;script type="text/javascript"&gt; 14 +   \$(document).ready(initResizable); 15 + &lt;/script&gt; 16 + &lt;link href="search/search.css" rel="stylesheet" type="text/css"/&gt; 17 + &lt;script type="text/javascript" src="search/search.js"&gt;&lt;/script&gt; 18 + &lt;script type="text/javascript"&gt;</pre> |

```

19 + $(document).ready(function() { searchBox.OnSelectItem(0); });
20 + </script>
21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />
22 + </head>
23 + <body>
24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->
25 + <div id="titlearea">
26 + <table cellspacing="0" cellpadding="0">
27 + <tbody>
28 + <tr style="height: 56px;">
29 + <td id="projectlogo"></td>
30 + <td style="padding-left: 0.5em;">
31 + <div id="projectname">Mali OpenCL SDK v1.1.0
32 + </div>
33 + </td>
34 + </tr>
35 + </tbody>
36 + </table>
37 + </div>
38 + <!-- end header part -->
39 + <!-- Generated by Doxygen 1.8.2 -->
40 + <script type="text/javascript">
41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');
42 + </script>
43 + <div id="navrow1" class="tabs">
44 + <ul class="tablist">
45 + Home
46 + <li class="current">Help and Tutorials
47 + Files
48 +
49 + <div id="MSearchBox" class="MSearchBoxInactive">
50 +
51 +
55 + <input type="text" id="MTextField" value="Search" accesskey="S"
56 + onfocus="searchBox.OnSearchFieldFocus(true)"
57 + onblur="searchBox.OnSearchFieldFocus(false)"
58 + onkeyup="searchBox.OnSearchFieldChange(event)"/>
59 +
60 +
68 + <div id="nav-tree">
69 + <div id="nav-tree-contents">
70 + <div id="nav-sync" class="sync"></div>
71 + </div>
72 + </div>
73 + <div id="splitbar" style="-moz-user-select:none;">
74 + <class="ui-resizable-handle">
75 + </div>
76 + </div>
77 + <script type="text/javascript">
78 + $(document).ready(function(){initNavTree('tutorials.html','');});
79 + </script>
80 + <div id="doc-content">
81 + <!-- window showing the filter options -->
82 + <div id="MSearchSelectWindow"
83 + onmouseover="return searchBox.OnSearchSelectShow()"
84 + onmouseout="return searchBox.OnSearchSelectHide()"
85 + onkeydown="return searchBox.OnSearchSelectKey(event)">
86 + All
87 +

```

```

88 + <!-- iframe showing the search results (closed by default) -->
89 + <div id="MSearchResultsWindow">
90 + <iframe src="javascript:void(0)" frameborder="0"
91 + name="MSearchResults" id="MSearchResults">
92 + </iframe>
93 + </div>
94 +
95 + <div class="header">
96 + <div class="headertitle">
97 + <div class="title">Tutorials </div> </div>
98 + </div><!--header-->
99 + <div class="contents">
100 + <div class="textblock"><p>Tutorials on how to get the best out of OpenCL on Mali GPUs.</p>
101 + <h2>Basic Tutorials</h2>
102 + <p>These tutorials introduce the basics of an OpenCL application.</p>
103 + <ol type="1">
104 + <p class="startli">Hello World</p>
105 + <p class="startli">A basic introduction to OpenCL and Vectorization. </p>
106 +
107 + <p class="startli">Template</p>
108 + <p class="startli">A skeleton file that can be used as a starting point for OpenCL development. </p>
109 +
110 + <p class="startli">Memory Buffers</p>
111 + <p class="startli">How to share of memory efficiently between a Mali-T600 series GPU and a CPU. </p>
112 +
113 + <p class="startli">Image Objects</p>
114 + <p class="startli">An overview of OpenCL image objects including sample code. </p>
115 +
116 + <p class="startli">64-bit Integers and Atomics</p>
117 + <p class="startli">A tutorial to demonstrate the use of the long data type (64-bit integer) including atomics. </p>
118 +
119 +
120 + <h2>Advanced Tutorials</h2>
121 + <p>These tutorials show optimised implementations of more complex algorithms.</p>
122 +
123 + <p class="startli">Sobel Filter</p>
124 + <p class="startli">The Sobel image filter is a simple convolution filter used primarily for edge detection algorithms. </p>
125 +
126 +
127 +
128 + <p class="startli">FIR Filter</p>
129 + <p class="startli">Floating point FIR (Finite Input Response) image filter for pixelization and/or noise reduction. </p>
130 +
131 +
132 +
133 + <p class="startli">Mandelbrot</p>
134 + <p class="startli">The results of calculating the Mandelbrot set produces fractal patterns. </p>
135 +
136 +
137 +
138 + <p class="startli">SGEMM</p>
139 + <p class="startli">SGEMM (Single-Precision General Matrix Multiplication) OpenCL sample. </p>
140 +
141 +
142 + </div></div><!-- contents -->
143 + </div><!-- doc-content -->
144 + <!-- start footer part -->
145 + <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
146 +
147 + <li class="footer">
148 + (C) ARM Ltd. 2013
149 +
150 +
151 + </div>
152 + </body>
153 + </html>

```

```
... ... @@ -0,0 +1,75 @@
1 + var tutorials =
2 + [
3 + ["Hello World", "hello_world_tutorial.html", "hello_world_tutorial"],
4 + ["Template", "template_tutorial.html", [
5 + ["Check-list", "template_tutorial.html#templateCheckList", null],
6 + ["Walkthrough", "template_tutorial.html#templateWalkthrough", [
7 + ["Set up OpenCL environment", "template_tutorial.html#templateEnvironment", null],
8 + ["Set up memory/data", "template_tutorial.html#templateMemory", null],
9 + ["Execute the kernel instances", "template_tutorial.html#templateKernelExecution", null],
10 + ["After execution", "template_tutorial.html#templateAfterExecution", null]
11 +]],
12 + ["Running the Sample", "template_tutorial.html#templateRunning", null],
13 + ["More Information", "template_tutorial.html#templateMoreInformation", null]
14 +]],
15 + ["Memory Buffers", "memory_buffers_tutorial.html", [
16 + ["Introduction", "memory_buffers_tutorial.html#memoryBuffersIntroduction", null],
17 + ["Shared Memory Systems", "memory_buffers_tutorial.html#memoryBuffersSharedMemorySystems", null],
18 + ["Sharing Data Across Devices", "memory_buffers_tutorial.html#memoryBuffersAcrossDevices", null],
19 + ["Additional Recommendations", "memory_buffers_tutorial.html#memoryBuffersRecommendations", null],
20 + ["More Information", "memory_buffers_tutorial.html#memoryBuffersMoreInformation", null]
21 +]],
22 + ["Image Objects", "image_objects_tutorial.html", "image_objects_tutorial"],
23 + ["64-bit Integers and Atomics", "long64_bit_integer_tutorial.html", [
24 + ["Introduction", "long64_bit_integer_tutorial.html#long64BitIntegerIntroduction", [
25 + ["Long Data Type", "long64_bit_integer_tutorial.html#long64BitIntegerType", null],
26 + ["64-bit Atomics", "long64_bit_integer_tutorial.html#long64BitIntegerAtomics", null]
27 +]],
28 + ["Implementation", "long64_bit_integer_tutorial.html#long64BitIntegerImplementation", [
29 + ["Image Size", "long64_bit_integer_tutorial.html#long64BitIntegerSize", null],
30 + ["64-bit Arithmetic", "long64_bit_integer_tutorial.html#long64BitInteger", null]
31 +]],
32 + ["Running the Sample", "long64_bit_integer_tutorial.html#long64BitIntegerRunning", null],
33 + ["More Information", "long64_bit_integer_tutorial.html#long64BitIntegerMoreInformation", null]
34 +]],
35 + ["Sobel Filter", "sobel_tutorial.html", [
36 + ["Example Result", "sobel_tutorial.html#sobelExampleResult", null],
37 + ["The Algorithm", "sobel_tutorial.html#sobelAlgorithm", null],
38 + ["Implementation", "sobel_tutorial.html#sobelImplementation", [
39 + ["Image Size", "sobel_tutorial.html#sobelSize", null],
40 + ["Padding", "sobel_tutorial.html#sobelPadding", null],
41 + ["Implementation Specifics", "sobel_tutorial.html#sobelSpecifics", null],
42 + ["The Code", "sobel_tutorial.html#sobelCode", null]
43 +]],
44 + ["Running the Sample", "sobel_tutorial.html#sobelRunning", null],
45 + ["More Information", "sobel_tutorial.html#sobelMoreInformation", null]
46 +]],
47 + ["FIR Filter", "fir_tutorial.html", [
48 + ["Example Result", "fir_tutorial.html#firExampleResult", null],
49 + ["The Algorithm", "fir_tutorial.html#firAlgorithm", null],
50 + ["Implementation", "fir_tutorial.html#firImplementation", [
51 + ["Image Size", "fir_tutorial.html#firSize", null],
52 + ["Padding", "fir_tutorial.html#firPadding", null],
53 + ["Mali-T600 Series Hardware", "fir_tutorial.html#firMali", null],
54 + ["Implementation Specifics", "fir_tutorial.html#firSpecifics", null],
55 + ["The Filter", "fir_tutorial.html#firFilter", null],
56 + ["The Code", "fir_tutorial.html#firCode", null]
57 +]],
58 + ["Running the Sample", "fir_tutorial.html#firRunning", null],
59 + ["More Information", "fir_tutorial.html#firMoreInformation", null]
60 +]],
61 + ["Mandelbrot", "mandelbrot_tutorial.html", [
62 + ["Example Result", "mandelbrot_tutorial.html#mandelbrotExampleResult", null],
63 + ["The Algorithm", "mandelbrot_tutorial.html#mandelbrotAlgorithm", null],
64 + ["Implementation", "mandelbrot_tutorial.html#mandelbrotImplementation", null],
65 + ["Running the Sample", "mandelbrot_tutorial.html#mandelbrotRunning", null],

```

```

66 + ["More Information", "mandelbrot_tutorial.html#mandelbrotMoreInformation", null]
67 +],
68 + ["SGEMM", "sgemm_tutorial.html", [
69 + ["Example Result", "sgemm_tutorial.html#sgemmExampleResult", null],
70 + ["The Algorithm", "sgemm_tutorial.html#sgemmAlgorithm", null],
71 + ["Implementation", "sgemm_tutorial.html#sgemmImplementation", null],
72 + ["Running the Sample", "sgemm_tutorial.html#sgemmRunning", null],
73 + ["More Information", "sgemm_tutorial.html#sgemmMoreInformation", null]
74 +]]
75 +];

```

▽ 118 ━━━━ docs/html/tutorials\_8dox.html □

| ... | ... | @@ -0,0 +1,118 @@                                                                                                             |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------|
|     |     | 1 + <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd"> |
|     |     | 2 + <html xmlns="http://www.w3.org/1999/xhtml">                                                                               |
|     |     | 3 + <head>                                                                                                                    |
|     |     | 4 + <meta http-equiv="Content-Type" content="text/xhtml; charset=UTF-8"/>                                                     |
|     |     | 5 + <meta http-equiv="X-UA-Compatible" content="IE=9"/>                                                                       |
|     |     | 6 + <title>Mali OpenCL SDK v1.1.0: tutorials.dox File Reference</title>                                                       |
|     |     | 7 + <link href="tabs.css" rel="stylesheet" type="text/css"/>                                                                  |
|     |     | 8 + <script type="text/javascript" src="jquery.js"></script>                                                                  |
|     |     | 9 + <script type="text/javascript" src="dynsections.js"></script>                                                             |
|     |     | 10 + <link href="navtree.css" rel="stylesheet" type="text/css"/>                                                              |
|     |     | 11 + <script type="text/javascript" src="resize.js"></script>                                                                 |
|     |     | 12 + <script type="text/javascript" src="navtree.js"></script>                                                                |
|     |     | 13 + <script type="text/javascript">                                                                                          |
|     |     | 14 +   \$(document).ready(initResizable);                                                                                     |
|     |     | 15 + </script>                                                                                                                |
|     |     | 16 + <link href="search/search.css" rel="stylesheet" type="text/css"/>                                                        |
|     |     | 17 + <script type="text/javascript" src="search/search.js"></script>                                                          |
|     |     | 18 + <script type="text/javascript">                                                                                          |
|     |     | 19 +   \$(document).ready(function() { searchBox.OnSelectItem(0); });                                                         |
|     |     | 20 + </script>                                                                                                                |
|     |     | 21 + <link href="doxygen.css" rel="stylesheet" type="text/css" />                                                             |
|     |     | 22 + </head>                                                                                                                  |
|     |     | 23 + <body>                                                                                                                   |
|     |     | 24 + <div id="top"><!-- do not remove this div, it is closed by doxygen! -->                                                  |
|     |     | 25 + <div id="titlearea">                                                                                                     |
|     |     | 26 + <table cellspacing="0" cellpadding="0">                                                                                  |
|     |     | 27 +   <tbody>                                                                                                                |
|     |     | 28 +     <tr style="height: 56px;">                                                                                           |
|     |     | 29 +       <td id="projectlogo"></td>                                                         |
|     |     | 30 +       <td style="padding-left: 0.5em;">                                                                                  |
|     |     | 31 +         <div id="projectname">Mali OpenCL SDK v1.1.0                                                                     |
|     |     | 32 +       </div>                                                                                                             |
|     |     | 33 +     </td>                                                                                                                |
|     |     | 34 +   </tr>                                                                                                                  |
|     |     | 35 + </tbody>                                                                                                                 |
|     |     | 36 + </table>                                                                                                                 |
|     |     | 37 + </div>                                                                                                                   |
|     |     | 38 + <!-- end header part -->                                                                                                 |
|     |     | 39 + <!-- Generated by Doxygen 1.8.2 -->                                                                                      |
|     |     | 40 + <script type="text/javascript">                                                                                          |
|     |     | 41 + var searchBox = new SearchBox("searchBox", "search", false, 'Search');                                                   |
|     |     | 42 + </script>                                                                                                                |
|     |     | 43 + <div id="navrow1" class="tabs">                                                                                          |
|     |     | 44 +   <ul class="tablist">                                                                                                   |
|     |     | 45 +     <li><a href="index.html"><span>Home</span></a></li>                                                                  |
|     |     | 46 +     <li><a href="pages.html"><span>Help&#160;and&#160;Tutorials</span></a></li>                                          |
|     |     | 47 +     <li class="current"><a href="files.html"><span>Files</span></a></li>                                                 |
|     |     | 48 +   <li>                                                                                                                   |
|     |     | 49 +     <div id="MSearchBox" class="MSearchBoxInactive">                                                                     |
|     |     | 50 +       <span class="left">                                                                                                |
|     |     | 51 +                                                                                                                 |
|     |     | 55 +   </span>                                                                                                                |

```

+
+ <input type="text" id="MSearchField" value="Search" accesskey="S"
56+ onfocus="searchBox.OnSearchFieldFocus(true)"
57+ onblur="searchBox.OnSearchFieldFocus(false)"
58+ onkeyup="searchBox.OnSearchFieldChange(event)"/>
59+
60+
67+ <ul class="tablist">
68+ File List
69+ File Members
70+
71+ </div>
72+ </div><!-- top -->
73+ <div id="side-nav" class="ui-resizable side-nav-resizable">
74+ <div id="nav-tree">
75+ <div id="nav-tree-contents">
76+ <div id="nav-sync" class="sync"></div>
77+ </div>
78+ </div>
79+ <div id="splitbar" style="-moz-user-select:none;">
80+ <div class="ui-resizable-handle">
81+ </div>
82+ </div>
83+ <script type="text/javascript">
84+ $(document).ready(function(){initNavTree('tutorials_8dox.html','');});
85+ </script>
86+ <div id="doc-content">
87+ <!-- window showing the filter options -->
88+ <div id="MSearchSelectWindow"
89+ onmouseover="return searchBox.OnSearchSelectShow()"
90+ onmouseout="return searchBox.OnSearchSelectHide()"
91+ onkeydown="return searchBox.OnSearchSelectKey(event)">
92+ All
93+
94+ <!-- iframe showing the search results (closed by default) -->
95+ <div id="MSearchResultsWindow">
96+ <iframe src="javascript:void(0)" frameborder="0"
97+ name="MSearchResults" id="MSearchResults">
98+ </iframe>
99+ </div>
100+
101+ <div class="header">
102+ <div class="headertitle">
103+ <div class="title">tutorials.dox File Reference</div> </div>
104+ </div><!--header-->
105+ <div class="contents">
106+ </div><!-- contents -->
107+ </div><!-- doc-content -->
108+ <!-- start footer part -->
109+ <div id="nav-path" class="navpath"><!-- id is needed for treeview function! -->
110+
111+ <li class="navelem">tutorials.dox
112+ <li class="footer">
113+ (C) ARM Ltd. 2013
114+
115+
116+ </div>
117+ </body>
118+ </html>

```

## Unable to render code block

998 include/CL/cl.h

```
@@ -0,0 +1,998 @@
+
+ ****
+ * Copyright (c) 2008-2010 The Khronos Group Inc.
+ *
+ * Permission is hereby granted, free of charge, to any person obtaining a
+ * copy of this software and/or associated documentation files (the
+ * "Materials"), to deal in the Materials without restriction, including
+ * without limitation the rights to use, copy, modify, merge, publish,
+ * distribute, sublicense, and/or sell copies of the Materials, and to
+ * permit persons to whom the Materials are furnished to do so, subject to
+ * the following conditions:
+ *
+ * The above copyright notice and this permission notice shall be included
+ * in all copies or substantial portions of the Materials.
+ *
+ * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
+ * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
+ * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
+ * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
+ * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
+ * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
+ * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.
+ ****/
+
+ /* $Revision: 28993 $ on $Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) $ */
+
+ #ifndef __OPENCL_CL_H
+ #define __OPENCL_CL_H
+
+ #ifdef __APPLE__
+ #include <OpenCL/cl_platform.h>
+ #else
+ #include <CL/cl_platform.h>
+ #endif
+
+ #ifdef __cplusplus
+ extern "C" {
+ #endif
+
+ ****/
+
+ typedef struct _cl_platform_id * cl_platform_id;
+ typedef struct _cl_device_id * cl_device_id;
+ typedef struct _cl_context * cl_context;
+ typedef struct _cl_command_queue * cl_command_queue;
+ typedef struct _cl_mem * cl_mem;
+ typedef struct _cl_program * cl_program;
+ typedef struct _cl_kernel * cl_kernel;
+ typedef struct _cl_event * cl_event;
+ typedef struct _cl_sampler * cl_sampler;
+
+ typedef cl_uint cl_bool; /* WARNING! Unlike cl_ types in cl_platform.h, cl_bool is not guaranteed
+ to be a standard C type. */
+ typedef cl_ulong cl_bitfield;
+ typedef cl_bitfield cl_device_type;
+ typedef cl_uint cl_platform_info;
+ typedef cl_uint cl_device_info;
+ typedef cl_bitfield cl_device_fp_config;
+ typedef cl_uint cl_device_mem_cache_type;
+ typedef cl_uint cl_device_local_mem_type;
+ typedef cl_bitfield cl_device_exec_capabilities;
+ typedef cl_bitfield cl_command_queue_properties;
+
+ typedef intptr_t cl_context_properties;
```

```

63 + typedef cl_uint cl_context_info;
64 + typedef cl_uint cl_command_queue_info;
65 + typedef cl_uint cl_channel_order;
66 + typedef cl_uint cl_channel_type;
67 + typedef cl_bitfield cl_mem_flags;
68 + typedef cl_uint cl_mem_object_type;
69 + typedef cl_uint cl_mem_info;
70 + typedef cl_uint cl_image_info;
71 + typedef cl_uint cl_buffer_create_type;
72 + typedef cl_uint cl_addressing_mode;
73 + typedef cl_uint cl_filter_mode;
74 + typedef cl_uint cl_sampler_info;
75 + typedef cl_bitfield cl_map_flags;
76 + typedef cl_uint cl_program_info;
77 + typedef cl_uint cl_program_build_info;
78 + typedef cl_int cl_build_status;
79 + typedef cl_uint cl_kernel_info;
80 + typedef cl_uint cl_kernel_work_group_info;
81 + typedef cl_uint cl_event_info;
82 + typedef cl_uint cl_command_type;
83 + typedef cl_uint cl_profiling_info;
84 +
85 + typedef struct _cl_image_format {
86 + cl_channel_order image_channel_order;
87 + cl_channel_type image_channel_data_type;
88 + } cl_image_format;
89 +
90 +
91 + typedef struct _cl_buffer_region {
92 + size_t origin;
93 + size_t size;
94 + } cl_buffer_region;
95 +
96 + ****
97 +
98 + /* Error Codes */
99 + #define CL_SUCCESS 0
100 + #define CL_DEVICE_NOT_FOUND -1
101 + #define CL_DEVICE_NOT_AVAILABLE -2
102 + #define CL_COMPILER_NOT_AVAILABLE -3
103 + #define CL_MEM_OBJECT_ALLOCATION_FAILURE -4
104 + #define CL_OUT_OF_RESOURCES -5
105 + #define CL_OUT_OF_HOST_MEMORY -6
106 + #define CL_PROFILING_INFO_NOT_AVAILABLE -7
107 + #define CL_MEM_COPY_OVERLAP -8
108 + #define CL_IMAGE_FORMAT_MISMATCH -9
109 + #define CL_IMAGE_FORMAT_NOT_SUPPORTED -10
110 + #define CL_BUILD_PROGRAM_FAILURE -11
111 + #define CL_MAP_FAILURE -12
112 + #define CL_MISALIGNED_SUB_BUFFER_OFFSET -13
113 + #define CL_EXEC_STATUS_ERROR_FOR_EVENTS_IN_WAIT_LIST -14
114 +
115 + #define CL_INVALID_VALUE -30
116 + #define CL_INVALID_DEVICE_TYPE -31
117 + #define CL_INVALID_PLATFORM -32
118 + #define CL_INVALID_DEVICE -33
119 + #define CL_INVALID_CONTEXT -34
120 + #define CL_INVALID_QUEUE_PROPERTIES -35
121 + #define CL_INVALID_COMMAND_QUEUE -36
122 + #define CL_INVALID_HOST_PTR -37
123 + #define CL_INVALID_MEM_OBJECT -38
124 + #define CL_INVALID_IMAGE_FORMAT_DESCRIPTOR -39
125 + #define CL_INVALID_IMAGE_SIZE -40
126 + #define CL_INVALID_SAMPLER -41
127 + #define CL_INVALID_BINARY -42
128 + #define CL_INVALID_BUILD_OPTIONS -43
129 + #define CL_INVALID_PROGRAM -44
130 + #define CL_INVALID_PROGRAM_EXECUTABLE -45
131 + #define CL_INVALID_KERNEL_NAME -46

```

```

132 + #define CL_INVALID_KERNEL_DEFINITION -47
133 + #define CL_INVALID_KERNEL -48
134 + #define CL_INVALID_ARG_INDEX -49
135 + #define CL_INVALID_ARG_VALUE -50
136 + #define CL_INVALID_ARG_SIZE -51
137 + #define CL_INVALID_KERNEL_ARGS -52
138 + #define CL_INVALID_WORK_DIMENSION -53
139 + #define CL_INVALID_WORK_GROUP_SIZE -54
140 + #define CL_INVALID_WORK_ITEM_SIZE -55
141 + #define CL_INVALID_GLOBAL_OFFSET -56
142 + #define CL_INVALID_EVENT_WAIT_LIST -57
143 + #define CL_INVALID_EVENT -58
144 + #define CL_INVALID_OPERATION -59
145 + #define CL_INVALID_GL_OBJECT -60
146 + #define CL_INVALID_BUFFER_SIZE -61
147 + #define CL_INVALID_MIP_LEVEL -62
148 + #define CL_INVALID_GLOBAL_WORK_SIZE -63
149 + #define CL_INVALID_PROPERTY -64
150 +
151 + /* OpenCL Version */
152 + #define CL_VERSION_1_0 1
153 + #define CL_VERSION_1_1 1
154 +
155 + /* cl_bool */
156 + #define CL_FALSE 0
157 + #define CL_TRUE 1
158 +
159 + /* cl_platform_info */
160 + #define CL_PLATFORM_PROFILE 0x0900
161 + #define CL_PLATFORM_VERSION 0x0901
162 + #define CL_PLATFORM_NAME 0x0902
163 + #define CL_PLATFORM_VENDOR 0x0903
164 + #define CL_PLATFORM_EXTENSIONS 0x0904
165 +
166 + /* cl_device_type - bitfield */
167 + #define CL_DEVICE_TYPE_DEFAULT (1 << 0)
168 + #define CL_DEVICE_TYPE_CPU (1 << 1)
169 + #define CL_DEVICE_TYPE_GPU (1 << 2)
170 + #define CL_DEVICE_TYPE_ACCELERATOR (1 << 3)
171 + #define CL_DEVICE_TYPE_ALL 0xFFFFFFFF
172 +
173 + /* cl_device_info */
174 + #define CL_DEVICE_TYPE 0x1000
175 + #define CL_DEVICE_VENDOR_ID 0x1001
176 + #define CL_DEVICE_MAX_COMPUTE_UNITS 0x1002
177 + #define CL_DEVICE_MAX_WORK_ITEM_DIMENSIONS 0x1003
178 + #define CL_DEVICE_MAX_WORK_GROUP_SIZE 0x1004
179 + #define CL_DEVICE_MAX_WORK_ITEM_SIZES 0x1005
180 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_CHAR 0x1006
181 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_SHORT 0x1007
182 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_INT 0x1008
183 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_LONG 0x1009
184 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_FLOAT 0x100A
185 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_DOUBLE 0x100B
186 + #define CL_DEVICE_MAX_CLOCK_FREQUENCY 0x100C
187 + #define CL_DEVICE_ADDRESS_BITS 0x100D
188 + #define CL_DEVICE_MAX_READ_IMAGE_ARGS 0x100E
189 + #define CL_DEVICE_MAX_WRITE_IMAGE_ARGS 0x100F
190 + #define CL_DEVICE_MAX_MEM_ALLOC_SIZE 0x1010
191 + #define CL_DEVICE_IMAGE2D_MAX_WIDTH 0x1011
192 + #define CL_DEVICE_IMAGE2D_MAX_HEIGHT 0x1012
193 + #define CL_DEVICE_IMAGE3D_MAX_WIDTH 0x1013
194 + #define CL_DEVICE_IMAGE3D_MAX_HEIGHT 0x1014
195 + #define CL_DEVICE_IMAGE3D_MAX_DEPTH 0x1015
196 + #define CL_DEVICE_IMAGE_SUPPORT 0x1016
197 + #define CL_DEVICE_MAX_PARAMETER_SIZE 0x1017
198 + #define CL_DEVICE_MAX_SAMPLERS 0x1018
199 + #define CL_DEVICE_MEM_BASE_ADDR_ALIGN 0x1019
200 + #define CL_DEVICE_MIN_DATA_TYPE_ALIGN_SIZE 0x101A

```

```

201 + #define CL_DEVICE_SINGLE_FP_CONFIG 0x101B
202 + #define CL_DEVICE_GLOBAL_MEM_CACHE_TYPE 0x101C
203 + #define CL_DEVICE_GLOBAL_MEM_CACHELINE_SIZE 0x101D
204 + #define CL_DEVICE_GLOBAL_MEM_CACHE_SIZE 0x101E
205 + #define CL_DEVICE_GLOBAL_MEM_SIZE 0x101F
206 + #define CL_DEVICE_MAX_CONSTANT_BUFFER_SIZE 0x1020
207 + #define CL_DEVICE_MAX_CONSTANT_ARGS 0x1021
208 + #define CL_DEVICE_LOCAL_MEM_TYPE 0x1022
209 + #define CL_DEVICE_LOCAL_MEM_SIZE 0x1023
210 + #define CL_DEVICE_ERROR_CORRECTION_SUPPORT 0x1024
211 + #define CL_DEVICE_PROFILING_TIMER_RESOLUTION 0x1025
212 + #define CL_DEVICE_ENDIAN_LITTLE 0x1026
213 + #define CL_DEVICE_AVAILABLE 0x1027
214 + #define CL_DEVICE_COMPILER_AVAILABLE 0x1028
215 + #define CL_DEVICE_EXECUTION_CAPABILITIES 0x1029
216 + #define CL_DEVICE_QUEUE_PROPERTIES 0x102A
217 + #define CL_DEVICE_NAME 0x102B
218 + #define CL_DEVICE_VENDOR 0x102C
219 + #define CL_DRIVER_VERSION 0x102D
220 + #define CL_DEVICE_PROFILE 0x102E
221 + #define CL_DEVICE_VERSION 0x102F
222 + #define CL_DEVICE_EXTENSIONS 0x1030
223 + #define CL_DEVICE_PLATFORM 0x1031
224 + /* 0x1032 reserved for CL_DEVICE_DOUBLE_FP_CONFIG */
225 + /* 0x1033 reserved for CL_DEVICE_HALF_FP_CONFIG */
226 + #define CL_DEVICE_PREFERRED_VECTOR_WIDTH_HALF 0x1034
227 + #define CL_DEVICE_HOST_UNIFIED_MEMORY 0x1035
228 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_CHAR 0x1036
229 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_SHORT 0x1037
230 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_INT 0x1038
231 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_LONG 0x1039
232 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_FLOAT 0x103A
233 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_DOUBLE 0x103B
234 + #define CL_DEVICE_NATIVE_VECTOR_WIDTH_HALF 0x103C
235 + #define CL_DEVICE_OPENCL_C_VERSION 0x103D
236 +
237 + /* cl_device_fp_config - bitfield */
238 + #define CL_FP_DENORM (1 << 0)
239 + #define CL_FP_INF_NAN (1 << 1)
240 + #define CL_FP_ROUND_TO_NEAREST (1 << 2)
241 + #define CL_FP_ROUND_TO_ZERO (1 << 3)
242 + #define CL_FP_ROUND_TO_INF (1 << 4)
243 + #define CL_FP_FMA (1 << 5)
244 + #define CL_FP_SOFT_FLOAT (1 << 6)
245 +
246 + /* cl_device_mem_cache_type */
247 + #define CL_NONE 0x0
248 + #define CL_READ_ONLY_CACHE 0x1
249 + #define CL_READ_WRITE_CACHE 0x2
250 +
251 + /* cl_device_local_mem_type */
252 + #define CL_LOCAL 0x1
253 + #define CL_GLOBAL 0x2
254 +
255 + /* cl_device_exec_capabilities - bitfield */
256 + #define CL_EXEC_KERNEL (1 << 0)
257 + #define CL_EXEC_NATIVE_KERNEL (1 << 1)
258 +
259 + /* cl_command_queue_properties - bitfield */
260 + #define CL_QUEUE_OUT_OF_ORDER_EXEC_MODE_ENABLE (1 << 0)
261 + #define CL_QUEUE_PROFILING_ENABLE (1 << 1)
262 +
263 + /* cl_context_info */
264 + #define CL_CONTEXT_REFERENCE_COUNT 0x1080
265 + #define CL_CONTEXT_DEVICES 0x1081
266 + #define CL_CONTEXT_PROPERTIES 0x1082
267 + #define CL_CONTEXT_NUM_DEVICES 0x1083
268 +
269 + /* cl_context_info + cl_context_properties */

```

```

270 + #define CL_CONTEXT_PLATFORM 0x1084
271 +
272 + /* cl_command_queue_info */
273 + #define CL_QUEUE_CONTEXT 0x1090
274 + #define CL_QUEUE_DEVICE 0x1091
275 + #define CL_QUEUE_REFERENCE_COUNT 0x1092
276 + #define CL_QUEUE_PROPERTIES 0x1093
277 +
278 + /* cl_mem_flags - bitfield */
279 + #define CL_MEM_READ_WRITE (1 << 0)
280 + #define CL_MEM_WRITE_ONLY (1 << 1)
281 + #define CL_MEM_READ_ONLY (1 << 2)
282 + #define CL_MEM_USE_HOST_PTR (1 << 3)
283 + #define CL_MEM_ALLOC_HOST_PTR (1 << 4)
284 + #define CL_MEM_COPY_HOST_PTR (1 << 5)
285 +
286 + /* cl_channel_order */
287 + #define CL_R 0x10B0
288 + #define CL_A 0x10B1
289 + #define CL_RG 0x10B2
290 + #define CL_RA 0x10B3
291 + #define CL_RGB 0x10B4
292 + #define CL_RGBA 0x10B5
293 + #define CL_BGRA 0x10B6
294 + #define CL_ARGB 0x10B7
295 + #define CL_INTENSITY 0x10B8
296 + #define CL_LUMINANCE 0x10B9
297 + #define CL_Rx 0x10BA
298 + #define CL_RGx 0x10BB
299 + #define CL_RGBx 0x10BC
300 +
301 + /* cl_channel_type */
302 + #define CL_SNORM_INT8 0x10D0
303 + #define CL_SNORM_INT16 0x10D1
304 + #define CL_UNORM_INT8 0x10D2
305 + #define CL_UNORM_INT16 0x10D3
306 + #define CL_UNORM_SHORT_565 0x10D4
307 + #define CL_UNORM_SHORT_555 0x10D5
308 + #define CL_UNORM_INT_101010 0x10D6
309 + #define CL_SIGNED_INT8 0x10D7
310 + #define CL_SIGNED_INT16 0x10D8
311 + #define CL_SIGNED_INT32 0x10D9
312 + #define CL_UNSIGNED_INT8 0x10DA
313 + #define CL_UNSIGNED_INT16 0x10DB
314 + #define CL_UNSIGNED_INT32 0x10DC
315 + #define CL_HALF_FLOAT 0x10DD
316 + #define CL_FLOAT 0x10DE
317 +
318 + /* cl_mem_object_type */
319 + #define CL_MEM_OBJECT_BUFFER 0x10F0
320 + #define CL_MEM_OBJECT_IMAGE2D 0x10F1
321 + #define CL_MEM_OBJECT_IMAGE3D 0x10F2
322 +
323 + /* cl_mem_info */
324 + #define CL_MEM_TYPE 0x1100
325 + #define CL_MEM_FLAGS 0x1101
326 + #define CL_MEM_SIZE 0x1102
327 + #define CL_MEM_HOST_PTR 0x1103
328 + #define CL_MEM_MAP_COUNT 0x1104
329 + #define CL_MEM_REFERENCE_COUNT 0x1105
330 + #define CL_MEM_CONTEXT 0x1106
331 + #define CL_MEM_ASSOCIATED_MEMOBJECT 0x1107
332 + #define CL_MEM_OFFSET 0x1108
333 +
334 + /* cl_image_info */
335 + #define CL_IMAGE_FORMAT 0x1110
336 + #define CL_IMAGE_ELEMENT_SIZE 0x1111
337 + #define CL_IMAGE_ROW_PITCH 0x1112
338 + #define CL_IMAGE_SLICE_PITCH 0x1113

```

```

339 + #define CL_IMAGE_WIDTH 0x1114
340 + #define CL_IMAGE_HEIGHT 0x1115
341 + #define CL_IMAGE_DEPTH 0x1116
342 +
343 + /* cl_addressing_mode */
344 + #define CL_ADDRESS_NONE 0x1130
345 + #define CL_ADDRESS_CLAMP_TO_EDGE 0x1131
346 + #define CL_ADDRESS_CLAMP 0x1132
347 + #define CL_ADDRESS_REPEAT 0x1133
348 + #define CL_ADDRESS_MIRRORED_REPEAT 0x1134
349 +
350 + /* cl_filter_mode */
351 + #define CL_FILTER_NEAREST 0x1140
352 + #define CL_FILTER_LINEAR 0x1141
353 +
354 + /* cl_sampler_info */
355 + #define CL_SAMPLER_REFERENCE_COUNT 0x1150
356 + #define CL_SAMPLER_CONTEXT 0x1151
357 + #define CL_SAMPLER_NORMALIZED_COORDS 0x1152
358 + #define CL_SAMPLER_ADDRESSING_MODE 0x1153
359 + #define CL_SAMPLER_FILTER_MODE 0x1154
360 +
361 + /* cl_map_flags - bitfield */
362 + #define CL_MAP_READ (1 << 0)
363 + #define CL_MAP_WRITE (1 << 1)
364 +
365 + /* cl_program_info */
366 + #define CL_PROGRAM_REFERENCE_COUNT 0x1160
367 + #define CL_PROGRAM_CONTEXT 0x1161
368 + #define CL_PROGRAM_NUM_DEVICES 0x1162
369 + #define CL_PROGRAM_DEVICES 0x1163
370 + #define CL_PROGRAM_SOURCE 0x1164
371 + #define CL_PROGRAM_BINARY_SIZES 0x1165
372 + #define CL_PROGRAM_BINARIES 0x1166
373 +
374 + /* cl_program_build_info */
375 + #define CL_PROGRAM_BUILD_STATUS 0x1181
376 + #define CL_PROGRAM_BUILD_OPTIONS 0x1182
377 + #define CL_PROGRAM_BUILD_LOG 0x1183
378 +
379 + /* cl_build_status */
380 + #define CL_BUILD_SUCCESS 0
381 + #define CL_BUILD_NONE -1
382 + #define CL_BUILD_ERROR -2
383 + #define CL_BUILD_IN_PROGRESS -3
384 +
385 + /* cl_kernel_info */
386 + #define CL_KERNEL_FUNCTION_NAME 0x1190
387 + #define CL_KERNEL_NUM_ARGS 0x1191
388 + #define CL_KERNEL_REFERENCE_COUNT 0x1192
389 + #define CL_KERNEL_CONTEXT 0x1193
390 + #define CL_KERNEL_PROGRAM 0x1194
391 +
392 + /* cl_kernel_work_group_info */
393 + #define CL_KERNEL_WORK_GROUP_SIZE 0x11B0
394 + #define CL_KERNEL_COMPILE_WORK_GROUP_SIZE 0x11B1
395 + #define CL_KERNEL_LOCAL_MEM_SIZE 0x11B2
396 + #define CL_KERNEL_PREFERRED_WORK_GROUP_SIZE_MULTIPLE 0x11B3
397 + #define CL_KERNEL_PRIVATE_MEM_SIZE 0x11B4
398 +
399 + /* cl_event_info */
400 + #define CL_EVENT_COMMAND_QUEUE 0x11D0
401 + #define CL_EVENT_COMMAND_TYPE 0x11D1
402 + #define CL_EVENT_REFERENCE_COUNT 0x11D2
403 + #define CL_EVENT_COMMAND_EXECUTION_STATUS 0x11D3
404 + #define CL_EVENT_CONTEXT 0x11D4
405 +
406 + /* cl_command_type */
407 + #define CL_COMMAND_NDRANGE_KERNEL 0x11F0

```

```

408 + #define CL_COMMAND_TASK 0x11F1
409 + #define CL_COMMAND_NATIVE_KERNEL 0x11F2
410 + #define CL_COMMAND_READ_BUFFER 0x11F3
411 + #define CL_COMMAND_WRITE_BUFFER 0x11F4
412 + #define CL_COMMAND_COPY_BUFFER 0x11F5
413 + #define CL_COMMAND_READ_IMAGE 0x11F6
414 + #define CL_COMMAND_WRITE_IMAGE 0x11F7
415 + #define CL_COMMAND_COPY_IMAGE 0x11F8
416 + #define CL_COMMAND_COPY_IMAGE_TO_BUFFER 0x11F9
417 + #define CL_COMMAND_COPY_BUFFER_TO_IMAGE 0x11FA
418 + #define CL_COMMAND_MAP_BUFFER 0x11FB
419 + #define CL_COMMAND_MAP_IMAGE 0x11FC
420 + #define CL_COMMAND_UNMAP_MEM_OBJECT 0x11FD
421 + #define CL_COMMAND_MARKER 0x11FE
422 + #define CL_COMMAND_ACQUIRE_GL_OBJECTS 0x11FF
423 + #define CL_COMMAND_RELEASE_GL_OBJECTS 0x1200
424 + #define CL_COMMAND_READ_BUFFER_RECT 0x1201
425 + #define CL_COMMAND_WRITE_BUFFER_RECT 0x1202
426 + #define CL_COMMAND_COPY_BUFFER_RECT 0x1203
427 + #define CL_COMMAND_USER 0x1204
428 +
429 + /* command execution status */
430 + #define CL_COMPLETE 0x0
431 + #define CL_RUNNING 0x1
432 + #define CL_SUBMITTED 0x2
433 + #define CL_QUEUED 0x3
434 +
435 + /* cl_buffer_create_type */
436 + #define CL_BUFFER_CREATE_TYPE_REGION 0x1220
437 +
438 + /* cl_profiling_info */
439 + #define CL_PROFILING_COMMAND_QUEUED 0x1280
440 + #define CL_PROFILING_COMMAND_SUBMIT 0x1281
441 + #define CL_PROFILING_COMMAND_START 0x1282
442 + #define CL_PROFILING_COMMAND_END 0x1283
443 +
444 + ****
445 +
446 + /* Platform API */
447 + extern CL_API_ENTRY cl_int CL_API_CALL
448 + clGetPlatformIDs(cl_uint /* num_entries */,
449 + cl_platform_id * /* platforms */,
450 + cl_uint * /* num_platforms */) CL_API_SUFFIX__VERSION_1_0;
451 +
452 + extern CL_API_ENTRY cl_int CL_API_CALL
453 + clGetPlatformInfo(cl_platform_id /* platform */,
454 + cl_platform_info /* param_name */,
455 + size_t /* param_value_size */,
456 + void * /* param_value */,
457 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
458 +
459 + /* Device APIs */
460 + extern CL_API_ENTRY cl_int CL_API_CALL
461 + clGetDeviceIDs(cl_platform_id /* platform */,
462 + cl_device_type /* device_type */,
463 + cl_uint /* num_entries */,
464 + cl_device_id * /* devices */,
465 + cl_uint * /* num_devices */) CL_API_SUFFIX__VERSION_1_0;
466 +
467 + extern CL_API_ENTRY cl_int CL_API_CALL
468 + clGetDeviceInfo(cl_device_id /* device */,
469 + cl_device_info /* param_name */,
470 + size_t /* param_value_size */,
471 + void * /* param_value */,
472 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
473 +
474 + /* Context APIs */
475 + extern CL_API_ENTRY cl_context CL_API_CALL
476 + clCreateContext(const cl_context_properties * /* properties */,

```

```

477 + cl_uint /* num_devices */,
478 + const cl_device_id * /* devices */,
479 + void (CL_CALLBACK * /* pfn_notify */)(const char *, const void *, size_t, void *),
480 + void * /* user_data */,
481 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
482 +
483 + extern CL_API_ENTRY cl_context CL_API_CALL
484 + clCreateContextFromType(const cl_context_properties * /* properties */,
485 + cl_device_type /* device_type */,
486 + void (CL_CALLBACK * /* pfn_notify*/)(const char *, const void *, size_t, void *),
487 + void * /* user_data */,
488 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
489 +
490 + extern CL_API_ENTRY cl_int CL_API_CALL
491 + clRetainContext(cl_context /* context */) CL_API_SUFFIX__VERSION_1_0;
492 +
493 + extern CL_API_ENTRY cl_int CL_API_CALL
494 + clReleaseContext(cl_context /* context */) CL_API_SUFFIX__VERSION_1_0;
495 +
496 + extern CL_API_ENTRY cl_int CL_API_CALL
497 + clGetContextInfo(cl_context /* context */,
498 + cl_context_info /* param_name */,
499 + size_t /* param_value_size */,
500 + void * /* param_value */,
501 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
502 +
503 /* Command Queue APIs */
504 + extern CL_API_ENTRY cl_command_queue CL_API_CALL
505 + clCreateCommandQueue(cl_context /* context */,
506 + cl_device_id /* device */,
507 + cl_command_queue_properties /* properties */,
508 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
509 +
510 + extern CL_API_ENTRY cl_int CL_API_CALL
511 + clRetainCommandQueue(cl_command_queue /* command_queue */) CL_API_SUFFIX__VERSION_1_0;
512 +
513 + extern CL_API_ENTRY cl_int CL_API_CALL
514 + clReleaseCommandQueue(cl_command_queue /* command_queue */) CL_API_SUFFIX__VERSION_1_0;
515 +
516 + extern CL_API_ENTRY cl_int CL_API_CALL
517 + clGetCommandQueueInfo(cl_command_queue /* command_queue */,
518 + cl_command_queue_info /* param_name */,
519 + size_t /* param_value_size */,
520 + void * /* param_value */,
521 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
522 +
523 #ifdef CL_USE_DEPRECATED_OPENCL_1_0_APIS
524 #warning CL_USE_DEPRECATED_OPENCL_1_0_APIS is defined. These APIs are unsupported and untested in OpenCL 1.1!
525 /*
526 * WARNING:
527 * This API introduces mutable state into the OpenCL implementation. It has been REMOVED
528 * to better facilitate thread safety. The 1.0 API is not thread safe. It is not tested by the
529 * OpenCL 1.1 conformance test, and consequently may not work or may not work dependably.
530 * It is likely to be non-performant. Use of this API is not advised. Use at your own risk.
531 *
532 * Software developers previously relying on this API are instructed to set the command queue
533 * properties when creating the queue, instead.
534 */
535 + extern CL_API_ENTRY cl_int CL_API_CALL
536 + clSetCommandQueueProperty(cl_command_queue /* command_queue */,
537 + cl_command_queue_properties /* properties */,
538 + cl_bool /* enable */,
539 + cl_command_queue_properties * /* old_properties */) CL_EXT_SUFFIX__VERSION_1_0_DEPRECATED;
540 #endif /* CL_USE_DEPRECATED_OPENCL_1_0_APIS */
541 +
542 /* Memory Object APIs */
543 + extern CL_API_ENTRY cl_mem CL_API_CALL
544 + clCreateBuffer(cl_context /* context */,
545 + cl_mem_flags /* flags */,

```

```

546 + size_t /* size */,
547 + void * /* host_ptr */,
548 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
549 +
550 + extern CL_API_ENTRY cl_mem CL_API_CALL
551 + clCreateSubBuffer(cl_mem /* buffer */,
552 + cl_mem_flags /* flags */,
553 + cl_buffer_create_type /* buffer_create_type */,
554 + const void * /* buffer_create_info */,
555 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_1;
556 +
557 + extern CL_API_ENTRY cl_mem CL_API_CALL
558 + clCreateImage2D(cl_context /* context */,
559 + cl_mem_flags /* flags */,
560 + const cl_image_format * /* image_format */,
561 + size_t /* image_width */,
562 + size_t /* image_height */,
563 + size_t /* image_row_pitch */,
564 + void * /* host_ptr */,
565 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
566 +
567 + extern CL_API_ENTRY cl_mem CL_API_CALL
568 + clCreateImage3D(cl_context /* context */,
569 + cl_mem_flags /* flags */,
570 + const cl_image_format * /* image_format */,
571 + size_t /* image_width */,
572 + size_t /* image_height */,
573 + size_t /* image_depth */,
574 + size_t /* image_row_pitch */,
575 + size_t /* image_slice_pitch */,
576 + void * /* host_ptr */,
577 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
578 +
579 + extern CL_API_ENTRY cl_int CL_API_CALL
580 + clRetainMemObject(cl_mem /* memobj */) CL_API_SUFFIX__VERSION_1_0;
581 +
582 + extern CL_API_ENTRY cl_int CL_API_CALL
583 + clReleaseMemObject(cl_mem /* memobj */) CL_API_SUFFIX__VERSION_1_0;
584 +
585 + extern CL_API_ENTRY cl_int CL_API_CALL
586 + clGetSupportedImageFormats(cl_context /* context */,
587 + cl_mem_flags /* flags */,
588 + cl_mem_object_type /* image_type */,
589 + cl_uint /* num_entries */,
590 + cl_image_format * /* image_formats */,
591 + cl_uint * /* num_image_formats */) CL_API_SUFFIX__VERSION_1_0;
592 +
593 + extern CL_API_ENTRY cl_int CL_API_CALL
594 + clGetMemObjectInfo(cl_mem /* memobj */,
595 + cl_mem_info /* param_name */,
596 + size_t /* param_value_size */,
597 + void * /* param_value */,
598 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
599 +
600 + extern CL_API_ENTRY cl_int CL_API_CALL
601 + clGetImageInfo(cl_mem /* image */,
602 + cl_image_info /* param_name */,
603 + size_t /* param_value_size */,
604 + void * /* param_value */,
605 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
606 +
607 + extern CL_API_ENTRY cl_int CL_API_CALL
608 + clSetMemObjectDestructorCallback(cl_mem /* memobj */,
609 + void (CL_CALLBACK * /*pfn_notify*/)(cl_mem /* memobj */ , void* /*user_data*/),
610 + void * /*user_data */) CL_API_SUFFIX__VERSION_1_1;
611 +
612 + /* Sampler APIs */
613 + extern CL_API_ENTRY cl_sampler CL_API_CALL
614 + clCreateSampler(cl_context /* context */,

```

```

615 + cl_bool /* normalized_coords */,
616 + cl_addressing_mode /* addressing_mode */,
617 + cl_filter_mode /* filter_mode */,
618 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
619 +
620 + extern CL_API_ENTRY cl_int CL_API_CALL
621 + clRetainSampler(cl_sampler /* sampler */) CL_API_SUFFIX__VERSION_1_0;
622 +
623 + extern CL_API_ENTRY cl_int CL_API_CALL
624 + clReleaseSampler(cl_sampler /* sampler */) CL_API_SUFFIX__VERSION_1_0;
625 +
626 + extern CL_API_ENTRY cl_int CL_API_CALL
627 + clGetSamplerInfo(cl_sampler /* sampler */,
628 + cl_sampler_info /* param_name */,
629 + size_t /* param_value_size */,
630 + void * /* param_value */,
631 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
632 +
633 /* Program Object APIs */
634 + extern CL_API_ENTRY cl_program CL_API_CALL
635 + clCreateProgramWithSource(cl_context /* context */,
636 + cl_uint /* count */,
637 + const char ** /* strings */,
638 + const size_t * /* lengths */,
639 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
640 +
641 + extern CL_API_ENTRY cl_program CL_API_CALL
642 + clCreateProgramWithBinary(cl_context /* context */,
643 + cl_uint /* num_devices */,
644 + const cl_device_id * /* device_list */,
645 + const size_t * /* lengths */,
646 + const unsigned char ** /* binaries */,
647 + cl_int * /* binary_status */,
648 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
649 +
650 + extern CL_API_ENTRY cl_int CL_API_CALL
651 + clRetainProgram(cl_program /* program */) CL_API_SUFFIX__VERSION_1_0;
652 +
653 + extern CL_API_ENTRY cl_int CL_API_CALL
654 + clReleaseProgram(cl_program /* program */) CL_API_SUFFIX__VERSION_1_0;
655 +
656 + extern CL_API_ENTRY cl_int CL_API_CALL
657 + clBuildProgram(cl_program /* program */,
658 + cl_uint /* num_devices */,
659 + const cl_device_id * /* device_list */,
660 + const char * /* options */,
661 + void (CL_CALLBACK * /* pfnotify */)(cl_program /* program */, void * /* user_data */),
662 + void * /* user_data */) CL_API_SUFFIX__VERSION_1_0;
663 +
664 + extern CL_API_ENTRY cl_int CL_API_CALL
665 + clUnloadCompiler(void) CL_API_SUFFIX__VERSION_1_0;
666 +
667 + extern CL_API_ENTRY cl_int CL_API_CALL
668 + clGetProgramInfo(cl_program /* program */,
669 + cl_program_info /* param_name */,
670 + size_t /* param_value_size */,
671 + void * /* param_value */,
672 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
673 +
674 + extern CL_API_ENTRY cl_int CL_API_CALL
675 + clGetProgramBuildInfo(cl_program /* program */,
676 + cl_device_id /* device */,
677 + cl_program_build_info /* param_name */,
678 + size_t /* param_value_size */,
679 + void * /* param_value */,
680 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
681 +
682 /* Kernel Object APIs */
683 + extern CL_API_ENTRY cl_kernel CL_API_CALL

```

```

684 + clCreateKernel(cl_program /* program */,
685 + const char * /* kernel_name */,
686 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
687 +
688 + extern CL_API_ENTRY cl_int CL_API_CALL
689 + clCreateKernelsInProgram(cl_program /* program */,
690 + cl_uint /* num_kernels */,
691 + cl_kernel * /* kernels */,
692 + cl_uint * /* num_kernels_ret */) CL_API_SUFFIX__VERSION_1_0;
693 +
694 + extern CL_API_ENTRY cl_int CL_API_CALL
695 + clRetainKernel(cl_kernel /* kernel */) CL_API_SUFFIX__VERSION_1_0;
696 +
697 + extern CL_API_ENTRY cl_int CL_API_CALL
698 + clReleaseKernel(cl_kernel /* kernel */) CL_API_SUFFIX__VERSION_1_0;
699 +
700 + extern CL_API_ENTRY cl_int CL_API_CALL
701 + clSetKernelArg(cl_kernel /* kernel */,
702 + cl_uint /* arg_index */,
703 + size_t /* arg_size */,
704 + const void * /* arg_value */) CL_API_SUFFIX__VERSION_1_0;
705 +
706 + extern CL_API_ENTRY cl_int CL_API_CALL
707 + clGetKernelInfo(cl_kernel /* kernel */,
708 + cl_kernel_info /* param_name */,
709 + size_t /* param_value_size */,
710 + void * /* param_value */,
711 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
712 +
713 + extern CL_API_ENTRY cl_int CL_API_CALL
714 + clGetKernelWorkGroupInfo(cl_kernel /* kernel */,
715 + cl_device_id /* device */,
716 + cl_kernel_work_group_info /* param_name */,
717 + size_t /* param_value_size */,
718 + void * /* param_value */,
719 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
720 +
721 + /* Event Object APIs */
722 + extern CL_API_ENTRY cl_int CL_API_CALL
723 + clWaitForEvents(cl_uint /* num_events */,
724 + const cl_event * /* event_list */) CL_API_SUFFIX__VERSION_1_0;
725 +
726 + extern CL_API_ENTRY cl_int CL_API_CALL
727 + clGetEventInfo(cl_event /* event */,
728 + cl_event_info /* param_name */,
729 + size_t /* param_value_size */,
730 + void * /* param_value */,
731 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
732 +
733 + extern CL_API_ENTRY cl_event CL_API_CALL
734 + clCreateUserEvent(cl_context /* context */,
735 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_1;
736 +
737 + extern CL_API_ENTRY cl_int CL_API_CALL
738 + clRetainEvent(cl_event /* event */) CL_API_SUFFIX__VERSION_1_0;
739 +
740 + extern CL_API_ENTRY cl_int CL_API_CALL
741 + clReleaseEvent(cl_event /* event */) CL_API_SUFFIX__VERSION_1_0;
742 +
743 + extern CL_API_ENTRY cl_int CL_API_CALL
744 + clSetUserEventStatus(cl_event /* event */,
745 + cl_int /* execution_status */) CL_API_SUFFIX__VERSION_1_1;
746 +
747 + extern CL_API_ENTRY cl_int CL_API_CALL
748 + clSetEventCallback(cl_event /* event */,
749 + cl_int /* command_exec_callback_type */,
750 + void (CL_CALLBACK * /* pfn_notify */)(cl_event, cl_int, void *),
751 + void * /* user_data */) CL_API_SUFFIX__VERSION_1_1;
752 +

```

```

753 + /* Profiling APIs */
754 + extern CL_API_ENTRY cl_int CL_API_CALL
755 + clGetEventProfilingInfo(cl_event /* event */,
756 + cl_profiling_info /* param_name */,
757 + size_t /* param_value_size */,
758 + void * /* param_value */,
759 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
760 +
761 + /* Flush and Finish APIs */
762 + extern CL_API_ENTRY cl_int CL_API_CALL
763 + clFlush(cl_command_queue /* command_queue */) CL_API_SUFFIX__VERSION_1_0;
764 +
765 + extern CL_API_ENTRY cl_int CL_API_CALL
766 + clFinish(cl_command_queue /* command_queue */) CL_API_SUFFIX__VERSION_1_0;
767 +
768 + /* Enqueued Commands APIs */
769 + extern CL_API_ENTRY cl_int CL_API_CALL
770 + clEnqueueReadBuffer(cl_command_queue /* command_queue */,
771 + cl_mem /* buffer */,
772 + cl_bool /* blocking_read */,
773 + size_t /* offset */,
774 + size_t /* cb */,
775 + void * /* ptr */,
776 + cl_uint /* num_events_in_wait_list */,
777 + const cl_event * /* event_wait_list */,
778 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
779 +
780 + extern CL_API_ENTRY cl_int CL_API_CALL
781 + clEnqueueReadBufferRect(cl_command_queue /* command_queue */,
782 + cl_mem /* buffer */,
783 + cl_bool /* blocking_read */,
784 + const size_t * /* buffer_origin */,
785 + const size_t * /* host_origin */,
786 + const size_t * /* region */,
787 + size_t /* buffer_row_pitch */,
788 + size_t /* buffer_slice_pitch */,
789 + size_t /* host_row_pitch */,
790 + size_t /* host_slice_pitch */,
791 + void * /* ptr */,
792 + cl_uint /* num_events_in_wait_list */,
793 + const cl_event * /* event_wait_list */,
794 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_1;
795 +
796 + extern CL_API_ENTRY cl_int CL_API_CALL
797 + clEnqueueWriteBuffer(cl_command_queue /* command_queue */,
798 + cl_mem /* buffer */,
799 + cl_bool /* blocking_write */,
800 + size_t /* offset */,
801 + size_t /* cb */,
802 + const void * /* ptr */,
803 + cl_uint /* num_events_in_wait_list */,
804 + const cl_event * /* event_wait_list */,
805 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
806 +
807 + extern CL_API_ENTRY cl_int CL_API_CALL
808 + clEnqueueWriteBufferRect(cl_command_queue /* command_queue */,
809 + cl_mem /* buffer */,
810 + cl_bool /* blocking_write */,
811 + const size_t * /* buffer_origin */,
812 + const size_t * /* host_origin */,
813 + const size_t * /* region */,
814 + size_t /* buffer_row_pitch */,
815 + size_t /* buffer_slice_pitch */,
816 + size_t /* host_row_pitch */,
817 + size_t /* host_slice_pitch */,
818 + const void * /* ptr */,
819 + cl_uint /* num_events_in_wait_list */,
820 + const cl_event * /* event_wait_list */,
821 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_1;

```

```

822 +
823 + extern CL_API_ENTRY cl_int CL_API_CALL
824 + clEnqueueCopyBuffer(cl_command_queue /* command_queue */,
825 + cl_mem /* src_buffer */,
826 + cl_mem /* dst_buffer */,
827 + size_t /* src_offset */,
828 + size_t /* dst_offset */,
829 + size_t /* cb */,
830 + cl_uint /* num_events_in_wait_list */,
831 + const cl_event * /* event_wait_list */,
832 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
833 +
834 + extern CL_API_ENTRY cl_int CL_API_CALL
835 + clEnqueueCopyBufferRect(cl_command_queue /* command_queue */,
836 + cl_mem /* src_buffer */,
837 + cl_mem /* dst_buffer */,
838 + const size_t * /* src_origin */,
839 + const size_t * /* dst_origin */,
840 + const size_t * /* region */,
841 + size_t /* src_row_pitch */,
842 + size_t /* src_slice_pitch */,
843 + size_t /* dst_row_pitch */,
844 + size_t /* dst_slice_pitch */,
845 + cl_uint /* num_events_in_wait_list */,
846 + const cl_event * /* event_wait_list */,
847 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_1;
848 +
849 + extern CL_API_ENTRY cl_int CL_API_CALL
850 + clEnqueueReadImage(cl_command_queue /* command_queue */,
851 + cl_mem /* image */,
852 + cl_bool /* blocking_read */,
853 + const size_t * /* origin[3] */,
854 + const size_t * /* region[3] */,
855 + size_t /* row_pitch */,
856 + size_t /* slice_pitch */,
857 + void * /* ptr */,
858 + cl_uint /* num_events_in_wait_list */,
859 + const cl_event * /* event_wait_list */,
860 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
861 +
862 + extern CL_API_ENTRY cl_int CL_API_CALL
863 + clEnqueueWriteImage(cl_command_queue /* command_queue */,
864 + cl_mem /* image */,
865 + cl_bool /* blocking_write */,
866 + const size_t * /* origin[3] */,
867 + const size_t * /* region[3] */,
868 + size_t /* input_row_pitch */,
869 + size_t /* input_slice_pitch */,
870 + const void * /* ptr */,
871 + cl_uint /* num_events_in_wait_list */,
872 + const cl_event * /* event_wait_list */,
873 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
874 +
875 + extern CL_API_ENTRY cl_int CL_API_CALL
876 + clEnqueueCopyImage(cl_command_queue /* command_queue */,
877 + cl_mem /* src_image */,
878 + cl_mem /* dst_image */,
879 + const size_t * /* src_origin[3] */,
880 + const size_t * /* dst_origin[3] */,
881 + const size_t * /* region[3] */,
882 + cl_uint /* num_events_in_wait_list */,
883 + const cl_event * /* event_wait_list */,
884 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
885 +
886 + extern CL_API_ENTRY cl_int CL_API_CALL
887 + clEnqueueCopyImageToBuffer(cl_command_queue /* command_queue */,
888 + cl_mem /* src_image */,
889 + cl_mem /* dst_buffer */,
890 + const size_t * /* src_origin[3] */,

```

```

891 + const size_t * /* region[3] */,
892 + size_t /* dst_offset */,
893 + cl_uint /* num_events_in_wait_list */,
894 + const cl_event * /* event_wait_list */,
895 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
896 +
897 + extern CL_API_ENTRY cl_int CL_API_CALL
898 + clEnqueueCopyBufferToImage(cl_command_queue /* command_queue */,
899 + cl_mem /* src_buffer */,
900 + cl_mem /* dst_image */,
901 + size_t /* src_offset */,
902 + const size_t * /* dst_origin[3] */,
903 + const size_t * /* region[3] */,
904 + cl_uint /* num_events_in_wait_list */,
905 + const cl_event * /* event_wait_list */,
906 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
907 +
908 + extern CL_API_ENTRY void * CL_API_CALL
909 + clEnqueueMapBuffer(cl_command_queue /* command_queue */,
910 + cl_mem /* buffer */,
911 + cl_bool /* blocking_map */,
912 + cl_map_flags /* map_flags */,
913 + size_t /* offset */,
914 + size_t /* cb */,
915 + cl_uint /* num_events_in_wait_list */,
916 + const cl_event * /* event_wait_list */,
917 + cl_event * /* event */,
918 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
919 +
920 + extern CL_API_ENTRY void * CL_API_CALL
921 + clEnqueueMapImage(cl_command_queue /* command_queue */,
922 + cl_mem /* image */,
923 + cl_bool /* blocking_map */,
924 + cl_map_flags /* map_flags */,
925 + const size_t * /* origin[3] */,
926 + const size_t * /* region[3] */,
927 + size_t * /* image_row_pitch */,
928 + size_t * /* image_slice_pitch */,
929 + cl_uint /* num_events_in_wait_list */,
930 + const cl_event * /* event_wait_list */,
931 + cl_event * /* event */,
932 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
933 +
934 + extern CL_API_ENTRY cl_int CL_API_CALL
935 + clEnqueueUnmapMemObject(cl_command_queue /* command_queue */,
936 + cl_mem /* memobj */,
937 + void * /* mapped_ptr */,
938 + cl_uint /* num_events_in_wait_list */,
939 + const cl_event * /* event_wait_list */,
940 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
941 +
942 + extern CL_API_ENTRY cl_int CL_API_CALL
943 + clEnqueueNDRangeKernel(cl_command_queue /* command_queue */,
944 + cl_kernel /* kernel */,
945 + cl_uint /* work_dim */,
946 + const size_t * /* global_work_offset */,
947 + const size_t * /* global_work_size */,
948 + const size_t * /* local_work_size */,
949 + cl_uint /* num_events_in_wait_list */,
950 + const cl_event * /* event_wait_list */,
951 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
952 +
953 + extern CL_API_ENTRY cl_int CL_API_CALL
954 + clEnqueueTask(cl_command_queue /* command_queue */,
955 + cl_kernel /* kernel */,
956 + cl_uint /* num_events_in_wait_list */,
957 + const cl_event * /* event_wait_list */,
958 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
959 +

```

```

960 + extern CL_API_ENTRY cl_int CL_API_CALL
961 + clEnqueueNativeKernel(cl_command_queue /* command_queue */,
962 + void (*user_func)(void *),
963 + void * /* args */,
964 + size_t /* cb_args */,
965 + cl_uint /* num_mem_objects */,
966 + const cl_mem * /* mem_list */,
967 + const void ** /* args_mem_loc */,
968 + cl_uint /* num_events_in_wait_list */,
969 + const cl_event * /* event_wait_list */,
970 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
971 +
972 + extern CL_API_ENTRY cl_int CL_API_CALL
973 + clEnqueueMarker(cl_command_queue /* command_queue */,
974 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
975 +
976 + extern CL_API_ENTRY cl_int CL_API_CALL
977 + clEnqueueWaitForEvents(cl_command_queue /* command_queue */,
978 + cl_uint /* num_events */,
979 + const cl_event * /* event_list */) CL_API_SUFFIX__VERSION_1_0;
980 +
981 + extern CL_API_ENTRY cl_int CL_API_CALL
982 + clEnqueueBarrier(cl_command_queue /* command_queue */) CL_API_SUFFIX__VERSION_1_0;
983 +
984 + /* Extension function access
985 +
986 + * Returns the extension function address for the given function name,
987 + * or NULL if a valid function can not be found. The client must
988 + * check to make sure the address is not NULL, before using or
989 + * calling the returned function address.
990 +
991 + extern CL_API_ENTRY void * CL_API_CALL clGetExtensionFunctionAddress(const char * /* func_name */) CL_API_SUFFIX__VERSION_1_0;
992 +
993 + #ifdef __cplusplus
994 + }
995 + #endif
996 +
997 + #endif /* __OPENCL_CL_H */
998 +

```

▼ 126 include/CL/cl\_d3d10.h

| ... | ... | @@ -0,0 +1,126 @@                                                                       |
|-----|-----|-----------------------------------------------------------------------------------------|
| 1   |     | + ****                                                                                  |
| 2   |     | + * Copyright (c) 2008-2010 The Khronos Group Inc.                                      |
| 3   |     | + *                                                                                     |
| 4   |     | + * Permission is hereby granted, free of charge, to any person obtaining a             |
| 5   |     | + * copy of this software and/or associated documentation files (the                    |
| 6   |     | + * "Materials"), to deal in the Materials without restriction, including               |
| 7   |     | + * without limitation the rights to use, copy, modify, merge, publish,                 |
| 8   |     | + * distribute, sublicense, and/or sell copies of the Materials, and to                 |
| 9   |     | + * permit persons to whom the Materials are furnished to do so, subject to             |
| 10  |     | + * the following conditions:                                                           |
| 11  |     | + *                                                                                     |
| 12  |     | + * The above copyright notice and this permission notice shall be included             |
| 13  |     | + * in all copies or substantial portions of the Materials.                             |
| 14  |     | + *                                                                                     |
| 15  |     | + * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,                   |
| 16  |     | + * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF                  |
| 17  |     | + * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.              |
| 18  |     | + * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY                |
| 19  |     | + * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,                |
| 20  |     | + * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE                   |
| 21  |     | + * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.                            |
| 22  |     | + ****                                                                                  |
| 23  |     | +                                                                                       |
| 24  |     | + /* \$Revision: 28993 \$ on \$Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) \$ */ |
| 25  |     | +                                                                                       |

```

26 + #ifndef __OPENCL_CL_D3D10_H
27 + #define __OPENCL_CL_D3D10_H
28 +
29 + #include <d3d10.h>
30 + #include <CL/cl.h>
31 + #include <CL/cl_platform.h>
32 +
33 + #ifdef __cplusplus
34 + extern "C" {
35 + #endif
36 +
37 + ****
38 + * cl_khr_d3d10_sharing
39 + #define cl_khr_d3d10_sharing 1
40 +
41 + typedef cl_uint cl_d3d10_device_source_khr;
42 + typedef cl_uint cl_d3d10_device_set_khr;
43 +
44 + ****
45 +
46 + // Error Codes
47 + #define CL_INVALID_D3D10_DEVICE_KHR -1002
48 + #define CL_INVALID_D3D10_RESOURCE_KHR -1003
49 + #define CL_D3D10_RESOURCE_ALREADY_ACQUIRED_KHR -1004
50 + #define CL_D3D10_RESOURCE_NOT_ACQUIRED_KHR -1005
51 +
52 + // cl_d3d10_device_source_nv
53 + #define CL_D3D10_DEVICE_KHR 0x4010
54 + #define CL_D3D10 DXGI_ADAPTER_KHR 0x4011
55 +
56 + // cl_d3d10_device_set_nv
57 + #define CL_PREFERRED_DEVICES_FOR_D3D10_KHR 0x4012
58 + #define CL_ALL_DEVICES_FOR_D3D10_KHR 0x4013
59 +
60 + // cl_context_info
61 + #define CL_CONTEXT_D3D10_DEVICE_KHR 0x4014
62 + #define CL_CONTEXT_D3D10_PREFER_SHARED_RESOURCES_KHR 0x402C
63 +
64 + // cl_mem_info
65 + #define CL_MEM_D3D10_RESOURCE_KHR 0x4015
66 +
67 + // cl_image_info
68 + #define CL_IMAGE_D3D10_SUBRESOURCE_KHR 0x4016
69 +
70 + // cl_command_type
71 + #define CL_COMMAND_ACQUIRE_D3D10_OBJECTS_KHR 0x4017
72 + #define CL_COMMAND_RELEASE_D3D10_OBJECTS_KHR 0x4018
73 +
74 + ****
75 +
76 + typedef CL_API_ENTRY cl_int (CL_API_CALL *clGetDeviceIDsFromD3D10KHR_fn)(
77 + cl_platform_id platform,
78 + cl_d3d10_device_source_khr d3d_device_source,
79 + void * d3d_object,
80 + cl_d3d10_device_set_khr d3d_device_set,
81 + cl_uint num_entries,
82 + cl_device_id * devices,
83 + cl_uint * num_devices) CL_API_SUFFIX__VERSION_1_0;
84 +
85 + typedef CL_API_ENTRY cl_mem (CL_API_CALL *clCreateFromD3D10BufferKHR_fn)(
86 + cl_context context,
87 + cl_mem_flags flags,
88 + ID3D10Buffer * resource,
89 + cl_int * errcode_ret) CL_API_SUFFIX__VERSION_1_0;
90 +
91 + typedef CL_API_ENTRY cl_mem (CL_API_CALL *clCreateFromD3D10Texture2DKHR_fn)(
92 + cl_context context,
93 + cl_mem_flags flags,
94 + ID3D10Texture2D * resource,

```

```

95 + UINT subresource,
96 + cl_int * errcode_ret) CL_API_SUFFIX__VERSION_1_0;
97 +
98 + typedef CL_API_ENTRY cl_mem (CL_API_CALL *clCreateFromD3D10Texture3DKHR_fn)(
99 + cl_context context,
100 + cl_mem_flags flags,
101 + ID3D10Texture3D * resource,
102 + UINT subresource,
103 + cl_int * errcode_ret) CL_API_SUFFIX__VERSION_1_0;
104 +
105 + typedef CL_API_ENTRY cl_int (CL_API_CALL *clEnqueueAcquireD3D10ObjectsKHR_fn)(
106 + cl_command_queue command_queue,
107 + cl_uint num_objects,
108 + const cl_mem * mem_objects,
109 + cl_uint num_events_in_wait_list,
110 + const cl_event * event_wait_list,
111 + cl_event * event) CL_API_SUFFIX__VERSION_1_0;
112 +
113 + typedef CL_API_ENTRY cl_int (CL_API_CALL *clEnqueueReleaseD3D10ObjectsKHR_fn)(
114 + cl_command_queue command_queue,
115 + cl_uint num_objects,
116 + cl_mem * mem_objects,
117 + cl_uint num_events_in_wait_list,
118 + const cl_event * event_wait_list,
119 + cl_event * event) CL_API_SUFFIX__VERSION_1_0;
120 +
121 + #ifdef __cplusplus
122 + }
123 + #endif
124 +
125 + #endif // __OPENCL_CL_D3D10_H
126 +

```

▼ 213 include/CL/cl\_ext.h □

| ... | ... |                                                                                         |
|-----|-----|-----------------------------------------------------------------------------------------|
|     |     | @@ -0,0 +1,213 @@                                                                       |
| 1   |     | + ****                                                                                  |
| 2   |     | + * Copyright (c) 2008-2010 The Khronos Group Inc.                                      |
| 3   |     | + *                                                                                     |
| 4   |     | + * Permission is hereby granted, free of charge, to any person obtaining a             |
| 5   |     | + * copy of this software and/or associated documentation files (the                    |
| 6   |     | + * "Materials"), to deal in the Materials without restriction, including               |
| 7   |     | + * without limitation the rights to use, copy, modify, merge, publish,                 |
| 8   |     | + * distribute, sublicense, and/or sell copies of the Materials, and to                 |
| 9   |     | + * permit persons to whom the Materials are furnished to do so, subject to             |
| 10  |     | + * the following conditions:                                                           |
| 11  |     | + *                                                                                     |
| 12  |     | + * The above copyright notice and this permission notice shall be included             |
| 13  |     | + * in all copies or substantial portions of the Materials.                             |
| 14  |     | + *                                                                                     |
| 15  |     | + * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,                   |
| 16  |     | + * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF                  |
| 17  |     | + * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.              |
| 18  |     | + * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY                |
| 19  |     | + * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,                |
| 20  |     | + * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE                   |
| 21  |     | + * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.                            |
| 22  |     | + ****                                                                                  |
| 23  |     | + *                                                                                     |
| 24  |     | + /* \$Revision: 28993 \$ on \$Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) \$ */ |
| 25  |     | + *                                                                                     |
| 26  |     | + /* cl_ext.h contains OpenCL extensions which don't have external */                   |
| 27  |     | + /* (OpenGL, D3D) dependencies. */                                                     |
| 28  |     | + *                                                                                     |
| 29  |     | + <b>#ifndef</b> __CL_EXT_H                                                             |
| 30  |     | + <b>#define</b> __CL_EXT_H                                                             |
| 31  |     | + *                                                                                     |
| 32  |     | + <b>#ifdef</b> __cplusplus                                                             |
| 33  |     | + <b>extern</b> "C" {                                                                   |

```

34 + #endif
35 +
36 + #ifdef __APPLE__
37 + #include <OpenCL/cl.h>
38 + #include <AvailabilityMacros.h>
39 + #else
40 + #include <CL/cl.h>
41 + #endif
42 +
43 + /* cl_khr_fp64 extension - no extension #define since it has no functions */
44 + #define CL_DEVICE_DOUBLE_FP_CONFIG 0x1032
45 +
46 + /* cl_khr_fp16 extension - no extension #define since it has no functions */
47 + #define CL_DEVICE_HALF_FP_CONFIG 0x1033
48 +
49 + /* Memory object destruction
50 + *
51 + * Apple extension for use to manage externally allocated buffers used with cl_mem objects with CL_MEM_USE_HOST_PTR
52 + *
53 + * Registers a user callback function that will be called when the memory object is deleted and its resources
54 + * freed. Each call to clSetMemObjectCallbackFn registers the specified user callback function on a callback
55 + * stack associated with memobj. The registered user callback functions are called in the reverse order in
56 + * which they were registered. The user callback functions are called and then the memory object is deleted
57 + * and its resources freed. This provides a mechanism for the application (and libraries) using memobj to be
58 + * notified when the memory referenced by host_ptr, specified when the memory object is created and used as
59 + * the storage bits for the memory object, can be reused or freed.
60 + *
61 + * The application may not call CL api's with the cl_mem object passed to the pfn_notify.
62 + *
63 + * Please check for the "cl_APPLE_SetMemObjectDestructor" extension using clGetDeviceInfo(CL_DEVICE_EXTENSIONS)
64 + * before using.
65 + */
66 +#define cl_APPLE_SetMemObjectDestructor 1
67 + cl_int CL_API_ENTRY clSetMemObjectDestructorAPPLE(cl_mem /* memobj */,
68 + void (* /*pfn_notify*/)(cl_mem /* memobj */, void* /*user_data*/),
69 + void* /*user_data */) CL_EXT_SUFFIX__VERSION_1_0;
70 +
71 +
72 + /* Context Logging Functions
73 + *
74 + * The next three convenience functions are intended to be used as the pfn_notify parameter to clCreateContext().
75 + * Please check for the "cl_APPLE_ContextLoggingFunctions" extension using clGetDeviceInfo(CL_DEVICE_EXTENSIONS)
76 + * before using.
77 + *
78 + * clLogMessagesToSystemLog fowards on all log messages to the Apple System Logger
79 + */
80 +#define cl_APPLE_ContextLoggingFunctions 1
81 + extern void CL_API_ENTRY clLogMessagesToSystemLogAPPLE(const char* /* errstr */,
82 + const void* /* private_info */,
83 + size_t /* cb */,
84 + void* /* user_data */) CL_EXT_SUFFIX__VERSION_1_0;
85 +
86 + /* clLogMessagesToStdout sends all log messages to the file descriptor stdout */
87 + extern void CL_API_ENTRY clLogMessagesToStdoutAPPLE(const char* /* errstr */,
88 + const void* /* private_info */,
89 + size_t /* cb */,
90 + void* /* user_data */) CL_EXT_SUFFIX__VERSION_1_0;
91 +
92 + /* clLogMessagesTo.Stderr sends all log messages to the file descriptor stderr */
93 + extern void CL_API_ENTRY clLogMessagesTo.StderrAPPLE(const char* /* errstr */,
94 + const void* /* private_info */,
95 + size_t /* cb */,
96 + void* /* user_data */) CL_EXT_SUFFIX__VERSION_1_0;
97 +
98 +
99 + ****
100 + * cl_khr_icd extension *
101 + ****
102 +#define cl_khr_icd 1

```

```

103 +
104 + /* cl_platform_info */ 0x0920
105 + #define CL_PLATFORM_ICD_SUFFIX_KHR
106 +
107 + /* Additional Error Codes */ */
108 + #define CL_PLATFORM_NOT_FOUND_KHR -1001
109 +
110 + extern CL_API_ENTRY cl_int CL_API_CALL
111 + clIcdGetPlatformIDsKHR(cl_uint /* num_entries */,
112 + cl_platform_id * /* platforms */,
113 + cl_uint * /* num_platforms */);
114 +
115 + typedef CL_API_ENTRY cl_int (CL_API_CALL *clIcdGetPlatformIDsKHR_fn)(
116 + cl_uint /* num_entries */,
117 + cl_platform_id * /* platforms */,
118 + cl_uint * /* num_platforms */);
119 +
120 +
121 + ****
122 + * cl_nv_device_attribute_query extension *
123 + ****
124 + /* cl_nv_device_attribute_query extension - no extension #define since it has no functions */
125 + #define CL_DEVICE_COMPUTE_CAPABILITY_MAJOR_NV 0x4000
126 + #define CL_DEVICE_COMPUTE_CAPABILITY_MINOR_NV 0x4001
127 + #define CL_DEVICE_REGISTERS_PER_BLOCK_NV 0x4002
128 + #define CL_DEVICE_WARP_SIZE_NV 0x4003
129 + #define CL_DEVICE_GPU_OVERLAP_NV 0x4004
130 + #define CL_DEVICE_KERNEL_EXEC_TIMEOUT_NV 0x4005
131 + #define CL_DEVICE_INTEGRATED_MEMORY_NV 0x4006
132 +
133 +
134 + ****
135 + * cl_amd_device_attribute_query *
136 + ****
137 + #define CL_DEVICE_PROFILING_TIMER_OFFSET_AMD 0x4036
138 +
139 +
140 + #ifdef CL_VERSION_1_1
141 + ****
142 + * cl_ext_device_fission extension *
143 + ****
144 + #define cl_ext_device_fission 1
145 +
146 + extern CL_API_ENTRY cl_int CL_API_CALL
147 + clReleaseDeviceEXT(cl_device_id /*device*/) CL_EXT_SUFFIX__VERSION_1_1;
148 +
149 + typedef CL_API_ENTRY cl_int
150 + (CL_API_CALL *clReleaseDeviceEXT_fn)(cl_device_id /*device*/) CL_EXT_SUFFIX__VERSION_1_1;
151 +
152 + extern CL_API_ENTRY cl_int CL_API_CALL
153 + clRetainDeviceEXT(cl_device_id /*device*/) CL_EXT_SUFFIX__VERSION_1_1;
154 +
155 + typedef CL_API_ENTRY cl_int
156 + (CL_API_CALL *clRetainDeviceEXT_fn)(cl_device_id /*device*/) CL_EXT_SUFFIX__VERSION_1_1;
157 +
158 + typedef cl_ulong cl_device_partition_property_ext;
159 + extern CL_API_ENTRY cl_int CL_API_CALL
160 + clCreateSubDevicesEXT(cl_device_id /*in_device*/,
161 + const cl_device_partition_property_ext * /* properties */,
162 + cl_uint /*num_entries*/,
163 + cl_device_id * /*out_devices*/,
164 + cl_uint * /*num_devices*/) CL_EXT_SUFFIX__VERSION_1_1;
165 +
166 + typedef CL_API_ENTRY cl_int
167 + (CL_API_CALL * clCreateSubDevicesEXT_fn)(cl_device_id /*in_device*/,
168 + const cl_device_partition_property_ext * /* properties */,
169 + cl_int /*num_entries*/,
170 + cl_device_id * /*out_devices*/,
171 + cl_uint * /*num_devices*/) CL_EXT_SUFFIX__VERSION_1_1;

```

```

172 +
173 + /* cl_device_partition_property_ext */
174 + #define CL_DEVICE_PARTITION_EQUALLY_EXT 0x4050
175 + #define CL_DEVICE_PARTITION_BY_COUNTS_EXT 0x4051
176 + #define CL_DEVICE_PARTITION_BY_NAMES_EXT 0x4052
177 + #define CL_DEVICE_PARTITION_BY_AFFINITY_DOMAIN_EXT 0x4053
178 +
179 + /* clDeviceGetInfo selectors */
180 + #define CL_DEVICE_PARENT_DEVICE_EXT 0x4054
181 + #define CL_DEVICE_PARTITION_TYPES_EXT 0x4055
182 + #define CL_DEVICE_AFFINITY_DOMAINS_EXT 0x4056
183 + #define CL_DEVICE_REFERENCE_COUNT_EXT 0x4057
184 + #define CL_DEVICE_PARTITION_STYLE_EXT 0x4058
185 +
186 + /* error codes */
187 + #define CL_DEVICE_PARTITION_FAILED_EXT -1057
188 + #define CL_INVALID_PARTITION_COUNT_EXT -1058
189 + #define CL_INVALID_PARTITION_NAME_EXT -1059
190 +
191 + /* CL_AFFINITY_DOMAINS */
192 + #define CL_AFFINITY_DOMAIN_L1_CACHE_EXT 0x1
193 + #define CL_AFFINITY_DOMAIN_L2_CACHE_EXT 0x2
194 + #define CL_AFFINITY_DOMAIN_L3_CACHE_EXT 0x3
195 + #define CL_AFFINITY_DOMAIN_L4_CACHE_EXT 0x4
196 + #define CL_AFFINITY_DOMAIN_NUMA_EXT 0x10
197 + #define CL_AFFINITY_DOMAIN_NEXT_FISSIONABLE_EXT 0x100
198 +
199 + /* cl_device_partition_property_ext list terminators */
200 + #define CL_PROPERTIES_LIST_END_EXT ((cl_device_partition_property_ext) 0)
201 + #define CL_PARTITION_BY_COUNTS_LIST_END_EXT ((cl_device_partition_property_ext) 0)
202 + #define CL_PARTITION_BY_NAMES_LIST_END_EXT ((cl_device_partition_property_ext) 0 - 1)
203 +
204 +
205 +
206 + #endif /* CL_VERSION_1_1 */
207 +
208 + #ifdef __cplusplus
209 + }
210 + #endif
211 +
212 +
213 + #endif /* __CL_EXT_H */

```

▼ 155 include/CL/cl\_gl.h □

| ... | ... | @@ -0,0 +1,155 @@                                                           |
|-----|-----|-----------------------------------------------------------------------------|
|     |     | + ****                                                                      |
| 1   |     | + * Copyright (c) 2008-2010 The Khronos Group Inc.                          |
| 2   |     | + *                                                                         |
| 3   |     | + * Permission is hereby granted, free of charge, to any person obtaining a |
| 4   |     | + * copy of this software and/or associated documentation files (the        |
| 5   |     | + * "Materials"), to deal in the Materials without restriction, including   |
| 6   |     | + * without limitation the rights to use, copy, modify, merge, publish,     |
| 7   |     | + * distribute, sublicense, and/or sell copies of the Materials, and to     |
| 8   |     | + * permit persons to whom the Materials are furnished to do so, subject to |
| 9   |     | + * the following conditions:                                               |
| 10  |     | + *                                                                         |
| 11  |     | + * The above copyright notice and this permission notice shall be included |
| 12  |     | + * in all copies or substantial portions of the Materials.                 |
| 13  |     | + *                                                                         |
| 14  |     | + * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,       |
| 15  |     | + * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF      |
| 16  |     | + * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.  |
| 17  |     | + * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY    |
| 18  |     | + * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,    |
| 19  |     | + * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE       |
| 20  |     | + * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.                |
| 21  |     | + ****                                                                      |
| 22  |     | + ****                                                                      |
| 23  |     | + ****                                                                      |

```

24 + /* $Revision: 28993 $ on $Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) $ */
25 +
26 + /*
27 + * cl_gl.h contains Khronos-approved (KHR) OpenCL extensions which have
28 + * OpenGL dependencies. The application is responsible for #including
29 + * OpenGL or OpenGL ES headers before #including cl_gl.h.
30 + */
31 +
32 + #ifndef __OPENCL_CL_GL_H
33 + #define __OPENCL_CL_GL_H
34 +
35 + #ifdef __APPLE__
36 + #include <OpenCL/cl.h>
37 + #include <OpenGL/CGLDevice.h>
38 + #else
39 + #include <CL/cl.h>
40 + #endif
41 +
42 + #ifdef __cplusplus
43 + extern "C" {
44 + #endif
45 +
46 + typedef cl_uint cl_gl_object_type;
47 + typedef cl_uint cl_gl_texture_info;
48 + typedef cl_uint cl_gl_platform_info;
49 + typedef struct __GLsync *cl_GLsync;
50 +
51 + /* cl_gl_object_type */
52 + #define CL_GL_OBJECT_BUFFER 0x2000
53 + #define CL_GL_OBJECT_TEXTURE2D 0x2001
54 + #define CL_GL_OBJECT_TEXTURE3D 0x2002
55 + #define CL_GL_OBJECT_RENDERBUFFER 0x2003
56 +
57 + /* cl_gl_texture_info */
58 + #define CL_GL_TEXTURE_TARGET 0x2004
59 + #define CL_GL_MIPMAP_LEVEL 0x2005
60 +
61 + extern CL_API_ENTRY cl_mem CL_API_CALL
62 + clCreateFromGLBuffer(cl_context /* context */,
63 + cl_mem_flags /* flags */,
64 + cl_Gluint /* bufobj */,
65 + int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
66 +
67 + extern CL_API_ENTRY cl_mem CL_API_CALL
68 + clCreateFromGLTexture2D(cl_context /* context */,
69 + cl_mem_flags /* flags */,
70 + cl_GlEnum /* target */,
71 + cl_GLint /* miplevel */,
72 + cl_Gluint /* texture */,
73 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
74 +
75 + extern CL_API_ENTRY cl_mem CL_API_CALL
76 + clCreateFromGLTexture3D(cl_context /* context */,
77 + cl_mem_flags /* flags */,
78 + cl_GlEnum /* target */,
79 + cl_GLint /* miplevel */,
80 + cl_Gluint /* texture */,
81 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
82 +
83 + extern CL_API_ENTRY cl_mem CL_API_CALL
84 + clCreateFromGLRenderbuffer(cl_context /* context */,
85 + cl_mem_flags /* flags */,
86 + cl_Gluint /* renderbuffer */,
87 + cl_int * /* errcode_ret */) CL_API_SUFFIX__VERSION_1_0;
88 +
89 + extern CL_API_ENTRY cl_int CL_API_CALL
90 + clGetGLObjectInfo(cl_mem /* memobj */,
91 + cl_gl_object_type * /* gl_object_type */,
92 + cl_Gluint * /* gl_object_name */) CL_API_SUFFIX__VERSION_1_0;

```

```

93 +
94 + extern CL_API_ENTRY cl_int CL_API_CALL
95 + clGetGLTextureInfo(cl_mem /* memobj */,
96 + cl_gl_texture_info /* param_name */,
97 + size_t /* param_value_size */,
98 + void * /* param_value */,
99 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
100 +
101 + extern CL_API_ENTRY cl_int CL_API_CALL
102 + clEnqueueAcquireGLObjects(cl_command_queue /* command_queue */,
103 + cl_uint /* num_objects */,
104 + const cl_mem * /* mem_objects */,
105 + cl_uint /* num_events_in_wait_list */,
106 + const cl_event * /* event_wait_list */,
107 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
108 +
109 + extern CL_API_ENTRY cl_int CL_API_CALL
110 + clEnqueueReleaseGLObjects(cl_command_queue /* command_queue */,
111 + cl_uint /* num_objects */,
112 + const cl_mem * /* mem_objects */,
113 + cl_uint /* num_events_in_wait_list */,
114 + const cl_event * /* event_wait_list */,
115 + cl_event * /* event */) CL_API_SUFFIX__VERSION_1_0;
116 +
117 + /* cl_khr_gl_sharing extension */
118 +
119 + #define cl_khr_gl_sharing 1
120 +
121 + typedef cl_uint cl_gl_context_info;
122 +
123 + /* Additional Error Codes */
124 + #define CL_INVALID_GL_SHAREGROUP_REFERENCE_KHR -1000
125 +
126 + /* cl_gl_context_info */
127 + #define CL_CURRENT_DEVICE_FOR_GL_CONTEXT_KHR 0x2006
128 + #define CL_DEVICES_FOR_GL_CONTEXT_KHR 0x2007
129 +
130 + /* Additional cl_context_properties */
131 + #define CL_GL_CONTEXT_KHR 0x2008
132 + #define CL_EGL_DISPLAY_KHR 0x2009
133 + #define CL_GXL_DISPLAY_KHR 0x200A
134 + #define CL_WGL_HDC_KHR 0x200B
135 + #define CL_CGL_SHAREGROUP_KHR 0x200C
136 +
137 + extern CL_API_ENTRY cl_int CL_API_CALL
138 + clGetGLContextInfoKHR(const cl_context_properties * /* properties */,
139 + cl_gl_context_info /* param_name */,
140 + size_t /* param_value_size */,
141 + void * /* param_value */,
142 + size_t * /* param_value_size_ret */) CL_API_SUFFIX__VERSION_1_0;
143 +
144 + typedef CL_API_ENTRY cl_int (CL_API_CALL *clGetGLContextInfoKHR_fn)(
145 + const cl_context_properties * properties,
146 + cl_gl_context_info param_name,
147 + size_t param_value_size,
148 + void * param_value,
149 + size_t * param_value_size_ret);
150 +
151 + #ifdef __cplusplus
152 + }
153 + #endif
154 +
155 + #endif /* __OPENCL_CL_GL_H */

```

▽ 69 ■■■■■ include/CL/cl\_gl\_ext.h □

|     |     |                                                    |
|-----|-----|----------------------------------------------------|
| ... | ... | @@ -0,0 +1,69 @@                                   |
|     | 1   | + ****                                             |
|     | 2   | + * Copyright (c) 2008-2010 The Khronos Group Inc. |

```

3 + *
4 + * Permission is hereby granted, free of charge, to any person obtaining a
5 + * copy of this software and/or associated documentation files (the
6 + * "Materials"), to deal in the Materials without restriction, including
7 + * without limitation the rights to use, copy, modify, merge, publish,
8 + * distribute, sublicense, and/or sell copies of the Materials, and to
9 + * permit persons to whom the Materials are furnished to do so, subject to
10 + * the following conditions:
11 +
12 + * The above copyright notice and this permission notice shall be included
13 + * in all copies or substantial portions of the Materials.
14 +
15 + * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
16 + * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
17 + * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
18 + * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
19 + * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
20 + * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
21 + * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.
22 + ****
23 +
24 + /* $Revision: 28993 $ on $Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) $ */
25 +
26 + /* cl_gl_ext.h contains vendor (non-KHR) OpenCL extensions which have */

27 + /* OpenGL dependencies. */

28 +
29 + #ifndef __OPENCL_CL_GL_EXT_H

30 + #define __OPENCL_CL_GL_EXT_H

31 +
32 + #ifdef __cplusplus

33 + extern "C" {

34 + #endif

35 +
36 + #ifdef __APPLE__

37 + #include <OpenCL/cl_gl.h>

38 + #else

39 + #include <CL/cl_gl.h>

40 + #endif

41 +
42 + /*

43 + * For each extension, follow this template

44 + * /* cl_VEN_extname extension */

45 + * #define cl_VEN_extname 1

46 + * ... define new types, if any

47 + * ... define new tokens, if any

48 + * ... define new APIs, if any

49 + *

50 + * If you need GLtypes here, mirror them with a cl_GLtype, rather than including a GL header

51 + * This allows us to avoid having to decide whether to include GL headers or GLES here.

52 + */

53 +
54 + /*

55 + * cl_khr_gl_event extension

56 + * See section 9.9 in the OpenCL 1.1 spec for more information

57 + */

58 + #define CL_COMMAND_GL_FENCE_SYNC_OBJECT_KHR 0x200D

59 +
60 + extern CL_API_ENTRY cl_event CL_API_CALL

61 + clCreateEventFromGLsyncKHR(cl_context /* context */,

62 + cl_GLsync /* cl_GLsync */,

63 + cl_int * /* errcode_ret */) CL_EXT_SUFFIX__VERSION_1_1;

64 +
65 + #ifdef __cplusplus

66 + }

67 + #endif

68 +
69 + #endif /* __OPENCL_CL_GL_EXT_H */
```

▽ 1,198 include/CL/cl\_platform.h

```
... ... @@ -0,0 +1,1198 @@
1+ ****
2+ * Copyright (c) 2008-2010 The Khronos Group Inc.
3+ *
4+ * Permission is hereby granted, free of charge, to any person obtaining a
5+ * copy of this software and/or associated documentation files (the
6+ * "Materials"), to deal in the Materials without restriction, including
7+ * without limitation the rights to use, copy, modify, merge, publish,
8+ * distribute, sublicense, and/or sell copies of the Materials, and to
9+ * permit persons to whom the Materials are furnished to do so, subject to
10+ * the following conditions:
11+ *
12+ * The above copyright notice and this permission notice shall be included
13+ * in all copies or substantial portions of the Materials.
14+ *
15+ * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
16+ * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF
17+ * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
18+ * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
19+ * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
20+ * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
21+ * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.
22+ ****/
23+
24+ /* $Revision: 28993 $ on $Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) $ */
25+
26+ #ifndef __CL_PLATFORM_H
27+ #define __CL_PLATFORM_H
28+
29+ #ifdef __APPLE__
30+ /* Contains #defines for AVAILABLE_MAC_OS_X_VERSION_10_6_AND_LATER below */
31+ #include <AvailabilityMacros.h>
32+ #endif
33+
34+ #ifdef __cplusplus
35+ extern "C" {
36+ #endif
37+
38+ #if defined(_WIN32)
39+ #define CL_API_ENTRY
40+ #define CL_API_CALL __stdcall
41+ #define CL_CALLBACK __stdcall
42+ #else
43+ #define CL_API_ENTRY
44+ #define CL_API_CALL
45+ #define CL_CALLBACK
46+ #endif
47+
48+ #ifdef __APPLE__
49+ #define CL_EXTENSION_WEAK_LINK __attribute__((weak_import))
50+ #define CL_API_SUFFIX__VERSION_1_0 AVAILABLE_MAC_OS_X_VERSION_10_6_AND_LATER
51+ #define CL_EXT_SUFFIX__VERSION_1_0 CL_EXTENSION_WEAK_LINK AVAILABLE_MAC_OS_X_VERSION_10_6_AND_LATER
52+ #define CL_API_SUFFIX__VERSION_1_1 CL_EXTENSION_WEAK_LINK
53+ #define CL_EXT_SUFFIX__VERSION_1_1 CL_EXTENSION_WEAK_LINK
54+ #define CL_EXT_SUFFIX__VERSION_1_0_DEPRECATED CL_EXTENSION_WEAK_LINK AVAILABLE_MAC_OS_X_VERSION_10_6_AND_LATER
55+ #else
56+ #define CL_EXTENSION_WEAK_LINK
57+ #define CL_API_SUFFIX__VERSION_1_0
58+ #define CL_EXT_SUFFIX__VERSION_1_0
59+ #define CL_API_SUFFIX__VERSION_1_1
60+ #define CL_EXT_SUFFIX__VERSION_1_1
61+ #define CL_EXT_SUFFIX__VERSION_1_0_DEPRECATED
62+ #endif
63+
64+ #if (defined (_WIN32) && defined(_MSC_VER))
65+
```

```

66 + /* scalar types */
67 + typedef signed __int8 cl_char;
68 + typedef unsigned __int8 cl_uchar;
69 + typedef signed __int16 cl_short;
70 + typedef unsigned __int16 cl_ushort;
71 + typedef signed __int32 cl_int;
72 + typedef unsigned __int32 cl_uint;
73 + typedef signed __int64 cl_long;
74 + typedef unsigned __int64 cl_ulong;
75 +
76 + typedef unsigned __int16 cl_half;
77 + typedef float cl_float;
78 + typedef double cl_double;
79 +
80 + /* Macro names and corresponding values defined by OpenCL */
81 + #define CL_CHAR_BIT 8
82 + #define CL_SCHAR_MAX 127
83 + #define CL_SCHAR_MIN (-127-1)
84 + #define CL_CHAR_MAX CL_SCHAR_MAX
85 + #define CL_CHAR_MIN CL_SCHAR_MIN
86 + #define CL_UCHAR_MAX 255
87 + #define CL_SHRT_MAX 32767
88 + #define CL_SHRT_MIN (-32767-1)
89 + #define CL_USHRT_MAX 65535
90 + #define CL_INT_MAX 2147483647
91 + #define CL_INT_MIN (-2147483647-1)
92 + #define CL_UINT_MAX 0xffffffffU
93 + #define CL_LONG_MAX ((cl_long) 0x7FFFFFFFFFFFFFFFLL)
94 + #define CL_LONG_MIN ((cl_long) -0x7FFFFFFFFFFFFFFFLL - 1LL)
95 + #define CL ULONG_MAX ((cl_ulong) 0xFFFFFFFFFFFFFFFULL)
96 +
97 + #define CLFLT_DIG 6
98 + #define CLFLT_MANT_DIG 24
99 + #define CLFLT_MAX_10_EXP +38
100 + #define CLFLT_MAX_EXP +128
101 + #define CLFLT_MIN_10_EXP -37
102 + #define CLFLT_MIN_EXP -125
103 + #define CLFLT_RADIX 2
104 + #define CLFLT_MAX 340282346638528859811704183484516925440.0f
105 + #define CLFLT_MIN 1.175494350822287507969e-38f
106 + #define CLFLT_EPSILON 0x1.0p-23f
107 +
108 + #define CLDBL_DIG 15
109 + #define CLDBL_MANT_DIG 53
110 + #define CLDBL_MAX_10_EXP +308
111 + #define CLDBL_MAX_EXP +1024
112 + #define CLDBL_MIN_10_EXP -307
113 + #define CLDBL_MIN_EXP -1021
114 + #define CLDBL_RADIX 2
115 + #define CLDBL_MAX 1797693134862315708145274237317043567980705675258449965989174768031572607800285387605895586327668781715
116 + #define CLDBL_MIN 2.225073858507201383090e-308
117 + #define CLDBL_EPSILON 2.220446049250313080847e-16
118 +
119 + #define CL_M_E 2.718281828459045090796
120 + #define CL_M_LOG2E 1.442695040888963387005
121 + #define CL_M_LOG10E 0.434294481903251816668
122 + #define CL_M_LN2 0.693147180559945286227
123 + #define CL_M_LN10 2.302585092994045901094
124 + #define CL_M_PI 3.141592653589793115998
125 + #define CL_M_PI_2 1.570796326794896557999
126 + #define CL_M_PI_4 0.785398163397448278999
127 + #define CL_M_1_PI 0.318309886183790691216
128 + #define CL_M_2_PI 0.636619772367581382433
129 + #define CL_M_2_SQRTPI 1.128379167095512558561
130 + #define CL_M_SQRT2 1.414213562373095145475
131 + #define CL_M_SQRT1_2 0.707106781186547572737
132 +
133 + #define CL_M_E_F 2.71828174591064f
134 + #define CL_M_LOG2E_F 1.44269502162933f

```

```

135 + #define CL_M_LOG10E_F 0.43429449200630f
136 + #define CL_M_LN2_F 0.69314718246460f
137 + #define CL_M_LN10_F 2.30258512496948f
138 + #define CL_M_PI_F 3.14159274101257f
139 + #define CL_M_PI_2_F 1.57079637050629f
140 + #define CL_M_PI_4_F 0.78539818525314f
141 + #define CL_M_1_PI_F 0.31830987334251f
142 + #define CL_M_2_PI_F 0.63661974668503f
143 + #define CL_M_2_SQRTPI_F 1.12837922573090f
144 + #define CL_M_SQRT2_F 1.41421353816986f
145 + #define CL_M_SQRT1_2_F 0.70710676908493f
146 +
147 + #define CL_NAN (CL_INFINITY - CL_INFINITY)
148 + #define CL_HUGE_VALF ((cl_float) 1e50)
149 + #define CL_HUGE_VAL ((cl_double) 1e500)
150 + #define CL_MAXFLOAT CL_FLT_MAX
151 + #define CL_INFINITY CL_HUGE_VALF
152 +
153 + #else
154 +
155 + #include <stdint.h>
156 +
157 + /* scalar types */
158 + typedef int8_t cl_char;
159 + typedef uint8_t cl_uchar;
160 + typedef int16_t cl_short __attribute__((aligned(2)));
161 + typedef uint16_t cl_ushort __attribute__((aligned(2)));
162 + typedef int32_t cl_int __attribute__((aligned(4)));
163 + typedef uint32_t cl_uint __attribute__((aligned(4)));
164 + typedef int64_t cl_long __attribute__((aligned(8)));
165 + typedef uint64_t cl_ulong __attribute__((aligned(8)));
166 +
167 + typedef uint16_t cl_half __attribute__((aligned(2)));
168 + typedef float cl_float __attribute__((aligned(4)));
169 + typedef double cl_double __attribute__((aligned(8)));
170 +
171 + /* Macro names and corresponding values defined by OpenCL */
172 + #define CL_CHAR_BIT 8
173 + #define CL_SCHAR_MAX 127
174 + #define CL_SCHAR_MIN (-127-1)
175 + #define CL_CHAR_MAX CL_SCHAR_MAX
176 + #define CL_CHAR_MIN CL_SCHAR_MIN
177 + #define CL_UCHAR_MAX 255
178 + #define CL_SHRT_MAX 32767
179 + #define CL_SHRT_MIN (-32767-1)
180 + #define CL_USHRT_MAX 65535
181 + #define CL_INT_MAX 2147483647
182 + #define CL_INT_MIN (-2147483647-1)
183 + #define CL_UINT_MAX 0xfffffffffu
184 + #define CL_LONG_MAX ((cl_long) 0x7FFFFFFFFFFFFFFFL)
185 + #define CL_LONG_MIN ((cl_long) -0x7FFFFFFFFFFFFFFFL - 1LL)
186 + #define CL ULONG_MAX ((cl_ulong) 0xFFFFFFFFFFFFFFFULL)
187 +
188 + #define CLFLT_DIG 6
189 + #define CLFLT_MANT_DIG 24
190 + #define CLFLT_MAX_10_EXP +38
191 + #define CLFLT_MAX_EXP +128
192 + #define CLFLT_MIN_10_EXP -37
193 + #define CLFLT_MIN_EXP -125
194 + #define CLFLT_RADIX 2
195 + #define CLFLT_MAX 0x1.fffffep127f
196 + #define CLFLT_MIN 0x1.0p-126f
197 + #define CLFLT_EPSILON 0x1.0p-23f
198 +
199 + #define CLDBL_DIG 15
200 + #define CLDBL_MANT_DIG 53
201 + #define CLDBL_MAX_10_EXP +308
202 + #define CLDBL_MAX_EXP +1024
203 + #define CLDBL_MIN_10_EXP -307

```

```

204 + #define CL_DBL_MIN_EXP -1021
205 + #define CL_DBL_RADIX 2
206 + #define CL_DBL_MAX 0x1.fffffffffffffp1023
207 + #define CL_DBL_MIN 0x1.0p-1022
208 + #define CL_DBL_EPSILON 0x1.0p-52
209 +
210 + #define CL_M_E 2.718281828459045090796
211 + #define CL_M_LOG2E 1.442695040888963387005
212 + #define CL_M_LOG10E 0.434294481903251816668
213 + #define CL_M_LN2 0.693147180559945286227
214 + #define CL_M_LN10 2.302585092994045901094
215 + #define CL_M_PI 3.141592653589793115998
216 + #define CL_M_PI_2 1.570796326794896557999
217 + #define CL_M_PI_4 0.785398163397448278999
218 + #define CL_M_1_PI 0.318309886183790691216
219 + #define CL_M_2_PI 0.636619772367581382433
220 + #define CL_M_2_SQRTPI 1.128379167095512558561
221 + #define CL_M_SQRT2 1.414213562373095145475
222 + #define CL_M_SQRT1_2 0.707106781186547572737
223 +
224 + #define CL_M_E_F 2.71828174591064f
225 + #define CL_M_LOG2E_F 1.44269502162933f
226 + #define CL_M_LOG10E_F 0.43429449200630f
227 + #define CL_M_LN2_F 0.69314718246460f
228 + #define CL_M_LN10_F 2.30258512496948f
229 + #define CL_M_PI_F 3.14159274101257f
230 + #define CL_M_PI_2_F 1.57079637050629f
231 + #define CL_M_PI_4_F 0.78539818525314f
232 + #define CL_M_1_PI_F 0.31830987334251f
233 + #define CL_M_2_PI_F 0.63661974668503f
234 + #define CL_M_2_SQRTPI_F 1.12837922573090f
235 + #define CL_M_SQRT2_F 1.41421353816986f
236 + #define CL_M_SQRT1_2_F 0.70710676908493f
237 +
238 + #if defined(__GNUC__)
239 + #define CL_HUGE_VALF __builtin_huge_valf()
240 + #define CL_HUGE_VAL __builtin_huge_val()
241 + #define CL_NAN __builtin_nanf("")
242 + #else
243 + #define CL_HUGE_VALF ((cl_float) 1e50)
244 + #define CL_HUGE_VAL ((cl_double) 1e500)
245 + float nanf(const char *);
246 + #define CL_NAN nanf("")
247 + #endif
248 + #define CL_MAXFLOAT CL_FLT_MAX
249 + #define CL_INFINITY CL_HUGE_VALF
250 +
251 + #endif
252 +
253 + #include <stddef.h>
254 +
255 + /* Mirror types to GL types. Mirror types allow us to avoid deciding which headers to load based on whether we are using GL or GLES
256 + typedef unsigned int cl_Gluint;
257 + typedef int cl_GLint;
258 + typedef unsigned int cl_GlEnum;
259 +
260 + /*
261 + * Vector types
262 + *
263 + * Note: OpenCL requires that all types be naturally aligned.
264 + * This means that vector types must be naturally aligned.
265 + * For example, a vector of four floats must be aligned to
266 + * a 16 byte boundary (calculated as 4 * the natural 4-byte
267 + * alignment of the float). The alignment qualifiers here
268 + * will only function properly if your compiler supports them
269 + * and if you don't actively work to defeat them. For example,
270 + * in order for a cl_float4 to be 16 byte aligned in a struct,
271 + * the start of the struct must itself be 16-byte aligned.
272 + */

```

```

273 + * Maintaining proper alignment is the user's responsibility.
274 + */
275 +
276 + /* Define basic vector types */
277 + #if defined(__VEC__)
278 + #include <altivec.h> /* may be omitted depending on compiler. AltiVec spec provides no way to detect whether the header is re-
279 + typedef vector unsigned char __cl_uchar16;
280 + typedef vector signed char __cl_char16;
281 + typedef vector unsigned short __cl_ushort8;
282 + typedef vector signed short __cl_short8;
283 + typedef vector unsigned int __cl_uint4;
284 + typedef vector signed int __cl_int4;
285 + typedef vector float __cl_float4;
286 + #define __CL_UCHAR16__ 1
287 + #define __CL_CHAR16__ 1
288 + #define __CL USHORT8__ 1
289 + #define __CL_SHORT8__ 1
290 + #define __CL_UINT4__ 1
291 + #define __CL_INT4__ 1
292 + #define __CL_FLOAT4__ 1
293 + #endif
294 +
295 + #if defined(__SSE__)
296 + #if defined(__MINGW64__)
297 + #include <intrin.h>
298 + #else
299 + #include <xmmmintrin.h>
300 + #endif
301 + #if defined(__GNUC__)
302 + typedef float __cl_float4 __attribute__((vector_size(16)));
303 + #else
304 + typedef __m128 __cl_float4;
305 + #endif
306 + #define __CL_FLOAT4__ 1
307 + #endif
308 +
309 + #if defined(__SSE2__)
310 + #if defined(__MINGW64__)
311 + #include <intrin.h>
312 + #else
313 + #include <emmintrin.h>
314 + #endif
315 + #if defined(__GNUC__)
316 + typedef cl_uchar __cl_uchar16 __attribute__((vector_size(16)));
317 + typedef cl_char __cl_char16 __attribute__((vector_size(16)));
318 + typedef cl_ushort __cl_ushort8 __attribute__((vector_size(16)));
319 + typedef cl_short __cl_short8 __attribute__((vector_size(16)));
320 + typedef cl_uint __cl_uint4 __attribute__((vector_size(16)));
321 + typedef cl_int __cl_int4 __attribute__((vector_size(16)));
322 + typedef cl_ulong __cl_ulong2 __attribute__((vector_size(16)));
323 + typedef cl_long __cl_long2 __attribute__((vector_size(16)));
324 + typedef cl_double __cl_double2 __attribute__((vector_size(16)));
325 + #else
326 + typedef __m128i __cl_uchar16;
327 + typedef __m128i __cl_char16;
328 + typedef __m128i __cl_ushort8;
329 + typedef __m128i __cl_short8;
330 + typedef __m128i __cl_uint4;
331 + typedef __m128i __cl_int4;
332 + typedef __m128i __cl_ulong2;
333 + typedef __m128i __cl_long2;
334 + typedef __m128d __cl_double2;
335 + #endif
336 + #define __CL_UCHAR16__ 1
337 + #define __CL_CHAR16__ 1
338 + #define __CL USHORT8__ 1
339 + #define __CL_SHORT8__ 1
340 + #define __CL_INT4__ 1
341 + #define __CL_UINT4__ 1

```

```

342 + #define __CL ULONG2__ 1
343 + #define __CL LONG2__ 1
344 + #define __CL DOUBLE2__ 1
345 + #endif
346 +
347 + #if defined(__MMX__)
348 + #include <mmmintrin.h>
349 + #if defined(__GNUC__)
350 + typedef cl_uchar __cl_uchar8 __attribute__((vector_size(8)));
351 + typedef cl_char __cl_char8 __attribute__((vector_size(8)));
352 + typedef cl_ushort __cl_ushort4 __attribute__((vector_size(8)));
353 + typedef cl_short __cl_short4 __attribute__((vector_size(8)));
354 + typedef cl_uint __cl_uint2 __attribute__((vector_size(8)));
355 + typedef cl_int __cl_int2 __attribute__((vector_size(8)));
356 + typedef cl_ulong __cl_ulong1 __attribute__((vector_size(8)));
357 + typedef cl_long __cl_long1 __attribute__((vector_size(8)));
358 + typedef cl_float __cl_float2 __attribute__((vector_size(8)));
359 + #else
360 + typedef __m64 __cl_uchar8;
361 + typedef __m64 __cl_char8;
362 + typedef __m64 __cl_ushort4;
363 + typedef __m64 __cl_short4;
364 + typedef __m64 __cl_uint2;
365 + typedef __m64 __cl_int2;
366 + typedef __m64 __cl_ulong1;
367 + typedef __m64 __cl_long1;
368 + typedef __m64 __cl_float2;
369 + #endif
370 + #define __CL UCHAR8__ 1
371 + #define __CL CHAR8__ 1
372 + #define __CL USHORT4__ 1
373 + #define __CL SHORT4__ 1
374 + #define __CL INT2__ 1
375 + #define __CL UINT2__ 1
376 + #define __CL ULONG1__ 1
377 + #define __CL LONG1__ 1
378 + #define __CL FLOAT2__ 1
379 + #endif
380 +
381 + #if defined(__AVX__)
382 + #if defined(__MINGW64__)
383 + #include <intrin.h>
384 + #else
385 + #include <immintrin.h>
386 + #endif
387 + #if defined(__GNUC__)
388 + typedef cl_float __cl_float8 __attribute__((vector_size(32)));
389 + typedef cl_double __cl_double4 __attribute__((vector_size(32)));
390 + #else
391 + typedef __m256 __cl_float8;
392 + typedef __m256d __cl_double4;
393 + #endif
394 + #define __CL FLOAT8__ 1
395 + #define __CL DOUBLE4__ 1
396 + #endif
397 +
398 + /* Define alignment keys */
399 + #if defined(__GNUC__)
400 + #define CL_ALIGNED(_x) __attribute__ ((aligned(_x)))
401 + #elif defined(__WIN32__) && (_MSC_VER)
402 + /* Alignment keys neutered on windows because MSVC can't swallow function arguments with alignment requirements */
403 + /* http://msdn.microsoft.com/en-us/library/373ak2y1%28VS.71%29.aspx */
404 + /* #include <crtdefs.h> */
405 + /* #define CL_ALIGNED(_x) _CRT_ALIGN(_x) */
406 + #define CL_ALIGNED(_x)
407 + #else
408 + #warning Need to implement some method to align data here
409 + #define CL_ALIGNED(_x)
410 + #endif

```

```

411 +
412 + /* Indicate whether .xyzw, .s0123 and .hi.lo are supported */
413 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
414 + /* .xyzw and .s0123...{f|F} are supported */
415 + #define CL_HAS_NAMED_VECTOR_FIELDS 1
416 + /* .hi and .lo are supported */
417 + #define CL_HAS_HI_LO_VECTOR_FIELDS 1
418 + #endif
419 +
420 + /* Define cl_vector types */
421 +
422 + /* ---- cl_charn ---- */
423 + typedef union
424 + {
425 + cl_char CL_ALIGNED(2) s[2];
426 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
427 + __extension__ struct{ cl_char x, y; };
428 + __extension__ struct{ cl_char s0, s1; };
429 + __extension__ struct{ cl_char lo, hi; };
430 + #endif
431 + #if defined(__CL_CHAR2__)
432 + __cl_char2 v2;
433 + #endif
434 + }cl_char2;
435 +
436 + typedef union
437 + {
438 + cl_char CL_ALIGNED(4) s[4];
439 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
440 + __extension__ struct{ cl_char x, y, z, w; };
441 + __extension__ struct{ cl_char s0, s1, s2, s3; };
442 + __extension__ struct{ cl_char2 lo, hi; };
443 + #endif
444 + #if defined(__CL_CHAR2__)
445 + __cl_char2 v2[2];
446 + #endif
447 + #if defined(__CL_CHAR4__)
448 + __cl_char4 v4;
449 + #endif
450 + }cl_char4;
451 +
452 + /* cl_char3 is identical in size, alignment and behavior to cl_char4. See section 6.1.5. */
453 + typedef cl_char4 cl_char3;
454 +
455 + typedef union
456 + {
457 + cl_char CL_ALIGNED(8) s[8];
458 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
459 + __extension__ struct{ cl_char x, y, z, w; };
460 + __extension__ struct{ cl_char s0, s1, s2, s3, s4, s5, s6, s7; };
461 + __extension__ struct{ cl_char4 lo, hi; };
462 + #endif
463 + #if defined(__CL_CHAR2__)
464 + __cl_char2 v2[4];
465 + #endif
466 + #if defined(__CL_CHAR4__)
467 + __cl_char4 v4[2];
468 + #endif
469 + #if defined(__CL_CHAR8__)
470 + __cl_char8 v8;
471 + #endif
472 + }cl_char8;
473 +
474 + typedef union
475 + {
476 + cl_char CL_ALIGNED(16) s[16];
477 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
478 + __extension__ struct{ cl_char x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se,
479 + __extension__ struct{ cl_char s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };

```

```

480 + __extension__ struct{ cl_char8 lo, hi; };
481 + #endif
482 + #if defined(__CL_CHAR2__)
483 + __cl_char2 v2[8];
484 + #endif
485 + #if defined(__CL_CHAR4__)
486 + __cl_char4 v4[4];
487 + #endif
488 + #if defined(__CL_CHAR8__)
489 + __cl_char8 v8[2];
490 + #endif
491 + #if defined(__CL_CHAR16__)
492 + __cl_char16 v16;
493 + #endif
494 + }cl_char16;
495 +
496 +
497 + /* ---- cl_ucharn ---- */
498 + typedef union
499 + {
500 + cl_uchar CL_ALIGNED(2) s[2];
501 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
502 + __extension__ struct{ cl_uchar x, y; };
503 + __extension__ struct{ cl_uchar s0, s1; };
504 + __extension__ struct{ cl_uchar lo, hi; };
505 + #endif
506 + #if defined(__cl_uchar2__)
507 + __cl_uchar2 v2;
508 + #endif
509 + }cl_uchar2;
510 +
511 + typedef union
512 + {
513 + cl_uchar CL_ALIGNED(4) s[4];
514 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
515 + __extension__ struct{ cl_uchar x, y, z, w; };
516 + __extension__ struct{ cl_uchar s0, s1, s2, s3; };
517 + __extension__ struct{ cl_uchar2 lo, hi; };
518 + #endif
519 + #if defined(__CL_UCHAR2__)
520 + __cl_uchar2 v2[2];
521 + #endif
522 + #if defined(__CL_UCHAR4__)
523 + __cl_uchar4 v4;
524 + #endif
525 + }cl_uchar4;
526 +
527 + /* cl_uchar3 is identical in size, alignment and behavior to cl_uchar4. See section 6.1.5. */
528 + typedef cl_uchar4 cl_uchar3;
529 +
530 + typedef union
531 + {
532 + cl_uchar CL_ALIGNED(8) s[8];
533 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
534 + __extension__ struct{ cl_uchar x, y, z, w; };
535 + __extension__ struct{ cl_uchar s0, s1, s2, s3, s4, s5, s6, s7; };
536 + __extension__ struct{ cl_uchar4 lo, hi; };
537 + #endif
538 + #if defined(__CL_UCHAR2__)
539 + __cl_uchar2 v2[4];
540 + #endif
541 + #if defined(__CL_UCHAR4__)
542 + __cl_uchar4 v4[2];
543 + #endif
544 + #if defined(__CL_UCHAR8__)
545 + __cl_uchar8 v8;
546 + #endif
547 + }cl_uchar8;
548 +

```

```

549 + typedef union
550 + {
551 + cl_uchar CL_ALIGNED(16) s[16];
552 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
553 + __extension__ struct{ cl_uchar x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se };
554 + __extension__ struct{ cl_uchar s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
555 + __extension__ struct{ cl_uchar8 lo, hi; };
556 + #endif
557 + #if defined(__CL_UCHAR2__)
558 + __cl_uchar2 v2[8];
559 + #endif
560 + #if defined(__CL_UCHAR4__)
561 + __cl_uchar4 v4[4];
562 + #endif
563 + #if defined(__CL_UCHAR8__)
564 + __cl_uchar8 v8[2];
565 + #endif
566 + #if defined(__CL_UCHAR16__)
567 + __cl_uchar16 v16;
568 + #endif
569 + }cl_uchar16;
570 +
571 +
572 + /* ---- cl_shortn ---- */
573 + typedef union
574 + {
575 + cl_short CL_ALIGNED(4) s[2];
576 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
577 + __extension__ struct{ cl_short x, y; };
578 + __extension__ struct{ cl_short s0, s1; };
579 + __extension__ struct{ cl_short lo, hi; };
580 + #endif
581 + #if defined(__CL_SHORT2__)
582 + __cl_short2 v2;
583 + #endif
584 + }cl_short2;
585 +
586 + typedef union
587 + {
588 + cl_short CL_ALIGNED(8) s[4];
589 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
590 + __extension__ struct{ cl_short x, y, z, w; };
591 + __extension__ struct{ cl_short s0, s1, s2, s3; };
592 + __extension__ struct{ cl_short2 lo, hi; };
593 + #endif
594 + #if defined(__CL_SHORT2__)
595 + __cl_short2 v2[2];
596 + #endif
597 + #if defined(__CL_SHORT4__)
598 + __cl_short4 v4;
599 + #endif
600 + }cl_short4;
601 +
602 + /* cl_short3 is identical in size, alignment and behavior to cl_short4. See section 6.1.5. */
603 + typedef cl_short4 cl_short3;
604 +
605 + typedef union
606 + {
607 + cl_short CL_ALIGNED(16) s[8];
608 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
609 + __extension__ struct{ cl_short x, y, z, w; };
610 + __extension__ struct{ cl_short s0, s1, s2, s3, s4, s5, s6, s7; };
611 + __extension__ struct{ cl_short4 lo, hi; };
612 + #endif
613 + #if defined(__CL_SHORT2__)
614 + __cl_short2 v2[4];
615 + #endif
616 + #if defined(__CL_SHORT4__)
617 + __cl_short4 v4[2];

```

```

618 + #endif
619 + #if defined(__CL_SHORT8__)
620 + __cl_short8 v8;
621 + #endif
622 + }cl_short8;
623 +
624 + typedef union
625 + {
626 + cl_short CL_ALIGNED(32) s[16];
627 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
628 + __extension__ struct{ cl_short x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se };
629 + __extension__ struct{ cl_short s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
630 + __extension__ struct{ cl_short8 lo, hi; };
631 + #endif
632 + #if defined(__CL_SHORT2__)
633 + __cl_short2 v2[8];
634 + #endif
635 + #if defined(__CL_SHORT4__)
636 + __cl_short4 v4[4];
637 + #endif
638 + #if defined(__CL_SHORT8__)
639 + __cl_short8 v8[2];
640 + #endif
641 + #if defined(__CL_SHORT16__)
642 + __cl_short16 v16;
643 + #endif
644 + }cl_short16;
645 +
646 +
647 + /* ---- cl_ushortn ---- */
648 + typedef union
649 + {
650 + cl_ushort CL_ALIGNED(4) s[2];
651 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
652 + __extension__ struct{ cl_ushort x, y; };
653 + __extension__ struct{ cl_ushort s0, s1; };
654 + __extension__ struct{ cl_ushort lo, hi; };
655 + #endif
656 + #if defined(__CL USHORT2__)
657 + __cl_ushort2 v2;
658 + #endif
659 + }cl_ushort2;
660 +
661 + typedef union
662 + {
663 + cl_ushort CL_ALIGNED(8) s[4];
664 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
665 + __extension__ struct{ cl_ushort x, y, z, w; };
666 + __extension__ struct{ cl_ushort s0, s1, s2, s3; };
667 + __extension__ struct{ cl_ushort2 lo, hi; };
668 + #endif
669 + #if defined(__CL USHORT2__)
670 + __cl_ushort2 v2[2];
671 + #endif
672 + #if defined(__CL USHORT4__)
673 + __cl_ushort4 v4;
674 + #endif
675 + }cl_ushort4;
676 +
677 + /* cl_ushort3 is identical in size, alignment and behavior to cl_ushort4. See section 6.1.5. */
678 + typedef cl_ushort4 cl_ushort3;
679 +
680 + typedef union
681 + {
682 + cl_ushort CL_ALIGNED(16) s[8];
683 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
684 + __extension__ struct{ cl_ushort x, y, z, w; };
685 + __extension__ struct{ cl_ushort s0, s1, s2, s3, s4, s5, s6, s7; };
686 + __extension__ struct{ cl_ushort4 lo, hi; };

```

```

687 + #endif
688 + #if defined(__CL USHORT2__)
689 + __cl_ushort2 v2[4];
690 + #endif
691 + #if defined(__CL USHORT4__)
692 + __cl_ushort4 v4[2];
693 + #endif
694 + #if defined(__CL USHORT8__)
695 + __cl_ushort8 v8;
696 + #endif
697 + }cl_ushort8;
698 +
699 + typedef union
700 {
701 cl_ushort CL_ALIGNED(32) s[16];
702 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
703 + __extension__ struct{ cl_ushort x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, s
704 + __extension__ struct{ cl_ushort s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
705 + __extension__ struct{ cl_ushort8 lo, hi; };
706 + #endif
707 + #if defined(__CL USHORT2__)
708 + __cl_ushort2 v2[8];
709 + #endif
710 + #if defined(__CL USHORT4__)
711 + __cl_ushort4 v4[4];
712 + #endif
713 + #if defined(__CL USHORT8__)
714 + __cl_ushort8 v8[2];
715 + #endif
716 + #if defined(__CL USHORT16__)
717 + __cl_ushort16 v16;
718 + #endif
719 + }cl_ushort16;
720 +
721 + /* ---- cl_intn ---- */
722 + typedef union
723 {
724 cl_int CL_ALIGNED(8) s[2];
725 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
726 + __extension__ struct{ cl_int x, y; };
727 + __extension__ struct{ cl_int s0, s1; };
728 + __extension__ struct{ cl_int lo, hi; };
729 + #endif
730 + #if defined(__CL INT2__)
731 + __cl_int2 v2;
732 + #endif
733 + }cl_int2;
734 +
735 + typedef union
736 {
737 cl_int CL_ALIGNED(16) s[4];
738 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
739 + __extension__ struct{ cl_int x, y, z, w; };
740 + __extension__ struct{ cl_int s0, s1, s2, s3; };
741 + __extension__ struct{ cl_int2 lo, hi; };
742 + #endif
743 + #if defined(__CL INT2__)
744 + __cl_int2 v2[2];
745 + #endif
746 + #if defined(__CL INT4__)
747 + __cl_int4 v4;
748 + #endif
749 + }cl_int4;
750 +
751 + /* cl_int3 is identical in size, alignment and behavior to cl_int4. See section 6.1.5. */
752 + typedef cl_int4 cl_int3;
753 +
754 + typedef union
755 {

```

```

756 + cl_int CL_ALIGNED(32) s[8];
757 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
758 + __extension__ struct{ cl_int x, y, z, w; };
759 + __extension__ struct{ cl_int s0, s1, s2, s3, s4, s5, s6, s7; };
760 + __extension__ struct{ cl_int4 lo, hi; };
761 + #endif
762 + #if defined(__CL_INT2__)
763 + __cl_int2 v2[4];
764 + #endif
765 + #if defined(__CL_INT4__)
766 + __cl_int4 v4[2];
767 + #endif
768 + #if defined(__CL_INT8__)
769 + __cl_int8 v8;
770 + #endif
771 + }cl_int8;
772 +
773 + typedef union
774 + {
775 + cl_int CL_ALIGNED(64) s[16];
776 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
777 + __extension__ struct{ cl_int x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se,
778 + __extension__ struct{ cl_int s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
779 + __extension__ struct{ cl_int8 lo, hi; };
780 + #endif
781 + #if defined(__CL_INT2__)
782 + __cl_int2 v2[8];
783 + #endif
784 + #if defined(__CL_INT4__)
785 + __cl_int4 v4[4];
786 + #endif
787 + #if defined(__CL_INT8__)
788 + __cl_int8 v8[2];
789 + #endif
790 + #if defined(__CL_INT16__)
791 + __cl_int16 v16;
792 + #endif
793 + }cl_int16;
794 +
795 +
796 + /* ---- cl_uintn ---- */
797 + typedef union
798 + {
799 + cl_uint CL_ALIGNED(8) s[2];
800 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
801 + __extension__ struct{ cl_uint x, y; };
802 + __extension__ struct{ cl_uint s0, s1; };
803 + __extension__ struct{ cl_uint lo, hi; };
804 + #endif
805 + #if defined(__CL_UINT2__)
806 + __cl_uint2 v2;
807 + #endif
808 + }cl_uint2;
809 +
810 + typedef union
811 + {
812 + cl_uint CL_ALIGNED(16) s[4];
813 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
814 + __extension__ struct{ cl_uint x, y, z, w; };
815 + __extension__ struct{ cl_uint s0, s1, s2, s3; };
816 + __extension__ struct{ cl_uint2 lo, hi; };
817 + #endif
818 + #if defined(__CL_UINT2__)
819 + __cl_uint2 v2[2];
820 + #endif
821 + #if defined(__CL_UINT4__)
822 + __cl_uint4 v4;
823 + #endif
824 + }cl_uint4;

```

```

825 +
826 + /* cl_uint3 is identical in size, alignment and behavior to cl_uint4. See section 6.1.5. */
827 + typedef cl_uint4 cl_uint3;
828 +
829 + typedef union
830 + {
831 + cl_uint CL_ALIGNED(32) s[8];
832 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
833 + __extension__ struct{ cl_uint x, y, z, w; };
834 + __extension__ struct{ cl_uint s0, s1, s2, s3, s4, s5, s6, s7; };
835 + __extension__ struct{ cl_uint4 lo, hi; };
836 + #endif
837 + #if defined(__CL_UINT2__)
838 + __cl_uint2 v2[4];
839 + #endif
840 + #if defined(__CL_UINT4__)
841 + __cl_uint4 v4[2];
842 + #endif
843 + #if defined(__CL_UINT8__)
844 + __cl_uint8 v8;
845 + #endif
846 + }cl_uint8;
847 +
848 + typedef union
849 + {
850 + cl_uint CL_ALIGNED(64) s[16];
851 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
852 + __extension__ struct{ cl_uint x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se,
853 + __extension__ struct{ cl_uint s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
854 + __extension__ struct{ cl_uint8 lo, hi; };
855 + #endif
856 + #if defined(__CL_UINT2__)
857 + __cl_uint2 v2[8];
858 + #endif
859 + #if defined(__CL_UINT4__)
860 + __cl_uint4 v4[4];
861 + #endif
862 + #if defined(__CL_UINT8__)
863 + __cl_uint8 v8[2];
864 + #endif
865 + #if defined(__CL_UINT16__)
866 + __cl_uint16 v16;
867 + #endif
868 + }cl_uint16;
869 +
870 + /* ---- cl_longn ---- */
871 + typedef union
872 + {
873 + cl_long CL_ALIGNED(16) s[2];
874 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
875 + __extension__ struct{ cl_long x, y; };
876 + __extension__ struct{ cl_long s0, s1; };
877 + __extension__ struct{ cl_long lo, hi; };
878 + #endif
879 + #if defined(__CL_LONG2__)
880 + __cl_long2 v2;
881 + #endif
882 + }cl_long2;
883 +
884 + typedef union
885 + {
886 + cl_long CL_ALIGNED(32) s[4];
887 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
888 + __extension__ struct{ cl_long x, y, z, w; };
889 + __extension__ struct{ cl_long s0, s1, s2, s3; };
890 + __extension__ struct{ cl_long2 lo, hi; };
891 + #endif
892 + #if defined(__CL_LONG2__)
893 + __cl_long2 v2[2];

```

```

894 + #endif
895 + #if defined(__CL_LONG4__)
896 + __cl_long4 v4;
897 + #endif
898 + }cl_long4;
899 +
900 /* cl_long3 is identical in size, alignment and behavior to cl_long4. See section 6.1.5. */
901 + typedef cl_long4 cl_long3;
902 +
903 + typedef union
904 {
905 cl_long CL_ALIGNED(64) s[8];
906 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
907 __extension__ struct{ cl_long x, y, z, w; };
908 __extension__ struct{ cl_long s0, s1, s2, s3, s4, s5, s6, s7; };
909 __extension__ struct{ cl_long4 lo, hi; };
910 + #endif
911 + #if defined(__CL_LONG2__)
912 __cl_long2 v2[4];
913 + #endif
914 + #if defined(__CL_LONG4__)
915 __cl_long4 v4[2];
916 + #endif
917 + #if defined(__CL_LONG8__)
918 __cl_long8 v8;
919 + #endif
920 }cl_long8;
921 +
922 + typedef union
923 {
924 cl_long CL_ALIGNED(128) s[16];
925 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
926 __extension__ struct{ cl_long x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se,
927 __extension__ struct{ cl_long s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
928 __extension__ struct{ cl_long8 lo, hi; };
929 + #endif
930 + #if defined(__CL_LONG2__)
931 __cl_long2 v2[8];
932 + #endif
933 + #if defined(__CL_LONG4__)
934 __cl_long4 v4[4];
935 + #endif
936 + #if defined(__CL_LONG8__)
937 __cl_long8 v8[2];
938 + #endif
939 + #if defined(__CL_LONG16__)
940 __cl_long16 v16;
941 + #endif
942 }cl_long16;
943 +
944 +
945 /* ---- cl_ulongn ---- */
946 + typedef union
947 {
948 cl_ulong CL_ALIGNED(16) s[2];
949 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
950 __extension__ struct{ cl_ulong x, y; };
951 __extension__ struct{ cl_ulong s0, s1; };
952 __extension__ struct{ cl_ulong lo, hi; };
953 + #endif
954 + #if defined(__CL ULONG2__)
955 __cl_ulong2 v2;
956 + #endif
957 }cl_ulong2;
958 +
959 + typedef union
960 {
961 cl_ulong CL_ALIGNED(32) s[4];
962 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)

```

```

963 + __extension__ struct{ cl_ulong x, y, z, w; };
964 + __extension__ struct{ cl_ulong s0, s1, s2, s3; };
965 + __extension__ struct{ cl_ulong2 lo, hi; };
966 + #endif
967 + #if defined(__CL ULONG2__)
968 + __cl_ulong2 v2[2];
969 + #endif
970 + #if defined(__CL ULONG4__)
971 + __cl_ulong4 v4;
972 + #endif
973 + }cl_ulong4;
974 +
975 /* cl_ulong3 is identical in size, alignment and behavior to cl_ulong4. See section 6.1.5. */
976 + typedef cl_ulong4 cl_ulong3;
977 +
978 + typedef union
979 + {
980 + cl_ulong CL_ALIGNED(64) s[8];
981 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
982 + __extension__ struct{ cl_ulong x, y, z, w; };
983 + __extension__ struct{ cl_ulong s0, s1, s2, s3, s4, s5, s6, s7; };
984 + __extension__ struct{ cl_ulong4 lo, hi; };
985 + #endif
986 + #if defined(__CL ULONG2__)
987 + __cl_ulong2 v2[4];
988 + #endif
989 + #if defined(__CL ULONG4__)
990 + __cl_ulong4 v4[2];
991 + #endif
992 + #if defined(__CL ULONG8__)
993 + __cl_ulong8 v8;
994 + #endif
995 + }cl_ulong8;
996 +
997 + typedef union
998 + {
999 + cl_ulong CL_ALIGNED(128) s[16];
1000 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1001 + __extension__ struct{ cl_ulong x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se; };
1002 + __extension__ struct{ cl_ulong s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
1003 + __extension__ struct{ cl_ulong8 lo, hi; };
1004 + #endif
1005 + #if defined(__CL ULONG2__)
1006 + __cl_ulong2 v2[8];
1007 + #endif
1008 + #if defined(__CL ULONG4__)
1009 + __cl_ulong4 v4[4];
1010 + #endif
1011 + #if defined(__CL ULONG8__)
1012 + __cl_ulong8 v8[2];
1013 + #endif
1014 + #if defined(__CL ULONG16__)
1015 + __cl_ulong16 v16;
1016 + #endif
1017 + }cl_ulong16;
1018 +
1019 +
1020 /* --- cl_floatn ---- */
1021 +
1022 + typedef union
1023 + {
1024 + cl_float CL_ALIGNED(8) s[2];
1025 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1026 + __extension__ struct{ cl_float x, y; };
1027 + __extension__ struct{ cl_float s0, s1; };
1028 + __extension__ struct{ cl_float lo, hi; };
1029 + #endif
1030 + #if defined(__CL FLOAT2__)
1031 + __cl_float2 v2;

```

```

1032 + #endif
1033 + }cl_float2;
1034 +
1035 + typedef union
1036 +
1037 + cl_float CL_ALIGNED(16) s[4];
1038 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1039 + _extension_ struct{ cl_float x, y, z, w; };
1040 + _extension_ struct{ cl_float s0, s1, s2, s3; };
1041 + _extension_ struct{ cl_float2 lo, hi; };
1042 + #endif
1043 + #if defined(__CL_FLOAT2__)
1044 + _cl_float2 v2[2];
1045 + #endif
1046 + #if defined(__CL_FLOAT4__)
1047 + _cl_float4 v4;
1048 + #endif
1049 + }cl_float4;
1050 +
1051 + /* cl_float3 is identical in size, alignment and behavior to cl_float4. See section 6.1.5. */
1052 + typedef cl_float4 cl_float3;
1053 +
1054 + typedef union
1055 +
1056 + cl_float CL_ALIGNED(32) s[8];
1057 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1058 + _extension_ struct{ cl_float x, y, z, w; };
1059 + _extension_ struct{ cl_float s0, s1, s2, s3, s4, s5, s6, s7; };
1060 + _extension_ struct{ cl_float4 lo, hi; };
1061 + #endif
1062 + #if defined(__CL_FLOAT2__)
1063 + _cl_float2 v2[4];
1064 + #endif
1065 + #if defined(__CL_FLOAT4__)
1066 + _cl_float4 v4[2];
1067 + #endif
1068 + #if defined(__CL_FLOAT8__)
1069 + _cl_float8 v8;
1070 + #endif
1071 + }cl_float8;
1072 +
1073 + typedef union
1074 +
1075 + cl_float CL_ALIGNED(64) s[16];
1076 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1077 + _extension_ struct{ cl_float x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, se, sf; };
1078 + _extension_ struct{ cl_float s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
1079 + _extension_ struct{ cl_float8 lo, hi; };
1080 + #endif
1081 + #if defined(__CL_FLOAT2__)
1082 + _cl_float2 v2[8];
1083 + #endif
1084 + #if defined(__CL_FLOAT4__)
1085 + _cl_float4 v4[4];
1086 + #endif
1087 + #if defined(__CL_FLOAT8__)
1088 + _cl_float8 v8[2];
1089 + #endif
1090 + #if defined(__CL_FLOAT16__)
1091 + _cl_float16 v16;
1092 + #endif
1093 + }cl_float16;
1094 +
1095 + /* --- cl_doublen ---- */
1096 +
1097 + typedef union
1098 +
1099 + cl_double CL_ALIGNED(16) s[2];
1100 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)

```

```

1101 + __extension__ struct{ cl_double x, y; };
1102 + __extension__ struct{ cl_double s0, s1; };
1103 + __extension__ struct{ cl_double lo, hi; };
1104 + #endif
1105 + #if defined(__CL_DOUBLE2__)
1106 + __cl_double2 v2;
1107 + #endif
1108 + }cl_double2;
1109 +
1110 + typedef union
1111 + {
1112 + cl_double CL_ALIGNED(32) s[4];
1113 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1114 + __extension__ struct{ cl_double x, y, z, w; };
1115 + __extension__ struct{ cl_double s0, s1, s2, s3; };
1116 + __extension__ struct{ cl_double2 lo, hi; };
1117 + #endif
1118 + #if defined(__CL_DOUBLE2__)
1119 + __cl_double2 v2[2];
1120 + #endif
1121 + #if defined(__CL_DOUBLE4__)
1122 + __cl_double4 v4;
1123 + #endif
1124 + }cl_double4;
1125 +
1126 + /* cl_double3 is identical in size, alignment and behavior to cl_double4. See section 6.1.5. */
1127 + typedef cl_double4 cl_double3;
1128 +
1129 + typedef union
1130 + {
1131 + cl_double CL_ALIGNED(64) s[8];
1132 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1133 + __extension__ struct{ cl_double x, y, z, w; };
1134 + __extension__ struct{ cl_double s0, s1, s2, s3, s4, s5, s6, s7; };
1135 + __extension__ struct{ cl_double4 lo, hi; };
1136 + #endif
1137 + #if defined(__CL_DOUBLE2__)
1138 + __cl_double2 v2[4];
1139 + #endif
1140 + #if defined(__CL_DOUBLE4__)
1141 + __cl_double4 v4[2];
1142 + #endif
1143 + #if defined(__CL_DOUBLE8__)
1144 + __cl_double8 v8;
1145 + #endif
1146 + }cl_double8;
1147 +
1148 + typedef union
1149 + {
1150 + cl_double CL_ALIGNED(128) s[16];
1151 + #if defined(__GNUC__) && ! defined(__STRICT_ANSI__)
1152 + __extension__ struct{ cl_double x, y, z, w, __spacer4, __spacer5, __spacer6, __spacer7, __spacer8, __spacer9, sa, sb, sc, sd, s
1153 + __extension__ struct{ cl_double s0, s1, s2, s3, s4, s5, s6, s7, s8, s9, sA, sB, sC, sD, sE, sF; };
1154 + __extension__ struct{ cl_double8 lo, hi; };
1155 + #endif
1156 + #if defined(__CL_DOUBLE2__)
1157 + __cl_double2 v2[8];
1158 + #endif
1159 + #if defined(__CL_DOUBLE4__)
1160 + __cl_double4 v4[4];
1161 + #endif
1162 + #if defined(__CL_DOUBLE8__)
1163 + __cl_double8 v8[2];
1164 + #endif
1165 + #if defined(__CL_DOUBLE16__)
1166 + __cl_double16 v16;
1167 + #endif
1168 + }cl_double16;
1169 +

```

```

1170 + /* Macro to facilitate debugging
1171 + * Usage:
1172 + * Place CL_PROGRAM_STRING_DEBUG_INFO on the line before the first line of your source.
1173 + * The first line ends with: CL_PROGRAM_STRING_BEGIN \
1174 + * Each line thereafter of OpenCL C source must end with: \n\
1175 + * The last line ends in ";
1176 +
1177 + * Example:
1178 +
1179 + * const char *my_program = CL_PROGRAM_STRING_BEGIN \
1180 + * kernel void foo(int a, float * b) \
1181 + * {
1182 + * // my comment \
1183 + * *b[get_global_id(0)] = a; \
1184 + * } \
1185 + * ";
1186 +
1187 + * This should correctly set up the line, (column) and file information for your source
1188 + * string so you can do source level debugging.
1189 +
1190 + #define __CL_STRINGIFY(_x) # _x
1191 + #define __CL_STRINGIFY(_x) __CL_STRINGIFY(_x)
1192 + #define CL_PROGRAM_STRING_DEBUG_INFO "#line " __CL_STRINGIFY(__LINE__) " \" __FILE__ \" \n\n"
1193 +
1194 + #ifdef __cplusplus
1195 +
1196 + #endif
1197 +
1198 + #endif /* __CL_PLATFORM_H */

```

▽ 54 ■■■■■ include/CL/opencl.h □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,54 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|     |     | <pre> 1 + **** 2 + * Copyright (c) 2008-2010 The Khronos Group Inc. 3 + 4 + * Permission is hereby granted, free of charge, to any person obtaining a 5 + * copy of this software and/or associated documentation files (the 6 + * "Materials"), to deal in the Materials without restriction, including 7 + * without limitation the rights to use, copy, modify, merge, publish, 8 + * distribute, sublicense, and/or sell copies of the Materials, and to 9 + * permit persons to whom the Materials are furnished to do so, subject to 10 + * the following conditions: 11 + 12 + * The above copyright notice and this permission notice shall be included 13 + * in all copies or substantial portions of the Materials. 14 + 15 + * THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, 16 + * EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF 17 + * MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. 18 + * IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY 19 + * CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, 20 + * TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE 21 + * MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS. 22 + **** 23 + 24 + /* \$Revision: 28993 \$ on \$Date: 2011-08-31 18:06:56 +0100 (Wed, 31 Aug 2011) \$ */ 25 + 26 + #ifndef __OPENCL_H 27 + #define __OPENCL_H 28 + 29 + #ifdef __cplusplus 30 + extern "C" { 31 + #endif 32 + 33 + #ifdef __APPLE__ 34 + 35 + #include &lt;OpenCL/cl.h&gt; </pre> |

```
36 + #include <OpenCL/cl_gl.h>
37 + #include <OpenCL/cl_gl_ext.h>
38 + #include <OpenCL/cl_ext.h>
39 +
40 + #else
41 +
42 + #include <CL/cl.h>
43 + #include <CL/cl_gl.h>
44 + #include <CL/cl_gl_ext.h>
45 + #include <CL/cl_ext.h>
46 +
47 + #endif
48 +
49 + #ifdef __cplusplus
50 +
51 + #endif
52 +
53 + #endif /* __OPENCL_H */
54 +
```

▽ 269 include/KHR/khrplatform.h □

| ... | ... | @@ -0,0 +1,269 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | 1 + #ifndef __khrplatform_h_ 2 + #define __khrplatform_h_ 3 + 4 + /* 5 + ** Copyright (c) 2008-2009 The Khronos Group Inc. 6 + ** 7 + ** Permission is hereby granted, free of charge, to any person obtaining a 8 + ** copy of this software and/or associated documentation files (the 9 + ** "Materials"), to deal in the Materials without restriction, including 10 + ** without limitation the rights to use, copy, modify, merge, publish, 11 + ** distribute, sublicense, and/or sell copies of the Materials, and to 12 + ** permit persons to whom the Materials are furnished to do so, subject to 13 + ** the following conditions: 14 + ** 15 + ** The above copyright notice and this permission notice shall be included 16 + ** in all copies or substantial portions of the Materials. 17 + ** 18 + ** THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, 19 + ** EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF 20 + ** MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. 21 + ** IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY 22 + ** CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, 23 + ** TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE 24 + ** MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS. 25 + */ 26 + 27 + /* Khronos platform-specific types and definitions. 28 + * 29 + * \$Revision: 52850 \$ on \$Date: 2012-05-07 12:10:49 +0100 (Mon, 07 May 2012) \$ 30 + * 31 + * Adopters may modify this file to suit their platform. Adopters are 32 + * encouraged to submit platform specific modifications to the Khronos 33 + * group so that they can be included in future versions of this file. 34 + * Please submit changes by sending them to the public Khronos Bugzilla 35 + * ( <a href="http://khronos.org/bugzilla">http://khronos.org/bugzilla</a> ) by filing a bug against product 36 + * "Khronos (general)" component "Registry". 37 + * 38 + * A predefined template which fills in some of the bug fields can be 39 + * reached using <a href="http://tinyurl.com/khrplatform-h-bugreport">http://tinyurl.com/khrplatform-h-bugreport</a> , but you 40 + * must create a Bugzilla login first. 41 + * 42 + * 43 + * See the Implementer's Guidelines for information about where this file 44 + * should be located on your system and for more details of its use: 45 + * <a href="http://www.khronos.org/registry/implementers_guide.pdf">http://www.khronos.org/registry/implementers_guide.pdf</a> 46 + * |

```

47 + * This file should be included as
48 + * #include <KHR/khrplatform.h>
49 + * by Khronos client API header files that use its types and defines.
50 +
51 + * The types in khrplatform.h should only be used to define API-specific types.
52 +
53 + * Types defined in khrplatform.h:
54 + * khronos_int8_t signed 8 bit
55 + * khronos_uint8_t unsigned 8 bit
56 + * khronos_int16_t signed 16 bit
57 + * khronos_uint16_t unsigned 16 bit
58 + * khronos_int32_t signed 32 bit
59 + * khronos_uint32_t unsigned 32 bit
60 + * khronos_int64_t signed 64 bit
61 + * khronos_uint64_t unsigned 64 bit
62 + * khronos_intptr_t signed same number of bits as a pointer
63 + * khronos_uintptr_t unsigned same number of bits as a pointer
64 + * khronos_ssize_t signed size
65 + * khronos_usize_t unsigned size
66 + * khronos_float_t signed 32 bit floating point
67 + * khronos_time_ns_t unsigned 64 bit time in nanoseconds
68 + * khronos_utime_nanoseconds_t unsigned time interval or absolute time in
69 + * nanoseconds
70 + * khronos_stime_nanoseconds_t signed time interval in nanoseconds
71 + * khronos_boolean_enum_t enumerated boolean type. This should
72 + * only be used as a base type when a client API's boolean type is
73 + * an enum. Client APIs which use an integer or other type for
74 + * booleans cannot use this as the base type for their boolean.
75 +
76 + * Tokens defined in khrplatform.h:
77 +
78 + * KHRONOS_FALSE, KHRONOS_TRUE Enumerated boolean false/true values.
79 +
80 + * KHRONOS_SUPPORT_INT64 is 1 if 64 bit integers are supported; otherwise 0.
81 + * KHRONOS_SUPPORT_FLOAT is 1 if floats are supported; otherwise 0.
82 +
83 + * Calling convention macros defined in this file:
84 + * KHRONOS_APICALL
85 + * KHRONOS_APIENTRY
86 + * KHRONOS_APIATTRIBUTES
87 +
88 + * These may be used in function prototypes as:
89 +
90 + * KHRONOS_APICALL void KHRONOS_APIENTRY funcname(
91 + * int arg1,
92 + * int arg2) KHRONOS_APIATTRIBUTES;
93 + */
94 +
95 + *-----
96 + * Definition of KHRONOS_APICALL
97 + *-----
98 + * This precedes the return type of the function in the function prototype.
99 + */
100 + #if defined(_WIN32) && !defined(__SCITECH_SNAP__)
101 + # define KHRONOS_APICALL __declspec(dllimport)
102 + #elif defined (__SYMBIAN32__)
103 + # define KHRONOS_APICALL IMPORT_C
104 + #else
105 + # define KHRONOS_APICALL
106 + #endif
107 +
108 + *-----
109 + * Definition of KHRONOS_APIENTRY
110 + *-----
111 + * This follows the return type of the function and precedes the function
112 + * name in the function prototype.
113 + */
114 + #if defined(_WIN32) && !defined(_WIN32_WCE) && !defined(__SCITECH_SNAP__)
115 + /* Win32 but not WinCE */

```

```

116 + # define KHRONOS_APIENTRY __stdcall
117 + #else
118 + # define KHRONOS_APIENTRY
119 + #endif
120 +
121 + -----
122 + * Definition of KHRONOS_APATTRIBUTES
123 + -----
124 + * This follows the closing parenthesis of the function prototype arguments.
125 + */
126 + #if defined (__ARMCC_2__)
127 + #define KHRONOS_APATTRIBUTES __softfp
128 + #else
129 + #define KHRONOS_APATTRIBUTES
130 + #endif
131 +
132 + -----
133 + * basic type definitions
134 + -----
135 + #if (defined(__STDC_VERSION__) && __STDC_VERSION__ >= 199901L) || defined(__GNUC__) || defined(__SCO__) || defined(__USLC__)
136 +
137 +
138 + /*
139 + * Using <stdint.h>
140 + */
141 + #include <stdint.h>
142 + typedef int32_t khroneos_int32_t;
143 + typedef uint32_t khroneos_uint32_t;
144 + typedef int64_t khroneos_int64_t;
145 + typedef uint64_t khroneos_uint64_t;
146 + #define KHRONOS_SUPPORT_INT64 1
147 + #define KHRONOS_SUPPORT_FLOAT 1
148 +
149 + #elif defined(__VMS) || defined(__sgi)
150 +
151 + /*
152 + * Using <inttypes.h>
153 + */
154 + #include <inttypes.h>
155 + typedef int32_t khroneos_int32_t;
156 + typedef uint32_t khroneos_uint32_t;
157 + typedef int64_t khroneos_int64_t;
158 + typedef uint64_t khroneos_uint64_t;
159 + #define KHRONOS_SUPPORT_INT64 1
160 + #define KHRONOS_SUPPORT_FLOAT 1
161 +
162 + #elif defined(_WIN32) && !defined(__SCITECH_SNAP__)
163 +
164 + /*
165 + * Win32
166 + */
167 + typedef __int32 khroneos_int32_t;
168 + typedef unsigned __int32 khroneos_uint32_t;
169 + typedef __int64 khroneos_int64_t;
170 + typedef unsigned __int64 khroneos_uint64_t;
171 + #define KHRONOS_SUPPORT_INT64 1
172 + #define KHRONOS_SUPPORT_FLOAT 1
173 +
174 + #elif defined(__sun__) || defined(__digital__)
175 +
176 + /*
177 + * Sun or Digital
178 + */
179 + typedef int khroneos_int32_t;
180 + typedef unsigned int khroneos_uint32_t;
181 + #if defined(__arch64__) || defined(__LP64__)
182 + typedef long int khroneos_int64_t;
183 + typedef unsigned long int khroneos_uint64_t;
184 + #else

```

```

185 + typedef long long int khronos_int64_t;
186 + typedef unsigned long long int khronos_uint64_t;
187 + #endif /* __arch64__ */
188 + #define KHRONOS_SUPPORT_INT64 1
189 + #define KHRONOS_SUPPORT_FLOAT 1
190 +
191 + #elif 0
192 +
193 + /*
194 + * Hypothetical platform with no float or int64 support
195 + */
196 + typedef int khronos_int32_t;
197 + typedef unsigned int khronos_uint32_t;
198 + #define KHRONOS_SUPPORT_INT64 0
199 + #define KHRONOS_SUPPORT_FLOAT 0
200 +
201 + #else
202 +
203 + /*
204 + * Generic fallback
205 + */
206 + #include <stdint.h>
207 + typedef int32_t khronos_int32_t;
208 + typedef uint32_t khronos_uint32_t;
209 + typedef int64_t khronos_int64_t;
210 + typedef uint64_t khronos_uint64_t;
211 + #define KHRONOS_SUPPORT_INT64 1
212 + #define KHRONOS_SUPPORT_FLOAT 1
213 +
214 + #endif
215 +
216 +
217 + /*
218 + * Types that are (so far) the same on all platforms
219 + */
220 + typedef signed char khronos_int8_t;
221 + typedef unsigned char khronos_uint8_t;
222 + typedef signed short int khronos_int16_t;
223 + typedef unsigned short int khronos_uint16_t;
224 + typedef signed long int khronos_intptr_t;
225 + typedef unsigned long int khronos_uintptr_t;
226 + typedef signed long int khronos_ssize_t;
227 + typedef unsigned long int khronos_usize_t;
228 +
229 + #if KHRONOS_SUPPORT_FLOAT
230 + /*
231 + * Float type
232 + */
233 + typedef float khronos_float_t;
234 + #endif
235 +
236 + #if KHRONOS_SUPPORT_INT64
237 + /* Time types
238 + *
239 + * These types can be used to represent a time interval in nanoseconds or
240 + * an absolute Unadjusted System Time. Unadjusted System Time is the number
241 + * of nanoseconds since some arbitrary system event (e.g. since the last
242 + * time the system booted). The Unadjusted System Time is an unsigned
243 + * 64 bit value that wraps back to 0 every 584 years. Time intervals
244 + * may be either signed or unsigned.
245 + */
246 + typedef khronos_uint64_t khronos_utime_nanoseconds_t;
247 + typedef khronos_int64_t khronos_stime_nanoseconds_t;
248 + #endif
249 +
250 + /*
251 + * Dummy value used to pad enum types to 32 bits.
252 + */
253 + #ifndef KHRONOS_MAX_ENUM

```

```

254 + #define KHRONOS_MAX_ENUM 0x7FFFFFFF
255 + #endif
256 +
257 + /*
258 + * Enumerated boolean type
259 + *
260 + * Values other than zero should be considered to be true. Therefore
261 + * comparisons should not be made against KHRONOS_TRUE.
262 + */
263 + typedef enum {
264 + KHRONOS_FALSE = 0,
265 + KHRONOS_TRUE = 1,
266 + KHRONOS_BOOLEAN_ENUM_FORCE_SIZE = KHRONOS_MAX_ENUM
267 + } khronos_boolean_enum_t;
268 +
269 + #endif /* __khrplatform_h_ */

```

▼ 21 lib/Makefile □

| ... | ... | @@ -0,0 +1,21 @@                                                   |
|-----|-----|--------------------------------------------------------------------|
|     | 1   | + # This confidential and proprietary software may be used only as |
|     | 2   | + # authorised by a licensing agreement from ARM Limited           |
|     | 3   | + # (C) COPYRIGHT 2013 ARM Limited                                 |
|     | 4   | + # ALL RIGHTS RESERVED                                            |
|     | 5   | + # The entire notice above must be reproduced on all authorised   |
|     | 6   | + # copies and copies may only be made to the extent permitted     |
|     | 7   | + # by a licensing agreement from ARM Limited.                     |
|     | 8   | +                                                                  |
|     | 9   | + include ../platform.mk                                           |
|     | 10  | +                                                                  |
|     | 11  | + SOFLAGS=-fpic -shared -I../include/                              |
|     | 12  | +                                                                  |
|     | 13  | + LIBRARY=libOpenCL.so                                             |
|     | 14  | +                                                                  |
|     | 15  | + all: \$(LIBRARY)                                                 |
|     | 16  | +                                                                  |
|     | 17  | + clean:                                                           |
|     | 18  | + \$(RM) \$(LIBRARY)                                               |
|     | 19  | +                                                                  |
|     | 20  | + \$(LIBRARY): opencl_stubs.c                                      |
|     | 21  | + \$(CC) \$(SOFLAGS) -o \$(LIBRARY) opencl_stubs.c □               |

▼ 752 lib/opencl\_stubs.c □

| ... | ... | @@ -0,0 +1,752 @@                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | 1   | + /* 2 + * Copyright: 3 + * ----- 4 + * This confidential and proprietary software may be used only as authorized 5 + * by a licensing agreement from ARM Limited. 6 + * (C) COPYRIGHT 2013 ARM Limited, ALL RIGHTS RESERVED 7 + * The entire notice above must be reproduced on all authorized copies and 8 + * copies may only be made to the extent permitted by a licensing agreement 9 + * from ARM Limited. 10 + * ----- 11 + */ |
|     | 12  | +                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|     | 13  | + #include <CL/cl.h>                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     | 14  | +                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|     | 15  | + CL_API_ENTRY cl_int CL_API_CALL clGetPlatformIDs(                                                                                                                                                                                                                                                                                                                                                                                    |
|     | 16  | + cl_uint num_entries,                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     | 17  | + cl_platform_id * platforms,                                                                                                                                                                                                                                                                                                                                                                                                          |
|     | 18  | + cl_uint * num_platforms                                                                                                                                                                                                                                                                                                                                                                                                              |
|     | 19  | + ) CL_API_SUFFIX__VERSION_1_0                                                                                                                                                                                                                                                                                                                                                                                                         |
|     | 20  | + {                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     | 21  | + }                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     | 22  | +                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|     | 23  | + CL_API_ENTRY cl_int CL_API_CALL clGetPlatformInfo(                                                                                                                                                                                                                                                                                                                                                                                   |

```
24 + cl_platform_id platform,
25 + cl_platform_info param_name,
26 + size_t param_value_size,
27 + void * param_value,
28 + size_t * param_value_size_ret
29 +) CL_API_SUFFIX__VERSION_1_0
30 +
31 +
32 +
33 + CL_API_ENTRY cl_int CL_API_CALL clGetDeviceIDs(
34 + cl_platform_id platform,
35 + cl_device_type device_type,
36 + cl_uint num_entries,
37 + cl_device_id * devices,
38 + cl_uint * num_devices
39 +) CL_API_SUFFIX__VERSION_1_0
40 +
41 +
42 +
43 + CL_API_ENTRY cl_int CL_API_CALL clGetDeviceInfo(
44 + cl_device_id device,
45 + cl_device_info param_name,
46 + size_t param_value_size,
47 + void * param_value,
48 + size_t * param_value_size_ret
49 +) CL_API_SUFFIX__VERSION_1_0
50 +
51 +
52 +
53 + CL_API_ENTRY cl_context CL_API_CALL clCreateContext(
54 + const cl_context_properties * properties,
55 + cl_uint num_devices,
56 + const cl_device_id * devices,
57 + void (CL_CALLBACK * pfn_notify)(const char *, const void *, size_t, void *),
58 + void * user_data,
59 + cl_int * errcode_ret
60 +) CL_API_SUFFIX__VERSION_1_0
61 +
62 +
63 +
64 + CL_API_ENTRY cl_context CL_API_CALL clCreateContextFromType(
65 + const cl_context_properties * properties,
66 + cl_device_type device_type,
67 + void (CL_CALLBACK * pfn_notify)(const char *, const void *, size_t, void *),
68 + void * user_data,
69 + cl_int * errcode_ret
70 +) CL_API_SUFFIX__VERSION_1_0
71 +
72 +
73 +
74 + CL_API_ENTRY cl_int CL_API_CALL clRetainContext(
75 + cl_context context
76 +) CL_API_SUFFIX__VERSION_1_0
77 +
78 +
79 +
80 + CL_API_ENTRY cl_int CL_API_CALL clReleaseContext(
81 + cl_context context
82 +) CL_API_SUFFIX__VERSION_1_0
83 +
84 +
85 +
86 + CL_API_ENTRY cl_int CL_API_CALL clGetContextInfo(
87 + cl_context context,
88 + cl_context_info param_name,
89 + size_t param_value_size,
90 + void * param_value,
91 + size_t * param_value_size_ret
92 +) CL_API_SUFFIX__VERSION_1_0
```

```

93 + {
94 + }
95 +
96 + CL_API_ENTRY cl_command_queue CL_API_CALL clCreateCommandQueue(
97 + cl_context context,
98 + cl_device_id device,
99 + cl_command_queue_properties properties,
100 + cl_int * errcode_ret
101 +) CL_API_SUFFIX__VERSION_1_0
102 + {
103 + }
104 +
105 + CL_API_ENTRY cl_int CL_API_CALL clRetainCommandQueue(
106 + cl_command_queue command_queue
107 +) CL_API_SUFFIX__VERSION_1_0
108 + {
109 + }
110 +
111 + CL_API_ENTRY cl_int CL_API_CALL clReleaseCommandQueue(
112 + cl_command_queue command_queue
113 +) CL_API_SUFFIX__VERSION_1_0
114 + {
115 + }
116 +
117 + CL_API_ENTRY cl_int CL_API_CALL clGetCommandQueueInfo(
118 + cl_command_queue command_queue,
119 + cl_command_queue_info param_name,
120 + size_t param_value_size,
121 + void * param_value,
122 + size_t * param_value_size_ret
123 +) CL_API_SUFFIX__VERSION_1_0
124 + {
125 + }
126 +
127 + CL_API_ENTRY cl_int CL_API_CALL clSetCommandQueueProperty(
128 + cl_command_queue command_queue,
129 + cl_command_queue_properties properties,
130 + cl_bool enable,
131 + cl_command_queue_properties * old_properties
132 +) CL_EXT_SUFFIX__VERSION_1_0_DEPRECATED
133 + {
134 + }
135 +
136 + CL_API_ENTRY cl_mem CL_API_CALL clCreateBuffer(
137 + cl_context context,
138 + cl_mem_flags flags,
139 + size_t size,
140 + void * host_ptr,
141 + cl_int * errcode_ret
142 +) CL_API_SUFFIX__VERSION_1_0
143 + {
144 + }
145 +
146 + CL_API_ENTRY cl_mem CL_API_CALL clCreateSubBuffer(
147 + cl_mem buffer,
148 + cl_mem_flags flags,
149 + cl_buffer_create_type buffer_create_type,
150 + const void * buffer_create_info,
151 + cl_int * errcode_ret
152 +) CL_API_SUFFIX__VERSION_1_1
153 + {
154 + }
155 +
156 + CL_API_ENTRY cl_mem CL_API_CALL clCreateImage2D(
157 + cl_context context,
158 + cl_mem_flags flags,
159 + const cl_image_format * image_format,
160 + size_t image_width,
161 + size_t image_height,

```

```

162 + size_t image_row_pitch,
163 + void * host_ptr,
164 + cl_int * errcode_ret
165 +) CL_API_SUFFIX__VERSION_1_0
166 +
167 +
168 +
169 + CL_API_ENTRY cl_mem CL_API_CALL clCreateImage3D(
170 + cl_context context,
171 + cl_mem_flags flags,
172 + const cl_image_format * image_format,
173 + size_t image_width,
174 + size_t image_height,
175 + size_t image_depth,
176 + size_t image_row_pitch,
177 + size_t image_slice_pitch,
178 + void * host_ptr,
179 + cl_int * errcode_ret
180 +) CL_API_SUFFIX__VERSION_1_0
181 +
182 +
183 +
184 + CL_API_ENTRY cl_int CL_API_CALL clRetainMemObject(
185 + cl_mem memobj
186 +) CL_API_SUFFIX__VERSION_1_0
187 +
188 +
189 +
190 + CL_API_ENTRY cl_int CL_API_CALL clReleaseMemObject(
191 + cl_mem memobj
192 +) CL_API_SUFFIX__VERSION_1_0
193 +
194 +
195 +
196 + CL_API_ENTRY cl_int CL_API_CALL clGetSupportedImageFormats(
197 + cl_context context,
198 + cl_mem_flags flags,
199 + cl_mem_object_type image_type,
200 + cl_uint num_entries,
201 + cl_image_format * image_formats,
202 + cl_uint * num_image_formats
203 +) CL_API_SUFFIX__VERSION_1_0
204 +
205 +
206 +
207 + CL_API_ENTRY cl_int CL_API_CALL clGetMemObjectInfo(
208 + cl_mem memobj,
209 + cl_mem_info param_name,
210 + size_t param_value_size,
211 + void * param_value,
212 + size_t * param_value_size_ret
213 +) CL_API_SUFFIX__VERSION_1_0
214 +
215 +
216 +
217 + CL_API_ENTRY cl_int CL_API_CALL clGetImageInfo(
218 + cl_mem image,
219 + cl_image_info param_name,
220 + size_t param_value_size,
221 + void * param_value,
222 + size_t * param_value_size_ret
223 +) CL_API_SUFFIX__VERSION_1_0
224 +
225 +
226 +
227 + CL_API_ENTRY cl_int CL_API_CALL clSetMemObjectDestructorCallback(
228 + cl_mem memobj,
229 + void (CL_CALLBACK * pfn_notify)(cl_mem memobj, void * user_data),
230 + void * user_data

```

```
231 +) CL_API_SUFFIX__VERSION_1_1
232 +
233 +
234 +
235 + CL_API_ENTRY cl_sampler CL_API_CALL clCreateSampler(
236 + cl_context context,
237 + cl_bool normalized_coords,
238 + cl_addressing_mode addressing_mode,
239 + cl_filter_mode filter_mode,
240 + cl_int * errcode_ret
241 +) CL_API_SUFFIX__VERSION_1_0
242 +
243 +
244 +
245 + CL_API_ENTRY cl_int CL_API_CALL clRetainSampler(
246 + cl_sampler sampler
247 +) CL_API_SUFFIX__VERSION_1_0
248 +
249 +
250 +
251 + CL_API_ENTRY cl_int CL_API_CALL clReleaseSampler(
252 + cl_sampler sampler
253 +) CL_API_SUFFIX__VERSION_1_0
254 +
255 +
256 +
257 + CL_API_ENTRY cl_int CL_API_CALL clGetSamplerInfo(
258 + cl_sampler sampler,
259 + cl_sampler_info param_name,
260 + size_t param_value_size,
261 + void * param_value,
262 + size_t * param_value_size_ret
263 +) CL_API_SUFFIX__VERSION_1_0
264 +
265 +
266 +
267 + CL_API_ENTRY cl_program CL_API_CALL clCreateProgramWithSource(
268 + cl_context context,
269 + cl_uint count,
270 + const char ** strings,
271 + const size_t * lengths,
272 + cl_int * errcode_ret
273 +) CL_API_SUFFIX__VERSION_1_0
274 +
275 +
276 +
277 + CL_API_ENTRY cl_program CL_API_CALL clCreateProgramWithBinary(
278 + cl_context context,
279 + cl_uint num_devices,
280 + const cl_device_id * device_list,
281 + const size_t * lengths,
282 + const unsigned char ** binaries,
283 + cl_int * binary_status,
284 + cl_int * errcode_ret
285 +) CL_API_SUFFIX__VERSION_1_0
286 +
287 +
288 +
289 + CL_API_ENTRY cl_int CL_API_CALL clRetainProgram(
290 + cl_program program
291 +) CL_API_SUFFIX__VERSION_1_0
292 +
293 +
294 +
295 + CL_API_ENTRY cl_int CL_API_CALL clReleaseProgram(
296 + cl_program program
297 +) CL_API_SUFFIX__VERSION_1_0
298 +
299 +
```

```
300 +
301 + CL_API_ENTRY cl_int CL_API_CALL clBuildProgram(
302 + cl_program program,
303 + cl_uint num_devices,
304 + const cl_device_id * device_list,
305 + const char * options,
306 + void (CL_CALLBACK * pfn_notify)(cl_program program, void * user_data),
307 + void * user_data
308 +) CL_API_SUFFIX__VERSION_1_0
309 +
310 +
311 +
312 + CL_API_ENTRY cl_int CL_API_CALL clUnloadCompiler(
313 + void
314 +) CL_API_SUFFIX__VERSION_1_0
315 +
316 +
317 +
318 + CL_API_ENTRY cl_int CL_API_CALL clGetProgramInfo(
319 + cl_program program,
320 + cl_program_info param_name,
321 + size_t param_value_size,
322 + void * param_value,
323 + size_t * param_value_size_ret
324 +) CL_API_SUFFIX__VERSION_1_0
325 +
326 +
327 +
328 + CL_API_ENTRY cl_int CL_API_CALL clGetProgramBuildInfo(
329 + cl_program program,
330 + cl_device_id device,
331 + cl_program_build_info param_name,
332 + size_t param_value_size,
333 + void * param_value,
334 + size_t * param_value_size_ret
335 +) CL_API_SUFFIX__VERSION_1_0
336 +
337 +
338 +
339 + CL_API_ENTRY cl_kernel CL_API_CALL clCreateKernel(
340 + cl_program program,
341 + const char * kernel_name,
342 + cl_int * errcode_ret
343 +) CL_API_SUFFIX__VERSION_1_0
344 +
345 +
346 +
347 + CL_API_ENTRY cl_int CL_API_CALL clCreateKernelsInProgram(
348 + cl_program program,
349 + cl_uint num_kernels,
350 + cl_kernel * kernels,
351 + cl_uint * num_kernels_ret
352 +) CL_API_SUFFIX__VERSION_1_0
353 +
354 +
355 +
356 + CL_API_ENTRY cl_int CL_API_CALL clRetainKernel(
357 + cl_kernel kernel
358 +) CL_API_SUFFIX__VERSION_1_0
359 +
360 +
361 +
362 + CL_API_ENTRY cl_int CL_API_CALL clReleaseKernel(
363 + cl_kernel kernel
364 +) CL_API_SUFFIX__VERSION_1_0
365 +
366 +
367 +
368 + CL_API_ENTRY cl_int CL_API_CALL clSetKernelArg(
```

```
369 + cl_kernel kernel,
370 + cl_uint arg_index,
371 + size_t arg_size,
372 + const void * arg_value
373 +) CL_API_SUFFIX__VERSION_1_0
374 +
375 +
376 +
377 + CL_API_ENTRY cl_int CL_API_CALL clGetKernelInfo(
378 + cl_kernel kernel,
379 + cl_kernel_info param_name,
380 + size_t param_value_size,
381 + void * param_value,
382 + size_t * param_value_size_ret
383 +) CL_API_SUFFIX__VERSION_1_0
384 +
385 +
386 +
387 + CL_API_ENTRY cl_int CL_API_CALL clGetKernelWorkGroupInfo(
388 + cl_kernel kernel,
389 + cl_device_id device,
390 + cl_kernel_work_group_info param_name,
391 + size_t param_value_size,
392 + void * param_value,
393 + size_t * param_value_size_ret
394 +) CL_API_SUFFIX__VERSION_1_0
395 +
396 +
397 +
398 + CL_API_ENTRY cl_int CL_API_CALL clWaitForEvents(
399 + cl_uint num_events,
400 + const cl_event * event_list
401 +) CL_API_SUFFIX__VERSION_1_0
402 +
403 +
404 +
405 + CL_API_ENTRY cl_int CL_API_CALL clGetEventInfo(
406 + cl_event event,
407 + cl_event_info param_name,
408 + size_t param_value_size,
409 + void * param_value,
410 + size_t * param_value_size_ret
411 +) CL_API_SUFFIX__VERSION_1_0
412 +
413 +
414 +
415 + CL_API_ENTRY cl_event CL_API_CALL clCreateUserEvent(
416 + cl_context context,
417 + cl_int * errcode_ret
418 +) CL_API_SUFFIX__VERSION_1_1
419 +
420 +
421 +
422 + CL_API_ENTRY cl_int CL_API_CALL clRetainEvent(
423 + cl_event event
424 +) CL_API_SUFFIX__VERSION_1_0
425 +
426 +
427 +
428 + CL_API_ENTRY cl_int CL_API_CALL clReleaseEvent(
429 + cl_event event
430 +) CL_API_SUFFIX__VERSION_1_0
431 +
432 +
433 +
434 + CL_API_ENTRY cl_int CL_API_CALL clSetUserEventStatus(
435 + cl_event event,
436 + cl_int execution_status
437 +) CL_API_SUFFIX__VERSION_1_1
```

```

438 + {
439 + }
440 +
441 + CL_API_ENTRY cl_int CL_API_CALL clSetEventCallback(
442 + cl_event event,
443 + cl_int command_exec_callback_type,
444 + void (CL_CALLBACK * pfn_notify)(cl_event, cl_int, void *),
445 + void * user_data
446 +) CL_API_SUFFIX__VERSION_1_1
447 + {
448 + }
449 +
450 + CL_API_ENTRY cl_int CL_API_CALL clGetEventProfilingInfo(
451 + cl_event event,
452 + cl_profiling_info param_name,
453 + size_t param_value_size,
454 + void * param_value,
455 + size_t * param_value_size_ret
456 +) CL_API_SUFFIX__VERSION_1_0
457 + {
458 + }
459 +
460 + CL_API_ENTRY cl_int CL_API_CALL clFlush(
461 + cl_command_queue command_queue
462 +) CL_API_SUFFIX__VERSION_1_0
463 + {
464 + }
465 +
466 + CL_API_ENTRY cl_int CL_API_CALL clFinish(
467 + cl_command_queue command_queue
468 +) CL_API_SUFFIX__VERSION_1_0
469 + {
470 + }
471 +
472 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueReadBuffer(
473 + cl_command_queue command_queue,
474 + cl_mem buffer,
475 + cl_bool blocking_read,
476 + size_t offset,
477 + size_t cb,
478 + void * ptr,
479 + cl_uint num_events_in_wait_list,
480 + const cl_event * event_wait_list,
481 + cl_event * event
482 +) CL_API_SUFFIX__VERSION_1_0
483 + {
484 + }
485 +
486 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueReadBufferRect(
487 + cl_command_queue command_queue,
488 + cl_mem buffer,
489 + cl_bool blocking_read,
490 + const size_t * buffer_offset,
491 + const size_t * host_offset,
492 + const size_t * region,
493 + size_t buffer_row_pitch,
494 + size_t buffer_slice_pitch,
495 + size_t host_row_pitch,
496 + size_t host_slice_pitch,
497 + void * ptr,
498 + cl_uint num_events_in_wait_list,
499 + const cl_event * event_wait_list,
500 + cl_event * event
501 +) CL_API_SUFFIX__VERSION_1_1
502 + {
503 + }
504 +
505 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueWriteBuffer(
506 + cl_command_queue command_queue,

```

```
507 + cl_mem buffer,
508 + cl_bool blocking_write,
509 + size_t offset,
510 + size_t cb,
511 + const void * ptr,
512 + cl_uint num_events_in_wait_list,
513 + const cl_event * event_wait_list,
514 + cl_event * event
515 +) CL_API_SUFFIX__VERSION_1_0
516 +
517 +
518 +
519 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueWriteBufferRect(
520 + cl_command_queue command_queue,
521 + cl_mem buffer,
522 + cl_bool blocking_read,
523 + const size_t * buffer_offset,
524 + const size_t * host_offset,
525 + const size_t * region,
526 + size_t buffer_row_pitch,
527 + size_t buffer_slice_pitch,
528 + size_t host_row_pitch,
529 + size_t host_slice_pitch,
530 + const void * ptr,
531 + cl_uint num_events_in_wait_list,
532 + const cl_event * event_wait_list,
533 + cl_event * event
534 +) CL_API_SUFFIX__VERSION_1_1
535 +
536 +
537 +
538 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueCopyBuffer(
539 + cl_command_queue command_queue,
540 + cl_mem src_buffer,
541 + cl_mem dst_buffer,
542 + size_t src_offset,
543 + size_t dst_offset,
544 + size_t cb,
545 + cl_uint num_events_in_wait_list,
546 + const cl_event * event_wait_list,
547 + cl_event * event
548 +) CL_API_SUFFIX__VERSION_1_0
549 +
550 +
551 +
552 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueCopyBufferRect(
553 + cl_command_queue command_queue,
554 + cl_mem src_buffer,
555 + cl_mem dst_buffer,
556 + const size_t * src_origin,
557 + const size_t * dst_origin,
558 + const size_t * region,
559 + size_t src_row_pitch,
560 + size_t src_slice_pitch,
561 + size_t dst_row_pitch,
562 + size_t dst_slice_pitch,
563 + cl_uint num_events_in_wait_list,
564 + const cl_event * event_wait_list,
565 + cl_event * event
566 +) CL_API_SUFFIX__VERSION_1_1
567 +
568 +
569 +
570 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueReadImage(
571 + cl_command_queue command_queue,
572 + cl_mem image,
573 + cl_bool blocking_read,
574 + const size_t * origin,
575 + const size_t * region,
```

```

576 + size_t row_pitch,
577 + size_t slice_pitch,
578 + void * ptr,
579 + cl_uint num_events_in_wait_list,
580 + const cl_event * event_wait_list,
581 + cl_event * event
582 +) CL_API_SUFFIX__VERSION_1_0
583 + {
584 + }
585 +
586 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueWriteImage(
587 + cl_command_queue command_queue,
588 + cl_mem image,
589 + cl_bool blocking_write,
590 + const size_t * origin,
591 + const size_t * region,
592 + size_t input_row_pitch,
593 + size_t input_slice_pitch,
594 + const void * ptr,
595 + cl_uint num_events_in_wait_list,
596 + const cl_event * event_wait_list,
597 + cl_event * event
598 +) CL_API_SUFFIX__VERSION_1_0
599 + {
600 + }
601 +
602 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueCopyImage(
603 + cl_command_queue command_queue,
604 + cl_mem src_image,
605 + cl_mem dst_image,
606 + const size_t * src_origin,
607 + const size_t * dst_origin,
608 + const size_t * region,
609 + cl_uint num_events_in_wait_list,
610 + const cl_event * event_wait_list,
611 + cl_event * event
612 +) CL_API_SUFFIX__VERSION_1_0
613 + {
614 + }
615 +
616 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueCopyImageToBuffer(
617 + cl_command_queue command_queue,
618 + cl_mem src_image,
619 + cl_mem dst_buffer,
620 + const size_t * src_origin,
621 + const size_t * region,
622 + size_t dst_offset,
623 + cl_uint num_events_in_wait_list,
624 + const cl_event * event_wait_list,
625 + cl_event * event
626 +) CL_API_SUFFIX__VERSION_1_0
627 + {
628 + }
629 +
630 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueCopyBufferToImage(
631 + cl_command_queue command_queue,
632 + cl_mem src_buffer,
633 + cl_mem dst_image,
634 + size_t src_offset,
635 + const size_t * dst_origin,
636 + const size_t * region,
637 + cl_uint num_events_in_wait_list,
638 + const cl_event * event_wait_list,
639 + cl_event * event
640 +) CL_API_SUFFIX__VERSION_1_0
641 + {
642 + }
643 +
644 + CL_API_ENTRY void * CL_API_CALL clEnqueueMapBuffer(

```

```

645 + cl_command_queue command_queue,
646 + cl_mem buffer,
647 + cl_bool blocking_map,
648 + cl_map_flags map_flags,
649 + size_t offset,
650 + size_t cb,
651 + cl_uint num_events_in_wait_list,
652 + const cl_event * event_wait_list,
653 + cl_event * event,
654 + cl_int * errcode_ret
655 +) CL_API_SUFFIX__VERSION_1_0
656 +
657 +
658 +
659 + CL_API_ENTRY void * CL_API_CALL clEnqueueMapImage(
660 + cl_command_queue command_queue,
661 + cl_mem image,
662 + cl_bool blocking_map,
663 + cl_map_flags map_flags,
664 + const size_t * origin,
665 + const size_t * region,
666 + size_t * image_row_pitch,
667 + size_t * image_slice_pitch,
668 + cl_uint num_events_in_wait_list,
669 + const cl_event * event_wait_list,
670 + cl_event * event,
671 + cl_int * errcode_ret
672 +) CL_API_SUFFIX__VERSION_1_0
673 +
674 +
675 +
676 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueUnmapMemObject(
677 + cl_command_queue command_queue,
678 + cl_mem memobj,
679 + void * mapped_ptr,
680 + cl_uint num_events_in_wait_list,
681 + const cl_event * event_wait_list,
682 + cl_event * event
683 +) CL_API_SUFFIX__VERSION_1_0
684 +
685 +
686 +
687 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueNDRangeKernel(
688 + cl_command_queue command_queue,
689 + cl_kernel kernel,
690 + cl_uint work_dim,
691 + const size_t * global_work_offset,
692 + const size_t * global_work_size,
693 + const size_t * local_work_size,
694 + cl_uint num_events_in_wait_list,
695 + const cl_event * event_wait_list,
696 + cl_event * event
697 +) CL_API_SUFFIX__VERSION_1_0
698 +
699 +
700 +
701 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueTask(
702 + cl_command_queue command_queue,
703 + cl_kernel kernel,
704 + cl_uint num_events_in_wait_list,
705 + const cl_event * event_wait_list,
706 + cl_event * event
707 +) CL_API_SUFFIX__VERSION_1_0
708 +
709 +
710 +
711 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueNativeKernel(
712 + cl_command_queue command_queue,
713 + void (* user_func) (void *),

```

```

714 + void * args,
715 + size_t cb_args,
716 + cl_uint num_mem_objects,
717 + const cl_mem * mem_list,
718 + const void ** args_mem_loc,
719 + cl_uint num_events_in_wait_list,
720 + const cl_event * event_wait_list,
721 + cl_event * event
722 +) CL_API_SUFFIX__VERSION_1_0
723 +
724 +
725 +
726 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueMarker(
727 + cl_command_queue command_queue,
728 + cl_event * event
729 +) CL_API_SUFFIX__VERSION_1_0
730 +
731 +
732 +
733 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueWaitForEvents(
734 + cl_command_queue command_queue,
735 + cl_uint num_events,
736 + const cl_event * event_list
737 +) CL_API_SUFFIX__VERSION_1_0
738 +
739 +
740 +
741 + CL_API_ENTRY cl_int CL_API_CALL clEnqueueBarrier(
742 + cl_command_queue command_queue
743 +) CL_API_SUFFIX__VERSION_1_0
744 +
745 +
746 +
747 + CL_API_ENTRY void * CL_API_CALL clGetExtensionFunctionAddress(
748 + const char * func_name
749 +) CL_API_SUFFIX__VERSION_1_0
750 +
751 +
752 +

```

▼ 23 platform.mk □

| ... | ... | @@ -0,0 +1,23 @@                                                                               |
|-----|-----|------------------------------------------------------------------------------------------------|
|     | 1   | + # This confidential and proprietary software may be used only as                             |
|     | 2   | + # authorised by a licensing agreement from ARM Limited                                       |
|     | 3   | + # (C) COPYRIGHT 2013 ARM Limited                                                             |
|     | 4   | + # ALL RIGHTS RESERVED                                                                        |
|     | 5   | + # The entire notice above must be reproduced on all authorised                               |
|     | 6   | + # copies and copies may only be made to the extent permitted                                 |
|     | 7   | + # by a licensing agreement from ARM Limited.                                                 |
|     | 8   | +                                                                                              |
|     | 9   | + CC:=arm-none-linux-gnueabi-g++                                                               |
|     | 10  | + AR=arm-none-linux-gnueabi-ar                                                                 |
|     | 11  | +                                                                                              |
|     | 12  | + # Test to see if the platform is Windows (it's Windows if the shell has the .exe extention). |
|     | 13  | + ifeq (.exe, \$(suffix \$(SHELL)))                                                            |
|     | 14  | + RM:=del /f                                                                                   |
|     | 15  | + CONCATENATE:=&                                                                               |
|     | 16  | + MKDIR:=mkdir                                                                                 |
|     | 17  | + CP:=copy                                                                                     |
|     | 18  | + else                                                                                         |
|     | 19  | + RM:=rm -f                                                                                    |
|     | 20  | + CONCATENATE:=;                                                                               |
|     | 21  | + MKDIR:=mkdir -p                                                                              |
|     | 22  | + CP:=cp                                                                                       |
|     | 23  | + endif ⊖                                                                                      |

▼ 248 samples/64\_bit\_integer/64\_bit\_integer.cpp □

```
... @@ -0,0 +1,248 @@
1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 + #include "common.h"
12 + #include "image.h"
13 +
14 + #include <CL/cl.h>
15 + #include <iostream>
16 + #include <fstream>
17 + #include <sstream>
18 + #include <cstddef>
19 + #include <cmath>
20 +
21 + using namespace std;
22 +
23 + /**
24 + * \brief Long data type (64-bit integer) OpenCL example.
25 + * \details An example to calculate, for an image:
26 + * - the sum of the squares of the pixels values
27 + * - sum of the pixels values.
28 + * Makes use of the long data type and 64-bit atomics.
29 + * The main calculation code is in an OpenCL kernel which is executed on a GPU device.
30 + * \return The exit code of the application, non-zero if a problem occurred.
31 + */
32 + int main(void)
33 + {
34 + string filename = "assets/input.bmp";
35 +
36 + cl_context context = 0;
37 + cl_command_queue commandQueue = 0;
38 + cl_program program = 0;
39 + cl_device_id device = 0;
40 + cl_kernel kernel = 0;
41 + const int numberOfMemoryObjects = 3;
42 + /* Index values for the memory objects. */
43 + const unsigned int imagePixelsIndex = 0;
44 + const unsigned int squareIndex = 1;
45 + const unsigned int sumIndex = 2;
46 + cl_mem memoryObjects[3] = {0, 0, 0};
47 + cl_int errorNumber;
48 +
49 +
50 + if (!createContext(&context))
51 + {
52 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
53 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
54 + return 1;
55 + }
56 +
57 + if (!createCommandQueue(context, &commandQueue, &device))
58 + {
59 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
60 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
61 + return 1;
62 + }
63 +
64 + /* Checking 64-bit integer atomics extension support. */
65 + if (!isExtensionSupported (device, "cl_khr_int64_base_atomics"))
66 + {
67 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
68 + }
```

```

69+ cerr << "cl_khr_int64_base_atomics is not supported on this device. " << __FILE__ << ":" << __LINE__ << endl;
70+ return 1;
71+
72+ if (!createProgram(context, device, "assets/64_bit_integer.cl", &program))
73+ {
74+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
75+ cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl;
76+ return 1;
77+ }
78+
79+ kernel = clCreateKernel(program, "long_vectors", &errorNumber);
80+ if (!checkSuccess(errorNumber))
81+ {
82+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
83+ cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
84+ return 1;
85+ }
86+
87+ /* Load 24-bits per pixel RGB data from a bitmap. */
88+ cl_int width;
89+ cl_int height;
90+ unsigned char* loadedRGBData = NULL;
91+ if (!loadFromBitmap(filename, &width, &height, &loadedRGBData))
92+ {
93+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
94+ cerr << "Failed loading bitmap. " << __FILE__ << ":" << __LINE__ << endl;
95+ return 1;
96+ }
97+
98+ /* Buffer for the image pixels. */
99+ size_t bufferSizeChar = width * height * sizeof(unsigned char);
100+ /* Buffer for the accumulators*/
101+ size_t bufferSizeLong = sizeof(cl_ulong);
102+
103+ /*
104+ * Ask the OpenCL implementation to allocate buffers for the data.
105+ * We ask the OpenCL implementation to allocate memory rather than allocating
106+ * it on the CPU to avoid having to copy the data later.
107+ * The read/write flags relate to accesses to the memory from within the kernel.
108+ */
109+ bool createMemoryObjectsSuccess = true;
110+
111+ memoryObjects[imagePixelsIndex] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSizeChar, NULL, &errorNumber);
112+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
113+
114+ memoryObjects[squareIndex] = clCreateBuffer(context, CL_MEM_READ_WRITE | CL_MEM_ALLOC_HOST_PTR, bufferSizeLong, NULL, &errorNumber);
115+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
116+
117+ memoryObjects[sumIndex] = clCreateBuffer(context, CL_MEM_READ_WRITE | CL_MEM_ALLOC_HOST_PTR, bufferSizeLong, NULL, &errorNumber);
118+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
119+
120+ if (!createMemoryObjectsSuccess)
121+ {
122+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
123+ cerr << "Failed to create OpenCL buffer. " << __FILE__ << ":" << __LINE__ << endl;
124+ return 1;
125+ }
126+
127+ /* Map the input memory objects to a host side pointers. */
128+ bool mapMemoryObjectsSuccess = true;
129+ cl_uchar* inputImagePixels = (cl_uchar*)clEnqueueMapBuffer(commandQueue, memoryObjects[imagePixelsIndex], CL_TRUE, CL_MAP_WRITE,
130+ mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
131+ cl_ulong* inputSquareOfPixels = (cl_ulong*)clEnqueueMapBuffer(commandQueue, memoryObjects[squareIndex], CL_TRUE, CL_MAP_WRITE,
132+ mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
133+ cl_ulong* inputSumOfPixels = (cl_ulong*)clEnqueueMapBuffer(commandQueue, memoryObjects[sumIndex], CL_TRUE, CL_MAP_WRITE, 0,
134+ mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
135+
136+ if (!mapMemoryObjectsSuccess)

```

```

137 + {
138 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
139 + cerr << "Mapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
140 + return 1;
141 + }
142 +
143 + /*
144 + * Convert 24-bits per pixel RGB into 8-bits per pixel luminance data
145 + * and fill the array for the kernel.
146 + */
147 + RGBToLuminance(loadedRGBData, inputImagePixels, width, height);
148 + delete [] loadedRGBData;
149 +
150 + /* Ensure the accumulators are initialized to zero. */
151 + *inputSquareOfPixels = 0;
152 + *inputSumOfPixels = 0;
153 +
154 + /* Unmap the memory so we can pass it to the kernel. */
155 + bool unmapMemoryObjectsSuccess = true;
156 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[imagePixelsIndex], inputImagePixels, 0, 0));
157 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[squareIndex], inputSquareOfPixels, 0, 0));
158 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[sumIndex], inputSumOfPixels, 0, 0));
159 +
160 + if (!unmapMemoryObjectsSuccess)
161 + {
162 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
163 + cerr << "Unmapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
164 + return 1;
165 + }
166 +
167 + /* Set the kernel arguments */
168 + bool setKernelArgumentsSuccess = true;
169 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, imagePixelsIndex, sizeof(cl_mem), &memoryObjects[imagePixelsIndex]));
170 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, squareIndex, sizeof(cl_mem), &memoryObjects[squareIndex]));
171 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, sumIndex, sizeof(cl_mem), &memoryObjects[sumIndex]));
172 +
173 + if (!setKernelArgumentsSuccess)
174 + {
175 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
176 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":"<< __LINE__ << endl;
177 + return 1;
178 + }
179 +
180 + /* An event to associate with the Kernel. Allows us to retrieve profiling information later. */
181 + cl_event event = 0;
182 +
183 + /*
184 + * Each instance of the kernel operates on a 8 * 1 portion of the image.
185 + * Therefore, the global work size must be 1.
186 + */
187 + size_t globalWorksize[1] = {(width * height) / 8};
188 + int work_dim = 1;
189 + /* Enqueue the kernel */
190 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, work_dim, NULL, globalWorksize, NULL, 0, NULL, &event)))
191 + {
192 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
193 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":"<< __LINE__ << endl;
194 + return 1;
195 + }
196 +
197 + /* Wait for kernel execution completion. */
198 + if (!checkSuccess(clFinish(commandQueue)))
199 + {
200 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
201 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":"<< __LINE__ << endl;
202 + return 1;
203 + }
204 +
205 + /* Print the profiling information for the event. */

```

```

206 + printProfilingInfo(event);
207 + /* Release the event object. */
208 + if (!checkSuccess(clReleaseEvent(event)))
209 + {
210 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
211 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
212 + return 1;
213 + }
214 +
215 + /* Get pointers to the output data. */
216 + mapMemoryObjectsSuccess = true;
217 + cl_ulong* squareOfPixels = (cl_ulong*)clEnqueueMapBuffer(commandQueue, memoryObjects[squareIndex], CL_TRUE, CL_MAP_READ, 0, bufferSize);
218 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
219 +
220 + cl_ulong* sumOfPixels = (cl_ulong*)clEnqueueMapBuffer(commandQueue, memoryObjects[sumIndex], CL_TRUE, CL_MAP_READ, 0, bufferSize);
221 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
222 + if (!mapMemoryObjectsSuccess)
223 + {
224 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
225 + cerr << "Failed to map buffer. " << __FILE__ << ":" << __LINE__ << endl;
226 + return 1;
227 + }
228 +
229 + /* [Output the results] */
230 + cout << "Square of the pixel values = " << *squareOfPixels << "\n";
231 + cout << "Sum of the pixel values = " << *sumOfPixels << endl;
232 + /* [Output the results] */
233 +
234 + /* Unmap the memory object as we are finished using them from the CPU side. */
235 + unmapMemoryObjectsSuccess = true;
236 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[squareIndex], squareOfPixels, 0, NULL));
237 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[sumIndex], sumOfPixels, 0, NULL));
238 +
239 + if (!unmapMemoryObjectsSuccess)
240 + {
241 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
242 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
243 + return 1;
244 + }
245 +
246 + /* Release OpenCL objects. */
247 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
248 + }

```

▼ 48 samples/64\_bit\_integer/Makefile

|     |     |                                                                    |
|-----|-----|--------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,48 @@                                                   |
| 1   |     | + # This confidential and proprietary software may be used only as |
| 2   |     | + # authorised by a licensing agreement from ARM Limited           |
| 3   |     | + # (C) COPYRIGHT 2012 ARM Limited                                 |
| 4   |     | + # ALL RIGHTS RESERVED                                            |
| 5   |     | + # The entire notice above must be reproduced on all authorised   |
| 6   |     | + # copies and copies may only be made to the extent permitted     |
| 7   |     | + # by a licensing agreement from ARM Limited.                     |
| 8   |     | +                                                                  |
| 9   |     | + ROOT:=.../..                                                     |
| 10  |     | +                                                                  |
| 11  |     | + include \$(ROOT)/platform.mk                                     |
| 12  |     | +                                                                  |
| 13  |     | + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I.        |
| 14  |     | +                                                                  |
| 15  |     | + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon      |
| 16  |     | +                                                                  |
| 17  |     | + SOURCES:=64_bit_integer.cpp                                      |
| 18  |     | + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h        |
| 19  |     | +                                                                  |
| 20  |     | + OBJECTS:=\$(SOURCES:.cpp=.o)                                     |
| 21  |     | +                                                                  |

```

22 + EXECUTABLE:=64_bit_integer
23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a

```

▽ 74 ████ samples/64\_bit\_integer/assets/64\_bit\_integer.cl □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | <pre> @@ -0,0 +1,74 @@ 1 + /* 2 + * This confidential and proprietary software may be used only as 3 + * authorised by a licensing agreement from ARM Limited 4 + * (C) COPYRIGHT 2013 ARM Limited 5 + * ALL RIGHTS RESERVED 6 + * The entire notice above must be reproduced on all authorised 7 + * copies and copies may only be made to the extent permitted 8 + * by a licensing agreement from ARM Limited. 9 + */ 10 + 11 + /** 12 + * \brief Long data type (64-bit integer) kernel. 13 + * \details This kernel loads 8 pixel values to calculate the square of each pixel value. Then it accumulates the 14 + * square of pixels and the sum of pixels values in the respective accumulators. 15 + * \param[in] imagePixels Input array with image pixels. 16 + * \param[in] squareOfPixels Sum of the square of pixel values. 17 + * \param[out] sumOfPixels Sum of pixel values. 18 + */ 19 + 20 + /* [Enable atom_add extension] */ 21 + #pragma OPENCL EXTENSION cl_khr_int64_base_atomics : enable 22 + /* [Enable atom_add extension] */ 23 + 24 + __kernel void long_vectors(__global uchar* restrict imagePixels, 25 +                             __global ulong* restrict squareOfPixels, 26 +                             __global ulong* restrict sumOfPixels) 27 + { 28 +     /* 29 +      * Set i to be the ID of the kernel instance. 30 +      * If the global work size (set by clEnqueueNDRangeKernel) is n, 31 +      * then n kernels will be run and i will be in the range [0, n - 1]. 32 +      */ 33 +     int i = get_global_id(0); 34 + 35 +     /* [Squares and sums]*/ 36 +     /* Load 8 pixels (char) and convert them to shorts to calculate the square.*/ 37 +     ushort8 pixelShort = convert_ushort8(vload8(i, imagePixels)); 38 +     /* Square of 255 &lt; 2 ^ 16. */ </pre> |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

```

39 + ushort8 newSquareShort = pixelShort * pixelShort;
40 +
41 + /*
42 + * Convert original pixel value and the square to longs to sum
43 + * all the vectors together and add the final values to the
44 + * respective accumulators.
45 + */
46 + ulong8 pixelLong = convert_ulong8(pixelShort);
47 + ulong8 newSquareLong = convert_ulong8(newSquareShort);
48 +
49 + /*
50 + * Use vector data type suffixes (.lo and .hi) to get smaller vector types,
51 + * until we obtain one single value.
52 + */
53 + ulong4 sumLongPixels1 = pixelLong.hi + pixelLong.lo;
54 + ulong2 sumLongPixels2 = sumLongPixels1.hi + sumLongPixels1.lo;
55 + ulong sumLongPixels3 = sumLongPixels2.hi + sumLongPixels2.lo;
56 +
57 + ulong4 sumLongSquares1 = newSquareLong.hi + newSquareLong.lo;
58 + ulong2 sumLongSquares2 = sumLongSquares1.hi + sumLongSquares1.lo;
59 + ulong sumLongSquares3 = sumLongSquares2.hi + sumLongSquares2.lo;
60 + /* [Squares and sums]*/
61 +
62 + /*
63 + * As all the kernels are accessing sumOfPixels
64 + * and squareOfPixels at the same time,
65 + * we use atom_add to ensure only one kernel
66 + * at a time can access the given variables.
67 + * This means that this operation is very expensive,
68 + * so we want to use it only when necessary.
69 + */
70 + /* [Atomic transaction] */
71 + atom_add(sumOfPixels, sumLongPixels3);
72 + atom_add(squareOfPixels, sumLongSquares3);
73 + /* [Atomic transaction] */
74 + }

```

▼ BIN ████ samples/64\_bit\_integer/assets/input.bmp □

Binary file not shown.

▼ 48 ████ samples/fir\_float/Makefile □

| ... | ... | @@ -0,0 +1,48 @@                                                   |
|-----|-----|--------------------------------------------------------------------|
| 1   |     | + # This confidential and proprietary software may be used only as |
| 2   |     | + # authorised by a licensing agreement from ARM Limited           |
| 3   |     | + # (C) COPYRIGHT 2013 ARM Limited                                 |
| 4   |     | + # ALL RIGHTS RESERVED                                            |
| 5   |     | + # The entire notice above must be reproduced on all authorised   |
| 6   |     | + # copies and copies may only be made to the extent permitted     |
| 7   |     | + # by a licensing agreement from ARM Limited.                     |
| 8   |     | +                                                                  |
| 9   |     | + ROOT:=.../..                                                     |
| 10  |     | +                                                                  |
| 11  |     | + include \$(ROOT)/platform.mk                                     |
| 12  |     | +                                                                  |
| 13  |     | + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I.        |
| 14  |     | +                                                                  |
| 15  |     | + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon      |
| 16  |     | +                                                                  |
| 17  |     | + SOURCES:=fir_float.cpp                                           |
| 18  |     | + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h        |
| 19  |     | +                                                                  |
| 20  |     | + OBJECTS:=\$(SOURCES:.cpp=.o)                                     |
| 21  |     | +                                                                  |
| 22  |     | + EXECUTABLE:=fir_float                                            |
| 23  |     | +                                                                  |
| 24  |     | + all: \$(EXECUTABLE)                                              |

```

25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a ⊖

```

▼ 109 ████ samples/fir\_float/assets/fir\_float.cl □

| ... | ... | @@ -0,0 +1,109 @@                                                                                                 |
|-----|-----|-------------------------------------------------------------------------------------------------------------------|
|     | 1   | + /*                                                                                                              |
|     | 2   | + * This confidential and proprietary software may be used only as                                                |
|     | 3   | + * authorised by a licensing agreement from ARM Limited                                                          |
|     | 4   | + * (C) COPYRIGHT 2013 ARM Limited                                                                                |
|     | 5   | + * ALL RIGHTS RESERVED                                                                                           |
|     | 6   | + * The entire notice above must be reproduced on all authorised                                                  |
|     | 7   | + * copies and copies may only be made to the extent permitted                                                    |
|     | 8   | + * by a licensing agreement from ARM Limited.                                                                    |
|     | 9   | + */                                                                                                              |
|     | 10  | +                                                                                                                 |
|     | 11  | + /* FW_SCALE = 1 / 256. */                                                                                       |
|     | 12  | + #define FW_SCALE 0.00390625f                                                                                    |
|     | 13  | + #define FW_UL (30.0f * FW_SCALE)                                                                                |
|     | 14  | + #define FW_UM (5.0f * FW_SCALE)                                                                                 |
|     | 15  | + #define FW_UR (6.0f * FW_SCALE)                                                                                 |
|     | 16  | + #define FW_CL (19.0f * FW_SCALE)                                                                                |
|     | 17  | + #define FW_CM (30.0f * FW_SCALE)                                                                                |
|     | 18  | + #define FW_CR (9.0f * FW_SCALE)                                                                                 |
|     | 19  | + #define FW_BL (15.0f * FW_SCALE)                                                                                |
|     | 20  | + #define FW_BM (5.0f * FW_SCALE)                                                                                 |
|     | 21  | + #define FW_BR (40.0f * FW_SCALE)                                                                                |
|     | 22  | +                                                                                                                 |
|     | 23  | + /**                                                                                                             |
|     | 24  | + * \brief FIR filter kernel function.                                                                            |
|     | 25  | + * \param[in] input Input image data in row-major format.                                                        |
|     | 26  | + * \param[in] width Width of the image passed in as input.                                                       |
|     | 27  | + * \param[out] output Output image after FIR has been applied. Resulting image depends on the coefficients used. |
|     | 28  | + */                                                                                                              |
|     | 29  | + __kernel void fir_float(__global const float* restrict input,                                                   |
|     | 30  | +                   __global float* restrict output,                                                              |
|     | 31  | +                   const int width)                                                                              |
|     | 32  | + {                                                                                                               |
|     | 33  | +     /* [Kernel size] */                                                                                         |
|     | 34  | +     /*                                                                                                          |
|     | 35  | +         * Each kernel calculates 4 output pixels in the same row (hence the '* 4').                             |
|     | 36  | +         * column is in the range [0, width] in steps of 4.                                                      |
|     | 37  | +         * row is in the range [0, height].                                                                      |
|     | 38  | +     */                                                                                                          |
|     | 39  | +     const int column = get_global_id(0) * 4;                                                                    |
|     | 40  | +     const int row = get_global_id(1);                                                                           |
|     | 41  |                                                                                                                   |

```

42 + /* Offset calculates the position in the linear data for the row and the column. */
43 + const int offset = row * width + column;
44 +
45 + /* Accumulator array of 4 floats. */
46 + float4 accumulator = (float4)0.0f;
47 +
48 + /*
49 + * As mentioned before the kernel works on a 6x3 window.
50 + * e.g. If the data in the input array is as follows:
51 + * [0 1 2 3 4 5]
52 + * [6 7 8 9 10 11]
53 + * [12 13 14 15 16 17]
54 + *
55 + * We load overlapping data from the first row into 3 vectors:
56 + *
57 + * data0 = [0 1 2 3]
58 + * data1 = [1 2 3 4]
59 + * data2 = [2 3 4 5]
60 + *
61 + * Which means the first result of accumulator will be equal to:
62 + * accumulator.s0 = data0.s0 * FW_UL + data1.s0 * FW_UM + data2.s0 * FW_UR
63 + *
64 + * The same is done for the second and third row, which makes acc.s0 the sum of 0, 1, 2, 6, 7, 8, 12, 13 and 14
65 + * multiplied by the corresponding coefficients.
66 + * If this indices are compared with the input array, we can see the 3x3 window of the FIR filter.
67 + */
68 +
69 + /* [Load first row] */
70 + /*
71 + * Access the first row in the 6x3 window to apply FW_U coefficients.
72 + * data1 can be constructed from the other vectors without doing an additional load.
73 + */
74 + float4 data0 = vload4(0, input + offset);
75 + float4 data2 = vload4(0, input + offset + 2);
76 + float4 data1 = (float4)(data0.s12, data2.s12);
77 + /* [Load first row] */
78 +
79 + /* [Filter first row] */
80 + accumulator += data0 * FW_UL;
81 + accumulator += data1 * FW_UM;
82 + accumulator += data2 * FW_UR;
83 + /* [Filter first row] */
84 +
85 + /* [Load and filter second and third row] */
86 + /* Access the second row in the 6x3 window and repeat the process, but with FW_C coefficients. */
87 + data0 = vload4(0, input + offset + width);
88 + data2 = vload4(0, input + offset + width + 2);
89 + data1 = (float4)(data0.s12, data2.s12);
90 +
91 + accumulator += data0 * FW_CL;
92 + accumulator += data1 * FW_CM;
93 + accumulator += data2 * FW_CR;
94 +
95 + /* Access the third row in the 6x3 window and repeat the process, but with FW_B coefficients. */
96 + data0 = vload4(0, input + offset + width * 2);
97 + data2 = vload4(0, input + offset + width * 2 + 2);
98 + data1 = (float4)(data0.s12, data2.s12);
99 +
100 + accumulator += data0 * FW_BL;
101 + accumulator += data1 * FW_BM;
102 + accumulator += data2 * FW_BR;
103 + /* [Load and filter second and third row] */
104 +
105 + /* [Store] */
106 + /* Store the accumulator. */
107 + vstore4(accumulator, 0, output + offset);
108 + /* [Store] */
109 + } -

```

✓ BIN samples/fir\_float/assets/input.bmp

Binary file not shown.

✓ 215 samples/fir\_float/fir\_float.cpp

```
... ... @@ -0,0 +1,215 @@
1+ /*
2+ * This confidential and proprietary software may be used only as
3+ * authorised by a licensing agreement from ARM Limited
4+ * (C) COPYRIGHT 2013 ARM Limited
5+ * ALL RIGHTS RESERVED
6+ * The entire notice above must be reproduced on all authorised
7+ * copies and copies may only be made to the extent permitted
8+ * by a licensing agreement from ARM Limited.
9+ */
10+
11+ #include "common.h"
12+ #include "image.h"
13+
14+ #include <CL/cl.h>
15+ #include <iostream>
16+ #include <fstream>
17+ #include <sstream>
18+ #include <cstddef>
19+ #include <cmath>
20+
21+ using namespace std;
22+
23+ /**
24+ * \brief Simple FIR filter OpenCL sample.
25+ * \details A sample which loads an image from assets/input.bmp and then passes it to the GPU.
26+ * An OpenCL kernel applies FIR filtering on the data and
27+ * the output image data is stored in output.bmp on the target.
28+ * \return The exit code of the application, non-zero if a problem occurred.
29+ */
30+ int main(void)
31+ {
32+ /* Name of the bitmap to load and run the FIR filter on. */
33+ string filename = "assets/input.bmp";
34+
35+ cl_context context = 0;
36+ cl_command_queue commandQueue = 0;
37+ cl_program program = 0;
38+ cl_device_id device = 0;
39+ cl_kernel kernel = 0;
40+ const unsigned int numberOfMemoryObjects = 2;
41+ cl_mem memoryObjects[numberOfMemoryObjects] = {0, 0};
42+ cl_int errorNumber;
43+
44+ if (!createContext(&context))
45+ {
46+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
47+ cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
48+ return 1;
49+ }
50+
51+ if (!createCommandQueue(context, &commandQueue, &device))
52+ {
53+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
54+ cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
55+ return 1;
56+ }
57+
58+ if (!createProgram(context, device, "assets/fir_float.cl", &program))
59+ {
60+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
61+ cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl;
```

```

62 + return 1;
63 +
64 +
65 + kernel = clCreateKernel(program, "fir_float", &errorNumber);
66 + if (!checkSuccess(errorNumber))
67 + {
68 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
69 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
70 + return 1;
71 + }
72 +
73 + /* Load 24-bits per pixel RGB data from a bitmap. */
74 + cl_int width;
75 + cl_int height;
76 + unsigned char* loadedRGBData = NULL;
77 + if (!loadFromBitmap(filename, &width, &height, &loadedRGBData))
78 + {
79 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
80 + cerr << "Failed loading bitmap. " << __FILE__ << ":" << __LINE__ << endl;
81 + return 1;
82 + }
83 +
84 + /* Convert 24-bits per pixel RGB into 8-bits per pixel luminance data. */
85 + unsigned char* inputLuminance = new unsigned char [width * height];
86 + RGBToLuminance(loadedRGBData, inputLuminance, width, height);
87 + delete [] loadedRGBData;
88 +
89 + /* All buffers are the size of the image data. */
90 + size_t bufferSize = width * height * sizeof(float);
91 +
92 + /* Create one input buffer for the original image data, and one output buffer for the output image data. */
93 + bool createMemoryObjectsSuccess = true;
94 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
95 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
96 + memoryObjects[1] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
97 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
98 + if (!createMemoryObjectsSuccess)
99 + {
100 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
101 + cerr << "Failed to create OpenCL buffers. " << __FILE__ << ":" << __LINE__ << endl;
102 + return 1;
103 + }
104 +
105 + /* Map the input memory object to a host side pointer. */
106 + cl_float* inputImageData = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize,
107 + if (!checkSuccess(errorNumber))
108 + {
109 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
110 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
111 + return 1;
112 + }
113 +
114 + /* Converting luminance data into float. A real world application would use real floating point data.*/
115 + for(int i = 0; i < width * height; i++)
116 + {
117 + inputImageData[i] = (float)inputLuminance[i] / 255.0f;
118 + }
119 +
120 + delete [] inputLuminance;
121 +
122 + /* Unmap the memory so we can pass it to the kernel. */
123 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], inputImageData, 0, NULL, NULL)))
124 + {
125 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
126 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
127 + return 1;
128 + }
129 +
130 + /* Setup the kernel arguments. */

```

```

131 + bool setKernelArgumentsSuccess = true;
132 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
133 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_mem), &memoryObjects[1]));
134 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_int), &width));
135 + if (!setKernelArgumentsSuccess)
136 + {
137 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
138 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":" << __LINE__ << endl;
139 + return 1;
140 + }
141 +
142 + /* An event to associate with the kernel. Allows us to retrieve profiling information later. */
143 + cl_event event = 0;
144 +
145 + /* [Kernel size] */
146 + /*
147 + * Each instance of the kernel operates on a 4 * 1 portion of the image.
148 + * Therefore, the global work size must be width / 4 by height / 1 work items.
149 + */
150 + size_t globalWorksize[2] = {width / 4, height / 1};
151 + /* [Kernel size] */
152 +
153 + /* Enqueue the kernel */
154 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 2, NULL, globalWorksize, NULL, 0, NULL, &event)))
155 + {
156 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
157 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
158 + return 1;
159 + }
160 +
161 + /* Wait for kernel execution completion. */
162 + if (!checkSuccess(clFinish(commandQueue)))
163 + {
164 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
165 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
166 + return 1;
167 + }
168 +
169 + /* Print the profiling information for the event. */
170 + printProfilingInfo(event);
171 + /* Release the event object. */
172 + if (!checkSuccess(clReleaseEvent(event)))
173 + {
174 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
175 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
176 + return 1;
177 + }
178 +
179 + /* Map the output memory to a host side pointer. */
180 + cl_float* output = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
181 + if (!checkSuccess(errorNumber))
182 + {
183 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
184 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
185 + return 1;
186 + }
187 +
188 + /* Convert the float output to unsigned char for saving to bitmap. */
189 + unsigned char *outputData= new unsigned char[width * height];
190 + for(int i = 0; i< width * height; i++)
191 + {
192 + outputData[i] = (unsigned char)(output[i] * 255.0f);
193 + }
194 +
195 + /* Unmap the output. */
196 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], output, 0, NULL, NULL)))
197 + {
198 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
199 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;

```

```

200 + return 1;
201 + }
202 +
203 + /* Release OpenCL objects. */
204 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
205 +
206 + /* Convert the output luminance array to RGB and save it out to a file. */
207 + unsigned char *rgbOut = new unsigned char[width * height * 3];
208 + luminanceToRGB(outputData, rgbOut, width, height);
209 + delete [] outputData;
210 +
211 + saveToBitmap("output.bmp", width, height, rgbOut);
212 + delete [] rgbOut;
213 +
214 + return 0;
215 +

```

▼ 47 samples/hello\_world\_c/Makefile □

```

... ...
@@ -0,0 +1,47 @@
1 + # This confidential and proprietary software may be used only as
2 + # authorised by a licensing agreement from ARM Limited
3 + # (C) COPYRIGHT 2013 ARM Limited
4 + # ALL RIGHTS RESERVED
5 + # The entire notice above must be reproduced on all authorised
6 + # copies and copies may only be made to the extent permitted
7 + # by a licensing agreement from ARM Limited.
8 +
9 + ROOT:=../../
10 +
11 + include $(ROOT)/platform.mk
12 +
13 + CFLAGS:=-c -Wall -I$(ROOT)/include -I$(ROOT)/common -I.
14 +
15 + LDFLAGS:=-L$(ROOT)/lib -L$(ROOT)/common -lOpenCL -lCommon
16 +
17 + SOURCES:=hello_world_c.cpp
18 + HEADERS:=$(ROOT)/common/common.h $(ROOT)/common/image.h
19 +
20 + OBJECTS:=$(SOURCES:.cpp=.o)
21 +
22 + EXECUTABLE:=hello_world_c
23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 +
38 + .PHONY: clean libOpenCL libCommon
39 +
40 + clean:
41 + $(RM) $(OBJECTS) $(EXECUTABLE)
42 +
43 + libOpenCL:
44 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
45 +
46 + libCommon:
47 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a

```

▽ 58 samples/hello\_world\_c/hello\_world\_c.cpp

```
... ... @@ -0,0 +1,58 @@
1+ /*
2+ * This confidential and proprietary software may be used only as
3+ * authorised by a licensing agreement from ARM Limited
4+ * (C) COPYRIGHT 2013 ARM Limited
5+ * ALL RIGHTS RESERVED
6+ * The entire notice above must be reproduced on all authorised
7+ * copies and copies may only be made to the extent permitted
8+ * by a licensing agreement from ARM Limited.
9+ */
10+
11+ #include <iostream>
12+
13+ using namespace std;
14+
15+ /**
16+ * \brief Basic integer array addition implemented in C/C++.
17+ * \details A sample which shows how to add two integer arrays and store the result in a third array.
18+ * No OpenCL code is used in this sample, only standard C/C++. The code executes only on the CPU.
19+ * \return The exit code of the application, non-zero if a problem occurred.
20+ */
21+ int main(void)
22+ {
23+ /* [Setup memory] */
24+ /* Number of elements in the arrays of input and output data. */
25+ int arraySize = 1000000;
26+
27+ /* Arrays to hold the input and output data. */
28+ int* inputA = new int[arraySize];
29+ int* inputB = new int[arraySize];
30+ int* output = new int[arraySize];
31+ /* [Setup memory] */
32+
33+ /* Fill the arrays with data. */
34+ for (int i = 0; i < arraySize; i++)
35+ {
36+ inputA[i] = i;
37+ inputB[i] = i;
38+ }
39+
40+ /* [C/C++ Implementation] */
41+ for (int i = 0; i < arraySize; i++)
42+ {
43+ output[i] = inputA[i] + inputB[i];
44+ }
45+ /* [C/C++ Implementation] */
46+
47+ /* Uncomment the following block to print results. */
48+ /*
49+ for (int i = 0; i < arraySize; i++)
50+ {
51+ cout << "i = " << i << ", output = " << output[i] << "\n";
52+ }
53+ */
54+
55+ delete[] inputA;
56+ delete[] inputB;
57+ delete[] output;
58+ }
```

▽ 48 samples/hello\_world\_opencl/Makefile

```
... ... @@ -0,0 +1,48 @@
1+ # This confidential and proprietary software may be used only as
2+ # authorised by a licensing agreement from ARM Limited
3+ # (C) COPYRIGHT 2013 ARM Limited
```

```

4 + # ALL RIGHTS RESERVED
5 + # The entire notice above must be reproduced on all authorised
6 + # copies and copies may only be made to the extent permitted
7 + # by a licensing agreement from ARM Limited.
8 +
9 + ROOT:=../../
10 +
11 + include $(ROOT)/platform.mk
12 +
13 + CFLAGS:=-c -Wall -I$(ROOT)/include -I$(ROOT)/common -I.
14 +
15 + LDFLAGS:=-L$(ROOT)/lib -L$(ROOT)/common -lOpenCL -lCommon
16 +
17 + SOURCES:=hello_world_opencl.cpp
18 + HEADERS:=$(ROOT)/common/common.h $(ROOT)/common/image.h
19 +
20 + OBJECTS:=$(SOURCES:.cpp=.o)
21 +
22 + EXECUTABLE:=hello_world_opencl
23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a

```

▼ 32 samples/hello\_world\_opencl/assets/hello\_world\_opencl.cl □

| ... | ... | @@ -0,0 +1,32 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |     | <pre> 1 + /* 2 + * This confidential and proprietary software may be used only as 3 + * authorised by a licensing agreement from ARM Limited 4 + * (C) COPYRIGHT 2013 ARM Limited 5 + *      ALL RIGHTS RESERVED 6 + * The entire notice above must be reproduced on all authorised 7 + * copies and copies may only be made to the extent permitted 8 + * by a licensing agreement from ARM Limited. 9 + */ 10 + 11 + /** 12 + * \brief Hello World kernel function. 13 + * \param[in] inputA First input array. 14 + * \param[in] inputB Second input array. 15 + * \param[out] output Output array. 16 + */ 17 + /* [OpenCL Implementation] */ 18 + __kernel void hello_world_opencl(__global int* restrict inputA, 19 +                                 __global int* restrict inputB, 20 +                                 __global int* restrict output) </pre> |

```

21 + {
22 + /*
23 + * Set i to be the ID of the kernel instance.
24 + * If the global work size (set by clEnqueueNDRangeKernel) is n,
25 + * then n kernels will be run and i will be in the range [0, n - 1].
26 + */
27 + int i = get_global_id(0);
28 +
29 + /* Use i as an index into the three arrays. */
30 + output[i] = inputA[i] + inputB[i];
31 +
32 + /* [OpenCL Implementation] */

```

▼ 224 samples/hello\_world\_opencl/hello\_world\_opencl.cpp □

| ... | ... | @@ -0,0 +1,224 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | 1   | + /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | 2   | + * This confidential and proprietary software may be used only as                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|     | 3   | + * authorised by a licensing agreement from ARM Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|     | 4   | + * (C) COPYRIGHT 2013 ARM Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|     | 5   | + * ALL RIGHTS RESERVED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|     | 6   | + * The entire notice above must be reproduced on all authorised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     | 7   | + * copies and copies may only be made to the extent permitted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     | 8   | + * by a licensing agreement from ARM Limited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     | 9   | + */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | 10  | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | 11  | + #include "common.h"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     | 12  | + #include "image.h"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | 13  | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | 14  | + #include <CL/cl.h>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | 15  | + #include <iostream>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     | 16  | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | 17  | + using namespace std;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|     | 18  | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | 19  | + /** 20 + * \brief Basic integer array addition implemented in OpenCL. 21 + * \details A sample which shows how to add two integer arrays and store the result in a third array. 22 + *          The main calculation code is in an OpenCL kernel which is executed on a GPU device. 23 + * \return The exit code of the application, non-zero if a problem occurred. 24 + */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     | 25  | + int main(void)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     | 26  | + { 27 +     cl_context context = 0; 28 +     cl_command_queue commandQueue = 0; 29 +     cl_program program = 0; 30 +     cl_device_id device = 0; 31 +     cl_kernel kernel = 0; 32 +     int numberOfWorkObjects = 3; 33 +     cl_mem memoryObjects[3] = {0, 0, 0}; 34 +     cl_int errorNumber; 35 + 36 +     if (!createContext(&context)) 37 +     { 38 +         cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects); 39 +         cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl; 40 +         return 1; 41 +     } 42 + 43 +     if (!createCommandQueue(context, &commandQueue, &device)) 44 +     { 45 +         cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects); 46 +         cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl; 47 +         return 1; 48 +     } 49 + 50 +     if (!createProgram(context, device, "assets/hello_world_opencl.cl", &program)) 51 +     { 52 +         cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects); 53 +         cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl; |

```

54 + return 1;
55 +
56 +
57 + kernel = clCreateKernel(program, "hello_world_opencl", &errorNumber);
58 + if (!checkSuccess(errorNumber))
59 + {
60 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
61 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
62 + return 1;
63 + }
64 +
65 + /* [Setup memory] */
66 + /* Number of elements in the arrays of input and output data. */
67 + cl_int arraySize = 1000000;
68 +
69 + /* The buffers are the size of the arrays. */
70 + size_t bufferSize = arraySize * sizeof(cl_int);
71 +
72 + /*
73 + * Ask the OpenCL implementation to allocate buffers for the data.
74 + * We ask the OpenCL implementation to allocate memory rather than allocating
75 + * it on the CPU to avoid having to copy the data later.
76 + * The read/write flags relate to accesses to the memory from within the kernel.
77 + */
78 + bool createMemoryObjectsSuccess = true;
79 +
80 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
81 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
82 +
83 + memoryObjects[1] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
84 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
85 +
86 + memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
87 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
88 +
89 + if (!createMemoryObjectsSuccess)
90 + {
91 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
92 + cerr << "Failed to create OpenCL buffer. " << __FILE__ << ":" << __LINE__ << endl;
93 + return 1;
94 + }
95 + /* [Setup memory] */
96 +
97 + /* [Map the buffers to pointers] */
98 + /* Map the memory buffers created by the OpenCL implementation to pointers so we can access them on the CPU. */
99 + bool mapMemoryObjectsSuccess = true;
100 +
101 + cl_int* inputA = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, NULL);
102 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
103 +
104 + cl_int* inputB = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, NULL);
105 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
106 +
107 + if (!mapMemoryObjectsSuccess)
108 + {
109 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
110 + cerr << "Failed to map buffer. " << __FILE__ << ":" << __LINE__ << endl;
111 + return 1;
112 + }
113 + /* [Map the buffers to pointers] */
114 +
115 + /* [Initialize the input data] */
116 + for (int i = 0; i < arraySize; i++)
117 + {
118 + inputA[i] = i;
119 + inputB[i] = i;
120 + }
121 + /* [Initialize the input data] */
122 +

```

```

123 + /* [Un-map the buffers] */
124 +
125 + /*
126 + * Unmap the memory objects as we have finished using them from the CPU side.
127 + * We unmap the memory because otherwise:
128 + * - reads and writes to that memory from inside a kernel on the OpenCL side are undefined.
129 + * - the OpenCL implementation cannot free the memory when it is finished.
130 + */
131 +
132 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], inputA, 0, NULL, NULL)))
133 +
134 + {
135 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
136 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
137 + return 1;
138 +
139 + }
140 +
141 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], inputB, 0, NULL, NULL)))
142 +
143 + {
144 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
145 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
146 + return 1;
147 +
148 + }
149 +
150 + /* [Un-map the buffers] */
151 +
152 + /* [Set the kernel arguments] */
153 + bool setKernelArgumentsSuccess = true;
154 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
155 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_mem), &memoryObjects[1]));
156 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_mem), &memoryObjects[2]));
157 +
158 + if (!setKernelArgumentsSuccess)
159 +
160 + {
161 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
162 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":" << __LINE__ << endl;
163 + return 1;
164 +
165 + }
166 +
167 + /* [Set the kernel arguments] */
168 +
169 + /* An event to associate with the Kernel. Allows us to retrieve profiling information later. */
170 + cl_event event = 0;
171 +
172 + /* [Global work size] */
173 +
174 + /*
175 + * Each instance of our OpenCL kernel operates on a single element of each array so the number of
176 + * instances needed is the number of elements in the array.
177 + */
178 +
179 + size_t globalWorksize[1] = {arraySize};
180 +
181 + /* Enqueue the kernel */
182 +
183 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 1, NULL, globalWorksize, 0, 0, &event)))
184 +
185 + {
186 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
187 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
188 + return 1;
189 +
190 + }
191 +
192 + /* Wait for kernel execution completion. */
193 +
194 + if (!checkSuccess(clFinish(commandQueue)))
195 +
196 + {
197 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
198 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
199 + return 1;
200 +
201 + }
202 +
203 + /* Print the profiling information for the event. */
204 + printProfilingInfo(event);
205 +
206 + /* Release the event object. */
207 +
208 + if (!checkSuccess(clReleaseEvent(event)))
209 +
210 + {
211 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
212 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
213 +
214 + }

```

```

192 + return 1;
193 +
194 +
195 + /* Get a pointer to the output data. */
196 + cl_int* output = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL, NULL);
197 + if (!checkSuccess(errorNumber))
198 + {
199 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
200 + cerr << "Failed to map buffer. " << __FILE__ << ":" << __LINE__ << endl;
201 + return 1;
202 + }
203 +
204 + /* [Output the results] */
205 + /* Uncomment the following block to print results. */
206 + /*
207 + for (int i = 0; i < arraySize; i++)
208 + {
209 + cout << "i = " << i << ", output = " << output[i] << "\n";
210 + }
211 + */
212 + /* [Output the results] */
213 +
214 + /* Unmap the memory object as we are finished using them from the CPU side. */
215 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], output, 0, NULL, NULL)))
216 + {
217 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
218 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
219 + return 1;
220 + }
221 +
222 + /* Release OpenCL objects. */
223 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
224 + }

```

48 samples/hello\_world\_vector/Makefile

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | <pre> @@ -0,0 +1,48 @@ + + # This confidential and proprietary software may be used only as + # authorised by a licensing agreement from ARM Limited + # (C) COPYRIGHT 2013 ARM Limited + # ALL RIGHTS RESERVED + # The entire notice above must be reproduced on all authorised + # copies and copies may only be made to the extent permitted + # by a licensing agreement from ARM Limited. + + ROOT:=../../ + + include \$(ROOT)/platform.mk + + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I. + + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon + + SOURCES:=hello_world_vector.cpp + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h + + OBJECTS:=\$(SOURCES:.cpp=.o) + + EXECUTABLE:=hello_world_vector + + all: \$(EXECUTABLE) + + \$(EXECUTABLE): \$(OBJECTS) libOpenCL libCommon +         \$(CC) \$(OBJECTS) -o \$@ \$(LDFLAGS) + +.cpp.o: +         \$(CC) \$(CFLAGS) \$&lt; -o \$@ + </pre> |
|-----|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

```

32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a

```

▽ 44 samples/hello\_world\_vector/assets/hello\_world\_vector.cl □

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,44 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|     |     | <pre> 1 + /* 2 + * This confidential and proprietary software may be used only as 3 + * authorised by a licensing agreement from ARM Limited 4 + * (C) COPYRIGHT 2013 ARM Limited 5 + * ALL RIGHTS RESERVED 6 + * The entire notice above must be reproduced on all authorised 7 + * copies and copies may only be made to the extent permitted 8 + * by a licensing agreement from ARM Limited. 9 + */ 10 + 11 + /** 12 + * \brief Vectorized Hello World kernel function. 13 + * \param[in] inputA First input array. 14 + * \param[in] inputB Second input array. 15 + * \param[out] output Output array. 16 + */ 17 + /* [Vector Implementation] */ 18 + __kernel void hello_world_vector(__global int* restrict inputA, 19 +                                 __global int* restrict inputB, 20 +                                 __global int* restrict output) 21 + { 22 +     /* 23 +      * We have reduced the global work size (n) by a factor of 4 compared to the hello_world_opencl sample. 24 +      * Therefore, i will now be in the range [0, (n / 4) - 1]. 25 +     */ 26 +     int i = get_global_id(0); 27 + 28 +     /* 29 +      * Load 4 integers into 'a'. 30 +      * The offset calculation is implicit from the size of the vector load. 31 +      * For vloadN(i, p), the address of the first data loaded would be p + i * N. 32 +      * Load from the data from the address: inputA + i * 4. 33 +     */ 34 +     int4 a = vload4(i, inputA); 35 +     /* Do the same for inputB */ 36 +     int4 b = vload4(i, inputB); 37 + 38 +     /* 39 +      * Do the vector addition. 40 +      * Store the result at the address: output + i * 4. 41 +     */ 42 +     vstore4(a + b, i, output); 43 + } 44 +/* [Vector Implementation] */ </pre> |

▽ 232 samples/hello\_world\_vector/hello\_world\_vector.cpp □

|     |     |                   |
|-----|-----|-------------------|
| ... | ... | @@ -0,0 +1,232 @@ |
|-----|-----|-------------------|

```

1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 + #include "common.h"
12 + #include "image.h"
13 +
14 + #include <CL/cl.h>
15 + #include <iostream>
16 +
17 + using namespace std;
18 +
19 + /**
20 + * \brief Basic integer array addition implemented in OpenCL.
21 + * \details A sample which shows how to add two integer arrays and store the result in a third array.
22 + * The main calculation code is in an OpenCL kernel which is executed on a GPU device.
23 + * The OpenCL kernel makes use of vectors for improved performance.
24 + * \return The exit code of the application, non-zero if a problem occurred.
25 + */
26 + int main(void)
27 + {
28 + cl_context context = 0;
29 + cl_command_queue commandQueue = 0;
30 + cl_program program = 0;
31 + cl_device_id device = 0;
32 + cl_kernel kernel = 0;
33 + int numberOfWorkObjects = 3;
34 + cl_mem memoryObjects[3] = {0, 0, 0};
35 + cl_int errorNumber;
36 +
37 + if (!createContext(&context))
38 + {
39 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects);
40 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
41 + return 1;
42 + }
43 +
44 + if (!createCommandQueue(context, &commandQueue, &device))
45 + {
46 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects);
47 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
48 + return 1;
49 + }
50 +
51 + if (!createProgram(context, device, "assets/hello_world_vector.cl", &program))
52 + {
53 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects);
54 + cerr << "Failed to create OpenCL program. " << __FILE__ << ":" << __LINE__ << endl;
55 + return 1;
56 + }
57 +
58 + kernel = clCreateKernel(program, "hello_world_vector", &errorNumber);
59 + if (!checkSuccess(errorNumber))
60 + {
61 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfWorkObjects);
62 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
63 + return 1;
64 + }
65 +
66 + /* [Query preferred vector width] */
67 + /*
68 + * Query the device to find out it's preferred integer vector width.
69 + * Although we are only printing the value here, it can be used to select between

```

```

70 + * different versions of a kernel.
71 + */
72 + cl_uint integerVectorWidth;
73 + clGetDeviceInfo(device, CL_DEVICE_PREFERRED_VECTOR_WIDTH_INT, sizeof(cl_uint), &integerVectorWidth, NULL);
74 + cout << "Preferred vector width for integers: " << integerVectorWidth << endl;
75 + /* [Query preferred vector width] */
76 +
77 + /* Number of elements in the arrays of input and output data. */
78 + cl_int arraySize = 1000000;
79 +
80 + /* The buffers are the size of the arrays. */
81 + size_t bufferSize = arraySize * sizeof(cl_int);
82 +
83 + /*
84 + * Ask the OpenCL implementation to allocate buffers for the data.
85 + * We ask the OpenCL implementation to allocate memory rather than allocating
86 + * it on the CPU to avoid having to copy the data later.
87 + * The read/write flags relate to accesses to the memory from within the kernel.
88 + */
89 + bool createMemoryObjectsSuccess = true;
90 + /* [Create buffer] */
91 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
92 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
93 +
94 + memoryObjects[1] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
95 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
96 +
97 + memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
98 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
99 + /* [Create buffer] */
100 +
101 + if (!createMemoryObjectsSuccess)
102 + {
103 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
104 + cerr << "Failed to create OpenCL buffer. " << __FILE__ << ":" << __LINE__ << endl;
105 + return 1;
106 + }
107 +
108 + /* Map the memory buffers created by the OpenCL implementation to pointers so we can access them on the CPU. */
109 + bool mapMemoryObjectsSuccess = true;
110 +
111 + /* [Map buffer] */
112 + cl_int* inputA = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, NULL);
113 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
114 +
115 + cl_int* inputB = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, NULL);
116 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
117 + /* [Map buffer] */
118 +
119 + if (!mapMemoryObjectsSuccess)
120 + {
121 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
122 + cerr << "Failed to map buffer. " << __FILE__ << ":" << __LINE__ << endl;
123 + return 1;
124 + }
125 +
126 + /* [Initialize the input data] */
127 + for (int i = 0; i < arraySize; i++)
128 + {
129 + inputA[i] = i;
130 + inputB[i] = i;
131 + }
132 + /* [Initialize the input data] */
133 +
134 + /*
135 + * Unmap the memory objects as we are finished using them from the CPU side.
136 + * We unmap the memory because otherwise:
137 + * - reads and writes to that memory from inside a kernel on the OpenCL side are undefined,
138 + * - the OpenCL implementation cannot free the memory when it is finished.

```

```

139 + */
140 + /* [Un-map buffer] */
141 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], inputA, 0, NULL, NULL)))
142 + {
143 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
144 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
145 + return 1;
146 + }
147 +
148 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], inputB, 0, NULL, NULL)))
149 + {
150 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
151 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
152 + return 1;
153 + }
154 + /* [Un-map buffer] */
155 +
156 + /* Set the kernel arguments. */
157 + bool setKernelArgumentsSuccess = true;
158 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
159 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_mem), &memoryObjects[1]));
160 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_mem), &memoryObjects[2]));
161 +
162 + if (!setKernelArgumentsSuccess)
163 + {
164 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
165 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":" << __LINE__ << endl;
166 + return 1;
167 + }
168 +
169 + /* An event to associate with the Kernel. Allows us to retreive profiling information later. */
170 + cl_event event = 0;
171 +
172 + /* [Global work size] */
173 + /*
174 + * Each instance of our OpenCL kernel now operates on 4 elements of each array so the number of
175 + * instances needed is the number of elements in the array divided by 4.
176 + */
177 + size_t globalWorksize[1] = {arraySize / 4};
178 + /* Enqueue the kernel */
179 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 1, NULL, globalWorksize, NULL, 0, NULL, &event)))
180 + {
181 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
182 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
183 + return 1;
184 + }
185 + /* [Global work size] */
186 +
187 + /* Wait for kernel execution completion. */
188 + if (!checkSuccess(clFinish(commandQueue)))
189 + {
190 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
191 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
192 + return 1;
193 + }
194 +
195 + /* Print the profiling information for the event. */
196 + printProfilingInfo(event);
197 + /* Release the event object. */
198 + if (!checkSuccess(clReleaseEvent(event)))
199 + {
200 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
201 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
202 + return 1;
203 + }
204 +
205 + /* Get a pointer to the output data. */
206 + cl_int* output = (cl_int*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL, NULL);
207 + if (!checkSuccess(errorNumber))

```

```

208 + {
209 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
210 + cerr << "Failed to map buffer. " << __FILE__ << ":" << __LINE__ << endl;
211 + return 1;
212 + }
213 +
214 + /* Uncomment the following block to print results. */
215 + /*
216 + for (int i = 0; i < arraySize; i++)
217 + {
218 + cout << "i = " << i << ", output = " << output[i] << "\n";
219 + }
220 + */
221 +
222 + /* Unmap the memory object as we are finished using them from the CPU side. */
223 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], output, 0, NULL, NULL)))
224 + {
225 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
226 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
227 + return 1;
228 + }
229 +
230 + /* Release OpenCL objects. */
231 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
232 + }

```

▽ 48 ████ samples/image\_scaling/Makefile □

| ... | ... | @@ -0,0 +1,48 @@                                                                  |
|-----|-----|-----------------------------------------------------------------------------------|
|     | 1   | + # This confidential and proprietary software may be used only as                |
|     | 2   | + # authorised by a licensing agreement from ARM Limited                          |
|     | 3   | + # (C) COPYRIGHT 2013 ARM Limited                                                |
|     | 4   | + # ALL RIGHTS RESERVED                                                           |
|     | 5   | + # The entire notice above must be reproduced on all authorised                  |
|     | 6   | + # copies and copies may only be made to the extent permitted                    |
|     | 7   | + # by a licensing agreement from ARM Limited.                                    |
|     | 8   | +                                                                                 |
|     | 9   | + ROOT:=.../..                                                                    |
|     | 10  | +                                                                                 |
|     | 11  | + include \$(ROOT)/platform.mk                                                    |
|     | 12  | +                                                                                 |
|     | 13  | + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I.                       |
|     | 14  | +                                                                                 |
|     | 15  | + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon                     |
|     | 16  | +                                                                                 |
|     | 17  | + SOURCES:=image_scaling.cpp                                                      |
|     | 18  | + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h                       |
|     | 19  | +                                                                                 |
|     | 20  | + OBJECTS:=\$(SOURCES:.cpp=.o)                                                    |
|     | 21  | +                                                                                 |
|     | 22  | + EXECUTABLE:=image_scaling                                                       |
|     | 23  | +                                                                                 |
|     | 24  | + all: \$(EXECUTABLE)                                                             |
|     | 25  | +                                                                                 |
|     | 26  | + \$(EXECUTABLE): \$(OBJECTS) libOpenCL libCommon                                 |
|     | 27  | +     \$(CC) \$(OBJECTS) -o \$@ \$(LDFLAGS)                                       |
|     | 28  | +                                                                                 |
|     | 29  | + .cpp.o:                                                                         |
|     | 30  | +     \$(CC) \$(CFLAGS) \$< -o \$@                                                |
|     | 31  | +                                                                                 |
|     | 32  | + \$(OBJECTS): \$(HEADERS)                                                        |
|     | 33  | +                                                                                 |
|     | 34  | + install: \$(EXECUTABLE)                                                         |
|     | 35  | +     -\$(MKDIR) "\$(ROOT)/bin/\$(EXECUTABLE)/assets"                             |
|     | 36  | +     \$(CP) "\$(EXECUTABLE)" "\$(ROOT)/bin/\$(EXECUTABLE)/\$(EXECUTABLE)"        |
|     | 37  | +     cd assets \$(CONCATENATE) \$(CP) * "../\$(ROOT)/bin/\$(EXECUTABLE)/assets/" |
|     | 38  | +                                                                                 |
|     | 39  | + .PHONY: clean libOpenCL libCommon                                               |

```
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a
```

66 samples/image\_scaling/assets/image\_scaling.cl

```

...
@@ -0,0 +1,66 @@
1+ /*
2+ * This confidential and proprietary software may be used only as
3+ * authorised by a licensing agreement from ARM Limited
4+ * (C) COPYRIGHT 2013 ARM Limited
5+ * ALL RIGHTS RESERVED
6+ * The entire notice above must be reproduced on all authorised
7+ * copies and copies may only be made to the extent permitted
8+ * by a licensing agreement from ARM Limited.
9+ */
10+
11+/* [Define a sampler] */
12+const sampler_t sampler = CLK_NORMALIZED_COORDS_TRUE | CLK_ADDRESS_CLAMP | CLK_FILTER_LINEAR;
13+/* [Define a sampler] */
14+
15+/**
16+ * \brief Image scaling kernel function.
17+ * \param[in] sourceImage Input image object.
18+ * \param[out] destinationImage Re-sized output image object.
19+ * \param[in] widthNormalizationFactor 1 / destinationImage width.
20+ * \param[in] heightNormalizationFactor 1 / destinationImage height.
21+ */
22+__kernel void image_scaling(__read_only image2d_t sourceImage,
23+ __write_only image2d_t destinationImage,
24+ const float widthNormalizationFactor,
25+ const float heightNormalizationFactor)
26+{
27+/*
28+ * It is possible to get the width and height of an image object (using get_image_width and get_image_height).
29+ * You could use this to calculate the normalization factors in the kernel.
30+ * In this case, because the width and height doesn't change for each kernel,
31+ * it is better to pass normalization factors to the kernel as parameters.
32+ * This way we do the calculations once on the host side instead of in every kernel.
33+*/
34+
35+/* [Calculate the coordinates] */
36+/*
37+ * There is one kernel instance per pixel in the destination image.
38+ * The global id of this kernel instance is therefore a coordinate in the destination image.
39+*/
40+int2 coordinate = (int2)(get_global_id(0), get_global_id(1));
41+
42+/*
43+ * That coordinate is only valid for the destination image.
44+ * If we normalize the coordinates to the range [0.0, 1.0] (using the height and width of the destination image),
45+ * we can use them as coordinates in the sourceImage.
46+*/
47+float2 normalizedCoordinate = convert_float2(coordinate) * (float2)(widthNormalizationFactor, heightNormalizationFactor);
48+/* [Calculate the coordinates] */
49+
50+/* [Read from the source image] */
51+/*
52+ * Read colours from the source image.
53+ * The sampler determines how the coordinates are interpreted.
54+ * Because bilinear filtering is enabled, the value of colour will be the average of the 4 pixels closest to the coordinate.
55+*/
56+

```

```
+ float4 colour = read_imagef(sourceImage, sampler, normalizedCoordinate);
57+ /* [Read from the source image] */
58+
59+ /* [Write to the destination image] */
60+ /*
61+ * Write the colour to the destination image.
62+ * No sampler is used here as all writes must specify an exact valid pixel coordinate.
63+ */
64+ write_imagef(destinationImage, coordinate, colour);
65+ /* [Write to the destination image] */
66+ }
```

▼ BIN ■■■■■ samples/image\_scaling/assets/input.bmp □

Binary file not shown.

▼ 229 ■■■■■ samples/image\_scaling/image\_scaling.cpp □

```
... ... @@ -0,0 +1,229 @@
1+ /*
2+ * This confidential and proprietary software may be used only as
3+ * authorised by a licensing agreement from ARM Limited
4+ * (C) COPYRIGHT 2013 ARM Limited
5+ * ALL RIGHTS RESERVED
6+ * The entire notice above must be reproduced on all authorised
7+ * copies and copies may only be made to the extent permitted
8+ * by a licensing agreement from ARM Limited.
9+ */
10+
11+ #include "common.h"
12+ #include "image.h"
13+
14+ #include <CL/cl.h>
15+ #include <iostream>
16+
17+ using namespace std;
18+
19+ /**
20+ * \brief OpenCL image object sample code.
21+ * \details Demonstration of how to use OpenCL image objects to resize an image.
22+ * \return The exit code of the application, non-zero if a problem occurred.
23+ */
24+ int main(void)
25+ {
26+ cl_context context = 0;
27+ cl_command_queue commandQueue = 0;
28+ cl_program program = 0;
29+ cl_device_id device = 0;
30+ cl_kernel kernel = 0;
31+ const int numMemoryObjects = 2;
32+ cl_mem memoryObjects[numMemoryObjects] = {0, 0};
33+ cl_int errorNumber;
34+
35+ /* Set up OpenCL environment: create context, command queue, program and kernel. */
36+ if (!createContext(&context))
37+ {
38+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
39+ cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
40+ return 1;
41+ }
42+
43+ if (!createCommandQueue(context, &commandQueue, &device))
44+ {
45+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
46+ cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
47+ return 1;
48+ }
49+
```

```

50 + if (!createProgram(context, device, "assets/image_scaling.cl", &program))
51 + {
52 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
53 + cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl;
54 + return 1;
55 + }
56 +
57 + kernel = clCreateKernel(program, "image_scaling", &errorNumber);
58 + if (!checkSuccess(errorNumber))
59 + {
60 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
61 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
62 + return 1;
63 + }
64 +
65 + /* Print the image formats that the OpenCL device supports. */
66 + cout << endl;
67 + printSupported2DImageFormats(context);
68 + cout << endl;
69 +
70 + /* The scaling factor to use when resizing the image. */
71 + const int scaleFactor = 8;
72 +
73 + /* Load the input image data. */
74 + unsigned char* inputImage = NULL;
75 + int width, height;
76 + loadFromBitmap("assets/input.bmp", &width, &height, &inputImage);
77 +
78 + /*
79 + * Calculate the width and height of the new image.
80 + * Used to allocate the correct amount of output memory and the number of kernels to use.
81 + */
82 + int newWidth = width * scaleFactor;
83 + int newHeight = height * scaleFactor;
84 +
85 + /* [Allocate image objects] */
86 + /*
87 + * Specify the format of the image.
88 + * The bitmap image we are using is RGB888, which is not a supported OpenCL image format.
89 + * We will use RGBA8888 and add an empty alpha channel.
90 + */
91 + cl_image_format format;
92 + format.image_channel_data_type = CL_UNORM_INT8;
93 + format.image_channel_order = CL_RGBA;
94 +
95 + /* Allocate memory for the input image that can be accessed by the CPU and GPU. */
96 + bool createMemoryObjectsSuccess = true;
97 +
98 + memoryObjects[0] = clCreateImage2D(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, &format, width, height, 0, NULL, &errorNumber);
99 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
100 +
101 + memoryObjects[1] = clCreateImage2D(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, &format, newWidth, newHeight, 0, NULL, &errorNumber);
102 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
103 +
104 + if (!createMemoryObjectsSuccess)
105 + {
106 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
107 + cerr << "Failed creating the image. " << __FILE__ << ":" << __LINE__ << endl;
108 + return 1;
109 + }
110 + /* [Allocate image objects] */
111 +
112 + /* [Map image objects to host pointers] */
113 + /*
114 + * Like with memory buffers, we now map the allocated memory to a host side pointer.
115 + * Unlike buffers, we must specify origin coordinates, width and height for the region of the image we wish to map.
116 + */
117 + size_t origin[3] = {0, 0, 0};
118 + size_t region[3] = {width, height, 1};

```

```

119 +
120 + /*
121 + * clEnqueueMapImage also returns the rowPitch; the width of the mapped region in bytes.
122 + * If the image format is not known, this is required information when accessing the image object as a normal array.
123 + * The number of bytes per pixel can vary with the image format being used,
124 + * this affects the offset into the array for a given coordinate.
125 + * In our case the image format is fixed as RGBA8888 so we don't need to worry about the rowPitch.
126 + */
127 + size_t rowPitch;
128 +
129 + unsigned char* inputImageRGBA = (unsigned char*)clEnqueueMapImage(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, origi
130 + if (!checkSuccess(errorNumber))
131 + {
132 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
133 + cerr << "Failed mapping the input image. " << __FILE__ << ":" << __LINE__ << endl;
134 + return 1;
135 + }
136 + /* [Map image objects to host pointers] */
137 +
138 + /* Convert the input data from RGB to RGBA (moves it to the OpenCL allocated memory at the same time). */
139 + RGBToRGBA(inputImage, inputImageRGBA, width, height);
140 + delete[] inputImage;
141 +
142 + /* Unmap the image from the host. */
143 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], inputImageRGBA, 0, NULL, NULL)))
144 + {
145 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
146 + cerr << "Failed unmapping the input image. " << __FILE__ << ":" << __LINE__ << endl;
147 + return 1;
148 + }
149 +
150 + /*
151 + * Calculate the normalization factor for the image coordinates.
152 + * By using normalized coordinates we don't have to manually map the destination coordinates to the source coordinates.
153 + */
154 + cl_float widthNormalizationFactor = 1.0f / newWidth;
155 + cl_float heightNormalizationFactor = 1.0f / newHeight;
156 +
157 + /* Setup the kernel arguments. */
158 + bool setKernelArgumentsSuccess = true;
159 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
160 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_mem), &memoryObjects[1]));
161 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_float), &widthNormalizationFactor));
162 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 3, sizeof(cl_float), &heightNormalizationFactor));
163 + if (!setKernelArgumentsSuccess)
164 + {
165 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, 3);
166 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":" << __LINE__ << endl;
167 + return 1;
168 + }
169 +
170 + /*
171 + * Set the kernel work size. Each kernel operates on one pixel of the ouput image.
172 + * Therefore, we need newWidth * newHeight kernel instances.
173 + * We are using two work dimensions because it maps nicely onto the coordinates of the image.
174 + * With one dimension we would have to derive the y coordinate from the x coordinate in the kernel.
175 + */
176 + const int workDimensions = 2;
177 + size_t globalWorkSize[workDimensions] = {newWidth, newHeight};
178 +
179 + /* An event to associate with the kernel. Allows us to retrieve profiling information later. */
180 + cl_event event = 0;
181 +
182 + /* Enqueue the kernel. */
183 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, workDimensions, NULL, globalWorkSize, NULL, 0, NULL, &event)))
184 + {
185 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
186 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
187 + return 1;

```

```

188 + }
189 +
190 + /* Wait for kernel execution completion. */
191 + if (!checkSuccess(clFinish(commandQueue)))
192 + {
193 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
194 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
195 + return 1;
196 + }
197 +
198 + /* Print the profiling information for the event. */
199 + printProfilingInfo(event);
200 + /* Release the event object. */
201 + if (!checkSuccess(clReleaseEvent(event)))
202 + {
203 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
204 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
205 + return 1;
206 + }
207 +
208 + size_t newRegion[3] = {newWidth, newHeight, 1};
209 +
210 + unsigned char* outputImage = (unsigned char*)clEnqueueMapImage(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_READ, origin, r
211 + if (!checkSuccess(errorNumber))
212 + {
213 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
214 + cerr << "Failed mapping the input image. " << __FILE__ << ":" << __LINE__ << endl;
215 + return 1;
216 + }
217 +
218 + unsigned char* outputImageRGB = new unsigned char[newWidth * newHeight * 3];
219 + RGBAToRGB(outputImage, outputImageRGB, newWidth, newHeight);
220 +
221 + saveToBitmap("output.bmp", newWidth, newHeight, outputImageRGB);
222 +
223 + delete[] outputImageRGB;
224 +
225 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
226 +
227 +
228 + return 0;
229 + }

```

48 samples/mandelbrot/Makefile

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,48 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     |     | <pre> 1 + # This confidential and proprietary software may be used only as 2 + # authorised by a licensing agreement from ARM Limited 3 + # (C) COPYRIGHT 2013 ARM Limited 4 + # ALL RIGHTS RESERVED 5 + # The entire notice above must be reproduced on all authorised 6 + # copies and copies may only be made to the extent permitted 7 + # by a licensing agreement from ARM Limited. 8 + 9 + ROOT:=../../ 10 + 11 + include \$(ROOT)/platform.mk 12 + 13 + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I. 14 + 15 + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon 16 + 17 + SOURCES:=mandelbrot.cpp 18 + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h 19 + 20 + OBJECTS:=\$(SOURCES:.cpp=.o) 21 + 22 + EXECUTABLE:=mandelbrot </pre> |

```

23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a ⊖

```

▼ 120 ■■■■■ samples/mandelbrot/assets/mandelbrot.cl □

| ... | ... | @@ -0,0 +1,120 @@                                                                               |
|-----|-----|-------------------------------------------------------------------------------------------------|
|     | 1   | + /*                                                                                            |
|     | 2   | + * This confidential and proprietary software may be used only as                              |
|     | 3   | + * authorised by a licensing agreement from ARM Limited                                        |
|     | 4   | + * (C) COPYRIGHT 2013 ARM Limited                                                              |
|     | 5   | + * ALL RIGHTS RESERVED                                                                         |
|     | 6   | + * The entire notice above must be reproduced on all authorised                                |
|     | 7   | + * copies and copies may only be made to the extent permitted                                  |
|     | 8   | + * by a licensing agreement from ARM Limited.                                                  |
|     | 9   | + */                                                                                            |
|     | 10  | + *                                                                                             |
|     | 11  | + /*                                                                                            |
|     | 12  | + * The number of iterations before we assume a point is in the Mandelbrot set.                 |
|     | 13  | + * Increasing this value has no effect since as we are returning the output as unsigned chars, |
|     | 14  | + * 255 is the maximum value that can be returned.                                              |
|     | 15  | + */                                                                                            |
|     | 16  | + #define MAX_ITER 255                                                                          |
|     | 17  | +                                                                                               |
|     | 18  | + /**                                                                                           |
|     | 19  | + * \brief Create a float4 containing the x positions of x and the 3 adjacent pixels.           |
|     | 20  | + * \param[in] x First pixel position to use.                                                   |
|     | 21  | + * \return An vector of 4 floats containing x, x + 1, x + 2, and x + 3.                        |
|     | 22  | + */                                                                                            |
|     | 23  | + float4 createStartX(int x)                                                                    |
|     | 24  | + {                                                                                             |
|     | 25  | +     return (float4)(x, x + 1, x + 2, x + 3);                                                  |
|     | 26  | + }                                                                                             |
|     | 27  | +                                                                                               |
|     | 28  | + /**                                                                                           |
|     | 29  | + * \brief Mandelbrot kernel function.                                                          |
|     | 30  | + * \details Evaluates whether a set of four adjacent pixels are part of the Mandelbrot         |
|     | 31  | + * set. The output is an array where each value represents how many iterations                 |
|     | 32  | + * were required to be able to decide whether the point in imaginary space                     |
|     | 33  | + * is part of the Mandelbrot set or not. A value of MAX_ITER represents a point                |
|     | 34  | + * that is part of the Mandelbrot set. All other values represent points that are              |
|     | 35  | + * not part of the Mandelbrot set.                                                             |
|     | 36  | + * A value is in the Mandelbrot set if the results of the calculations remain bounded.         |
|     | 37  | + * \param[out] output Output data buffer. Must be width * height * sizeof(cl_uchar) in size.   |
|     | 38  | + * \param[in] width Width of the data required.                                                |
|     | 39  |                                                                                                 |

```

+ * \param[in] height Height of the data required.
40 + */
41 + __kernel void mandelbrot(__global uchar* restrict output,
42 + const int width,
43 + const int height)
44 + {
45 + /* [Kernel size] */
46 + /*
47 + * Each kernel calculates 4 output pixels in the same row (hence the '* 4').
48 + * x is in the range [0, width] in steps of 4.
49 + * y is in the range [0, height].
50 + */
51 + int x = get_global_id(0) * 4;
52 + int y = get_global_id(1);
53 + /* [Kernel size] */
54 +
55 + /* [Create inputs] */
56 + /*
57 + * Calculate the coordinates of the four pixels in the real and imaginary space.
58 + * Scale the coordinates by the height and width such that the same image is produced for all values, just at different resolutions.
59 + * The real coordinate is scaled to the range [0, 2.5] (using '/ width * 2.5f') and then shifted to be in the range [-2, 0.5].
60 + * The imaginary coordinate is scaled to the range [0, 2] (using '/ ((float) height) * 2' and then shifted to be in the range [0, 1].
61 + * The resulting ranges ([-2, 0.5], [-1, 1]) are the limits of the interesting parts of the Mandelbrot set.
62 + * Four pixels (adjacent in x (real) dimension) are calculated per kernel instance. Therefore, we calculate real coordinates for all four pixels.
63 + */
64 + float4 initialReal = -2 + (createStartX(x) / (float)width * 2.5f);
65 + float4 initialImaginary = -1 + (y / (float)height * 2);
66 +
67 + float4 real = initialReal;
68 + float4 imaginary = initialImaginary;
69 + /* [Create inputs] */
70 +
71 + /* This will store the number of iterations for each of the four pixels */
72 + int4 iterationsPerPixel = (int4)(0, 0, 0, 0);
73 + /* Total number of iterations for this kernel instance. */
74 + int iterations = 0;
75 + int4 mask;
76 +
77 + /* [Calculation] */
78 + /*
79 + * Loop until we can say that all pixels are not part
80 + * of the Mandelbrot set or the maximum number of
81 + * iterations has been reached.
82 + */
83 + do
84 + {
85 + iterations++;
86 + if (iterations > MAX_ITER)
87 + {
88 + break;
89 + }
90 +
91 + /* Backup the real value as its used in both calculations but changed by the first. */
92 + float4 oldReal = real;
93 +
94 + /* Evaluate the equation. */
95 + real = real * real - imaginary * imaginary + initialReal;
96 + imaginary = 2 * oldReal * imaginary + initialImaginary;
97 +
98 + /*
99 + * Calculate which indices to update.
100 + * Mathematically, if the result of the calculation becomes greater than 2, it will continue to infinity.
101 + * Therefore, if the result becomes greater than 2 it cannot be part of the Mandelbrot set and we stop adding to it's iterations.
102 + * To get the absolute value of the calculation we have squared and added the components, therefore we must test it against
103 + * 4 (2 squared).
104 + */
105 + float4 absoluteValue = real * real + imaginary * imaginary;
106 + /* For vector input isless(x, y) returns -1 per component if x < y. */
107 + mask = isless(absoluteValue, (float4) 4.0f);

```

```
108 + /* Increase the iterations per pixel (if they are less than 4). */
109 + iterationsPerPixel -= mask;
110 + } while(any(mask));
111 + /* [Calculation] */
112 +
113 + /* [Store] */
114 + /*
115 + * Write the result to the output buffer.
116 + * Convert the output to unsigned char to make it easier to write to a bitmap.
117 + */
118 + vstore4(convert_uchar4(iterationsPerPixel), 0, output + x + y * width);
119 + /* [Store] */
120 }
```

▼ 167 samples/mandelbrot/mandelbrot.cpp □

```
... ... @@ -0,0 +1,167 @@
1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 + #include "common.h"
12 + #include "image.h"
13 +
14 + #include <CL/cl.h>
15 + #include <iostream>
16 + #include <fstream>
17 + #include <sstream>
18 + #include <cstddef>
19 + #include <cmath>
20 + #include <sys/time.h>
21 +
22 + using namespace std;
23 +
24 + /**
25 + * \brief A sample which generates Mandelbrot data for a given data size.
26 + * \details For a given height and width, the sample will test each pixel
27 + * to work out how many iterations it takes to determine if the
28 + * value is not part of the Mandelbrot set. This data is output
29 + * as a greyscale bitmap image. White pixels could not be ruled out
30 + * of the Mandelbrot set in the number of iterations used.
31 + * \return The exit code of the application, non-zero if a problem occurred.
32 + */
33 + int main(void)
34 + {
35 + cl_context context = 0;
36 + cl_command_queue commandQueue = 0;
37 + cl_program program = 0;
38 + cl_device_id device = 0;
39 + cl_kernel kernel = 0;
40 + const unsigned int numberOfMemoryObjects = 1;
41 + cl_mem memoryObjects[numberOfMemoryObjects] = {0};
42 + cl_int errorNumber;
43 +
44 + if (!createContext(&context))
45 + {
46 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
47 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
48 + return 1;
49 + }
50 +
51 + if (!createCommandQueue(context, &commandQueue, &device))
```

```

52 + {
53 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
54 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
55 + return 1;
56 + }
57 +
58 + if (!createProgram(context, device, "assets/mandelbrot.cl", &program))
59 + {
60 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
61 + cerr << "Failed to create OpenCL program. " << __FILE__ << ":" << __LINE__ << endl;
62 + return 1;
63 + }
64 +
65 + kernel = clCreateKernel(program, "mandelbrot", &errorNumber);
66 + if (!checkSuccess(errorNumber))
67 + {
68 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
69 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
70 + return 1;
71 + }
72 +
73 + /* Width and height of the Mandelbrot data you want to be produced. */
74 + cl_int width = 4096;
75 + cl_int height = 3280;
76 +
77 + /* The output buffer is the size of the Mandelbrot data. */
78 + size_t bufferSize = width * height * sizeof(cl_uchar);
79 +
80 + /* Create an output buffer for final data. */
81 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
82 + if (!checkSuccess(errorNumber))
83 + {
84 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
85 + cerr << "Failed to create OpenCL buffer. " << __FILE__ << ":" << __LINE__ << endl;
86 + return 1;
87 + }
88 +
89 + /* Setup the kernel arguments. */
90 + bool setKernelArgumentsSuccess = true;
91 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
92 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_int), &width));
93 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_int), &height));
94 +
95 + if (!setKernelArgumentsSuccess)
96 + {
97 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
98 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":" << __LINE__ << endl;
99 + return 1;
100 + }
101 +
102 + /* An event to associate with the Kernel. Allows us to retreive profiling information later. */
103 + cl_event event = 0;
104 +
105 + /* [Kernel size] */
106 + /*
107 + * The OpenCL kernel calculates four pixels at a time (all in the same row).
108 + * Therefore, we only need to run the kernel width / 4 times in the x dimension.
109 + */
110 + size_t globalWorksize[2] = {width / 4, height};
111 + /* [Kernel size] */
112 +
113 + /* Enqueue the kernel */
114 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 2, NULL, globalWorksize, NULL, 0, NULL, &event)))
115 + {
116 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
117 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
118 + return 1;
119 + }
120 +

```

```

121 + /* Wait for kernel execution completion. */
122 + if (!checkSuccess(clFinish(commandQueue)))
123 + {
124 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
125 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
126 + return 1;
127 + }
128 +
129 + /* Print the profiling information for the event. */
130 + printProfilingInfo(event);
131 + /* Release the event object. */
132 + if (!checkSuccess(clReleaseEvent(event)))
133 + {
134 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
135 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
136 + return 1;
137 + }
138 +
139 + /* Map the output memory to a host side pointer. */
140 + cl_uchar* output = (cl_uchar*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
141 + if (!checkSuccess(errorNumber))
142 + {
143 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
144 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
145 + return 1;
146 + }
147 +
148 + /* Convert the output luminance array to RGB and save it out to a file. */
149 + unsigned char* rgbOut = new unsigned char[width * height * 3];
150 + luminanceToRGB(output, rgbOut, width, height);
151 + saveToBitmap("output.bmp", width, height, rgbOut);
152 +
153 + /* Unmap the output. */
154 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], output, 0, NULL, NULL)))
155 + {
156 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
157 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
158 + return 1;
159 + }
160 +
161 + /* Release OpenCL objects. */
162 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
163 +
164 + delete [] rgbOut;
165 +
166 + return 0;
167 + }

```

#### 48 samples/sgemm/Makefile

|     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,48 @@                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|     |     | <pre> 1 + # This confidential and proprietary software may be used only as 2 + # authorised by a licensing agreement from ARM Limited 3 + # (C) COPYRIGHT 2013 ARM Limited 4 + #      ALL RIGHTS RESERVED 5 + # The entire notice above must be reproduced on all authorised 6 + # copies and copies may only be made to the extent permitted 7 + # by a licensing agreement from ARM Limited. 8 + 9 + ROOT:=../.. 10 + 11 + include \$(ROOT)/platform.mk 12 + 13 + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I. 14 + 15 + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon 16 + 17 + SOURCES:=sgemm.cpp </pre> |

```

18 + HEADERS:= $(ROOT)/common/common.h $(ROOT)/common/image.h
19 +
20 + OBJECTS:= $(SOURCES:.cpp=.o)
21 +
22 + EXECUTABLE:=sgemm
23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a -

```

▽ 74 samples/sgemm/assets/sgemm.cl □

| ... | ... | @@ -0,0 +1,74 @@                                                                                  |
|-----|-----|---------------------------------------------------------------------------------------------------|
|     | 1   | + /*                                                                                              |
|     | 2   | + * This confidential and proprietary software may be used only as                                |
|     | 3   | + * authorised by a licensing agreement from ARM Limited                                          |
|     | 4   | + * (C) COPYRIGHT 2013 ARM Limited                                                                |
|     | 5   | + * ALL RIGHTS RESERVED                                                                           |
|     | 6   | + * The entire notice above must be reproduced on all authorised                                  |
|     | 7   | + * copies and copies may only be made to the extent permitted                                    |
|     | 8   | + * by a licensing agreement from ARM Limited.                                                    |
|     | 9   | + */                                                                                              |
|     | 10  | + *                                                                                               |
|     | 11  | + /**                                                                                             |
|     | 12  | + * \brief SGEMM kernel function.                                                                 |
|     | 13  | + * \param[in] matrixA First input matrix.                                                        |
|     | 14  | + * \param[in] matrixB Second input matrix.                                                       |
|     | 15  | + * \param[in, out] matrixC Third input matrix. The output is stored in this matrix.              |
|     | 16  | + * \param[in] matrixOrder Matrix order (number of rows and columns). Matrix has to be symmetric. |
|     | 17  | + * \param[in] alpha Scaling parameter.                                                           |
|     | 18  | + * \param[in] beta Scaling parameter.                                                            |
|     | 19  | + */                                                                                              |
|     | 20  | + __kernel void sgemm(__global float* restrict matrixA,                                           |
|     | 21  | +           __global float* restrict const matrixB,                                               |
|     | 22  | +           __global float* restrict matrixC,                                                     |
|     | 23  | +           const uint matrixOrder,                                                               |
|     | 24  | +           const float alpha,                                                                    |
|     | 25  | +           const float beta)                                                                     |
|     | 26  | + {                                                                                               |
|     | 27  | +     /* [Kernel size] */                                                                         |
|     | 28  | +     const int i = get_global_id(1);                                                             |
|     | 29  | +     const int j = get_global_id(0);                                                             |
|     | 30  | +     float4 sum = (float4)0.0f;                                                                  |
|     | 31  | +     float4 matrixBColumn;                                                                       |
|     | 32  | +     /* [Kernel size] */                                                                         |
|     | 33  | +                                                                                                 |
|     | 34  |                                                                                                   |

```

 + /* Move to a specific row in matrixA. */
35 + matrixA += i * matrixOrder;
36 +
37 + /* Move to a specific column in matrixB. */
38 + uint bOffset = j;
39 +
40 + /* [Load column] */
41 + /*
42 + * Load 4 values from a column of data from matrixB, and 4 values from a row in matrixA,
43 + * then multiply them together. Repeat until all values in the column/row have been multiplied.
44 + * We only want the sum of the calculation so we can add the result of each calculation to the last.
45 + */
46 + for (int k = 0; k < matrixOrder; k+=4)
47 + {
48 + matrixBColumn.x = matrixB[bOffset];
49 + bOffset += matrixOrder;
50 +
51 + matrixBColumn.y = matrixB[bOffset];
52 + bOffset += matrixOrder;
53 +
54 + matrixBColumn.z = matrixB[bOffset];
55 + bOffset += matrixOrder;
56 +
57 + matrixBColumn.w = matrixB[bOffset];
58 + bOffset += matrixOrder;
59 + /* [Load column] */
60 +
61 + /* [Calculation] */
62 + sum += vload4 (0, matrixA) * matrixBColumn;
63 + matrixA += 4;
64 + }
65 + /* [Calculation] */
66 +
67 + /* [Store] */
68 + /*
69 + * Sum the 4 results to get the single output of multiplying a row of matrixA by a column of matrixB.
70 + * Then carry out the final calculation.
71 + */
72 + matrixC[i * matrixOrder + j] = alpha * (sum.x + sum.y + sum.z + sum.w) + beta * matrixC[i * matrixOrder + j];
73 + /* [Store] */
74 + } } -
```

▼ 232 ████ samples/sgemm/sgemm.cpp □

| ... | ... | @@ -0,0 +1,232 @@                                                                                                                                                                                                                                                                                                                                                                     |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | +   | /*<br>* This confidential and proprietary software may be used only as<br>* authorised by a licensing agreement from ARM Limited<br>* (C) COPYRIGHT 2013 ARM Limited<br>* ALL RIGHTS RESERVED<br>* The entire notice above must be reproduced on all authorised<br>* copies and copies may only be made to the extent permitted<br>* by a licensing agreement from ARM Limited.<br>*/ |
| 11  | +   | #include "common.h"<br>#include "image.h"                                                                                                                                                                                                                                                                                                                                             |
| 14  | +   | #include <CL/cl.h>                                                                                                                                                                                                                                                                                                                                                                    |
| 15  | +   | #include <iostream>                                                                                                                                                                                                                                                                                                                                                                   |
| 16  | +   | #include <fstream>                                                                                                                                                                                                                                                                                                                                                                    |
| 17  | +   | #include <sstream>                                                                                                                                                                                                                                                                                                                                                                    |
| 18  | +   | #include <cstddef>                                                                                                                                                                                                                                                                                                                                                                    |
| 19  | +   | #include <cmath>                                                                                                                                                                                                                                                                                                                                                                      |
| 20  | +   | #include <cstdlib>                                                                                                                                                                                                                                                                                                                                                                    |
| 22  | +   | using namespace std;                                                                                                                                                                                                                                                                                                                                                                  |
| 23  | +   |                                                                                                                                                                                                                                                                                                                                                                                       |
| 24  | +   |                                                                                                                                                                                                                                                                                                                                                                                       |

```

+ /**
25 + * \brief Initialize the input matrices with random values.
26 + * \param[in] matrixOrder The order of the matrices (number of rows and columns). Matrices have to be symmetric.
27 + * \param[in] matrixA First input matrix.
28 + * \param[in] matrixB Second input matrix.
29 + * \param[in] matrixC Third input matrix.
30 + * \return matrixA, matrixB and matrixC with random values.
31 + */
32 + void sgemmInitialize (int matrixOrder, float* matrixA, float* matrixB, float * matrixC)
33 + {
34 + for (int i = 0; i < matrixOrder; i++)
35 + {
36 + for (int j = 0; j < matrixOrder; j++)
37 + {
38 + int index = i * matrixOrder + j;
39 +
40 + /* Keep the values in the range [-1, 1]. */
41 + float randomeNumber = rand() / (float) RAND_MAX * 2 - 1;
42 + matrixA[index] = randomeNumber;
43 +
44 + randomeNumber = rand() / (float) RAND_MAX * 2 - 1;
45 + matrixB[index] = randomeNumber;
46 +
47 + randomeNumber = rand() / (float) RAND_MAX * 2 - 1;
48 + matrixC[index] = randomeNumber;
49 + }
50 + }
51 + }
52 +
53 + /**
54 + * \brief Simple SGEMM OpenCL sample.
55 + * \details A sample which calculates the following SGEMM equation:
56 + * matrixC = alpha * (matrixA * matrixB) + beta * matrixC.
57 + *
58 + * \return The exit code of the application, non-zero if a problem occurred.
59 + */
60 + int main(void)
61 + {
62 + cl_context context = 0;
63 + cl_command_queue commandQueue = 0;
64 + cl_program program = 0;
65 + cl_device_id device = 0;
66 + cl_kernel kernel = 0;
67 + const unsigned int numberOfMemoryObjects = 3;
68 + cl_mem memoryObjects[numberOfMemoryObjects] = {0, 0, 0};
69 + cl_int errorNumber;
70 +
71 + if (!createContext(&context))
72 + {
73 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
74 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
75 + return 1;
76 + }
77 +
78 + if (!createCommandQueue(context, &commandQueue, &device))
79 + {
80 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
81 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
82 + return 1;
83 + }
84 +
85 + if (!createProgram(context, device, "assets/sgemm.cl", &program))
86 + {
87 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
88 + cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl;
89 + return 1;
90 + }
91 +
92 + kernel = clCreateKernel(program, "sgemm", &errorNumber);

```

```

93 + if (!checkSuccess(errorNumber))
94 + {
95 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
96 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
97 + return 1;
98 + }
99 +
100 + /* Kernel variables. */
101 + unsigned int matrixOrder = 2048;
102 + float alpha = 1;
103 + float beta = 0.1;
104 +
105 + /* Create the matrices. */
106 + const size_t matrixSize = matrixOrder * matrixOrder;
107 +
108 + /* As all the matrices have the same size, the buffer size is common. */
109 + size_t bufferSize = matrixSize * sizeof(float);
110 +
111 + /* Create buffers for the matrices used in the kernel. */
112 + bool createMemoryObjectsSuccess = true;
113 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
114 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
115 + memoryObjects[1] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
116 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
117 + memoryObjects[2] = clCreateBuffer(context, CL_MEM_READ_WRITE | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
118 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
119 + if (!createMemoryObjectsSuccess)
120 + {
121 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
122 + cerr << "Failed to create OpenCL buffers. " << __FILE__ << ":" << __LINE__ << endl;
123 + return 1;
124 + }
125 +
126 + /* Map the input memory objects to a host side pointers. */
127 + bool mapMemoryObjectsSuccess = true;
128 + cl_float* matrixA = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL);
129 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
130 + cl_float* matrixB = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL);
131 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
132 + cl_float* matrixC = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL);
133 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
134 + if (!mapMemoryObjectsSuccess)
135 + {
136 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
137 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
138 + return 1;
139 + }
140 +
141 + /* Fill the matrices with random data. */
142 + sgemmInitialize(matrixOrder, matrixA, matrixB, matrixC);
143 +
144 + /* Unmap the memory so we can pass it to the kernel. */
145 + bool unmapMemoryObjectsSuccess = true;
146 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], matrixA, 0, NULL, NULL));
147 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], matrixB, 0, NULL, NULL));
148 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], matrixC, 0, NULL, NULL));
149 + if (!unmapMemoryObjectsSuccess)
150 + {
151 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
152 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
153 + return 1;
154 + }
155 +
156 + /* Setup kernel arguments. */
157 + bool setKernelArgumentsSuccess = true;
158 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
159 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_mem), &memoryObjects[1]));
160 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_mem), &memoryObjects[2]));
161 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 3, sizeof(cl_uint), &matrixOrder));

```

```

162 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 4, sizeof(cl_float), &alpha));
163 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 5, sizeof(cl_float), &beta));
164 + if (!createMemoryObjectsSuccess)
165 + {
166 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
167 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":"<< __LINE__ << endl;
168 + return 1;
169 + }
170 +
171 + /* An event to associate with the Kernel. Allows us to retrieve profiling information later. */
172 + cl_event event = 0;
173 +
174 + /* [Kernel size] */
175 + /*
176 + * Each kernel outputs one element in matrixC,
177 + * therefore the total number of work items must be the number of elements (matrixOrder * matrixOrder).
178 + * To accomplish this we use a global worksize split into 2 dimensions both of matrixOrder size.
179 + */
180 + size_t globalWorksize[2] = {matrixOrder, matrixOrder};
181 + /* [Kernel size] */
182 +
183 + /* Enqueue the kernel */
184 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 2, NULL, globalWorksize, NULL, 0, NULL, &event)))
185 + {
186 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
187 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":"<< __LINE__ << endl;
188 + return 1;
189 + }
190 +
191 + /* Wait for kernel execution completion */
192 + if (!checkSuccess(clFinish(commandQueue)))
193 + {
194 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
195 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":"<< __LINE__ << endl;
196 + return 1;
197 + }
198 +
199 + /* Print the profiling information for the event. */
200 + printProfilingInfo(event);
201 + /* Release the event object. */
202 + if (!checkSuccess(clReleaseEvent(event)))
203 + {
204 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
205 + cerr << "Failed releasing the event object. " << __FILE__ << ":"<< __LINE__ << endl;
206 + return 1;
207 + }
208 +
209 + /* Map the output to a host side pointer. */
210 + matrixC = (cl_float*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL, NULL, &errorNumber);
211 + if (!checkSuccess(errorNumber))
212 + {
213 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
214 + cerr << "Mapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
215 + return 1;
216 + }
217 +
218 + /* Do something with the output (matrixC) here. */
219 +
220 + /* Unmap the output. */
221 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], matrixC, 0, NULL, NULL)))
222 + {
223 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
224 + cerr << "Unmapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
225 + return 1;
226 + }
227 +
228 + /* Release OpenCL objects. */
229 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
230 +

```

```
231 + return 0;
232 + }
```

▽ 48 samples/sobel/Makefile

```
... ... @@ -0,0 +1,48 @@
1 + # This confidential and proprietary software may be used only as
2 + # authorised by a licensing agreement from ARM Limited
3 + # (C) COPYRIGHT 2013 ARM Limited
4 + # ALL RIGHTS RESERVED
5 + # The entire notice above must be reproduced on all authorised
6 + # copies and copies may only be made to the extent permitted
7 + # by a licensing agreement from ARM Limited.
8 +
9 + ROOT:=../../
10 +
11 + include $(ROOT)/platform.mk
12 +
13 + CFLAGS:=-c -Wall -I$(ROOT)/include -I$(ROOT)/common -I.
14 +
15 + LDFLAGS:=-L$(ROOT)/lib -L$(ROOT)/common -lOpenCL -lCommon
16 +
17 + SOURCES:=sobel.cpp
18 + HEADERS:=$(ROOT)/common/common.h $(ROOT)/common/image.h
19 +
20 + OBJECTS:=$(SOURCES:.cpp=.o)
21 +
22 + EXECUTABLE:=sobel
23 +
24 + all: $(EXECUTABLE)
25 +
26 + $(EXECUTABLE): $(OBJECTS) libOpenCL libCommon
27 + $(CC) $(OBJECTS) -o $@ $(LDFLAGS)
28 +
29 + .cpp.o:
30 + $(CC) $(CFLAGS) $< -o $@
31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a
```

⊖

▽ BIN samples/sobel/assets/input.bmp

Binary file not shown.

▽ 122 samples/sobel/assets/sobel.cl

```
... ... @@ -0,0 +1,122 @@
1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
```

```

6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 + /**
12 + * \brief Sobel filter kernel function.
13 + * \param[in] inputImage Input image data in row-major format.
14 + * \param[in] width Width of the image passed in as inputImage.
15 + * \param[out] outputImageDX Output image of the calculated gradient in the X direction.
16 + * \param[out] outputImageDY Output image of the calculated gradient in the Y direction.
17 + */
18 + __kernel void sobel(__global const uchar* restrict inputImage,
19 + const int width,
20 + __global char* restrict outputImageDX,
21 + __global char* restrict outputImageDY)
22 +
23 + {
24 + /* [Kernel size] */
25 +
26 + /* Each kernel calculates 16 output pixels in the same row (hence the '* 16').
27 + * column is in the range [0, width] in steps of 16.
28 + * row is in the range [0, height].
29 + */
30 +
31 + const int column = get_global_id(0) * 16;
32 + const int row = get_global_id(1) * 1;
33 +
34 + /* Offset calculates the position in the linear data for the row and the column. */
35 + const int offset = row * width + column;
36 + /* [Kernel size] */
37 +
38 + /* [Load row] */
39 + /*
40 + * First row of input.
41 + * In a scalar Sobel calculation you would load 1 value for leftLoad, middleLoad and rightLoad.
42 + * In the vector case we load 16 values for each.
43 + * leftLoad, middleLoad and rightLoad load 16-bytes of data from the first row.
44 + * The data they load overlaps. e.g. for the first column and row, leftLoad is 0->15, middleLoad is 1->16 and rightLoad is 2->1.
45 + * So we're actually loading 18-bytes of data from the first row.
46 + */
47 +
48 + uchar16 leftLoad = vload16(0, inputImage + (offset + 0));
49 + uchar16 middleLoad = vload16(0, inputImage + (offset + 1));
50 + uchar16 rightLoad = vload16(0, inputImage + (offset + 2));
51 +
52 + /* [Load row] */
53 +
54 + /* [Convert data] */
55 + /*
56 + * Convert the data from unsigned chars to shorts (8-bit unsigned to 16-bit signed).
57 + * The calculations can overflow 8-bits so we require larger intermediate storage.
58 + * Additionally, the values can become negative so we need a signed type.
59 + */
60 +
61 + short16 leftData = convert_short16(leftLoad);
62 + short16 middleData = convert_short16(middleLoad);
63 + short16 rightData = convert_short16(rightLoad);
64 +
65 + /* [Convert data] */
66 +
67 + /* [Calculation] */
68 + /*
69 + * Calculate the results for the first row.
70 + * Looking at the Sobel masks above for the first line of input,
71 + * the dX calculation is the sum of 1 * leftData, 0 * middleData, and -1 * rightData.
72 + * The dY calculation is the sum of 1 * leftData, 2 * middleData, and 1 * rightData.
73 + * This is what is being calculated below, except we have removed the
74 + * unnecessary calculations (multiplications by 1 or 0) and we are calculating 16 values at once.
75 + * This pattern repeats for the other 2 rows of data.
76 + */
77 +
78 + short16 dx = rightData - leftData;
79 + short16 dy = rightData + leftData + middleData * (short)2;
80 +
81 + /* [Calculation] */
82 +
83 + /* [Calculation] */
84 +
85 + /* [Calculation] */
86 +
87 + /* [Calculation] */
88 +
89 + /* [Calculation] */
90 +
91 + /* [Calculation] */
92 +
93 + /* [Calculation] */
94 +
95 + /* [Calculation] */
96 +
97 + /* [Calculation] */
98 +
99 + /* [Calculation] */
100 +
101 + /* [Calculation] */
102 +
103 + /* [Calculation] */
104 +
105 + /* [Calculation] */
106 +
107 + /* [Calculation] */
108 +
109 + /* [Calculation] */
110 +
111 + /* [Calculation] */
112 +
113 + /* [Calculation] */
114 +
115 + /* [Calculation] */
116 +
117 + /* [Calculation] */
118 +
119 + /* [Calculation] */
120 +
121 + /* [Calculation] */
122 +
123 + /* [Calculation] */
124 +
125 + /* [Calculation] */
126 +
127 + /* [Calculation] */
128 +
129 + /* [Calculation] */
130 +
131 + /* [Calculation] */
132 +
133 + /* [Calculation] */
134 +
135 + /* [Calculation] */
136 +
137 + /* [Calculation] */
138 +
139 + /* [Calculation] */
140 +
141 + /* [Calculation] */
142 +
143 + /* [Calculation] */
144 +
145 + /* [Calculation] */
146 +
147 + /* [Calculation] */
148 +
149 + /* [Calculation] */
150 +
151 + /* [Calculation] */
152 +
153 + /* [Calculation] */
154 +
155 + /* [Calculation] */
156 +
157 + /* [Calculation] */
158 +
159 + /* [Calculation] */
160 +
161 + /* [Calculation] */
162 +
163 + /* [Calculation] */
164 +
165 + /* [Calculation] */
166 +
167 + /* [Calculation] */
168 +
169 + /* [Calculation] */
170 +
171 + /* [Calculation] */
172 +
173 + /* [Calculation] */
174 +
175 + /* [Calculation] */
176 +
177 + /* [Calculation] */
178 +
179 + /* [Calculation] */
180 +
181 + /* [Calculation] */
182 +
183 + /* [Calculation] */
184 +
185 + /* [Calculation] */
186 +
187 + /* [Calculation] */
188 +
189 + /* [Calculation] */
190 +
191 + /* [Calculation] */
192 +
193 + /* [Calculation] */
194 +
195 + /* [Calculation] */
196 +
197 + /* [Calculation] */
198 +
199 + /* [Calculation] */
200 +
201 + /* [Calculation] */
202 +
203 + /* [Calculation] */
204 +
205 + /* [Calculation] */
206 +
207 + /* [Calculation] */
208 +
209 + /* [Calculation] */
210 +
211 + /* [Calculation] */
212 +
213 + /* [Calculation] */
214 +
215 + /* [Calculation] */
216 +
217 + /* [Calculation] */
218 +
219 + /* [Calculation] */
220 +
221 + /* [Calculation] */
222 +
223 + /* [Calculation] */
224 +
225 + /* [Calculation] */
226 +
227 + /* [Calculation] */
228 +
229 + /* [Calculation] */
230 +
231 + /* [Calculation] */
232 +
233 + /* [Calculation] */
234 +
235 + /* [Calculation] */
236 +
237 + /* [Calculation] */
238 +
239 + /* [Calculation] */
240 +
241 + /* [Calculation] */
242 +
243 + /* [Calculation] */
244 +
245 + /* [Calculation] */
246 +
247 + /* [Calculation] */
248 +
249 + /* [Calculation] */
250 +
251 + /* [Calculation] */
252 +
253 + /* [Calculation] */
254 +
255 + /* [Calculation] */
256 +
257 + /* [Calculation] */
258 +
259 + /* [Calculation] */
260 +
261 + /* [Calculation] */
262 +
263 + /* [Calculation] */
264 +
265 + /* [Calculation] */
266 +
267 + /* [Calculation] */
268 +
269 + /* [Calculation] */
270 +
271 + /* [Calculation] */
272 +
273 + /* [Calculation] */
274 +
275 + /* [Calculation] */
276 +
277 + /* [Calculation] */
278 +
279 + /* [Calculation] */
280 +
281 + /* [Calculation] */
282 +
283 + /* [Calculation] */
284 +
285 + /* [Calculation] */
286 +
287 + /* [Calculation] */
288 +
289 + /* [Calculation] */
290 +
291 + /* [Calculation] */
292 +
293 + /* [Calculation] */
294 +
295 + /* [Calculation] */
296 +
297 + /* [Calculation] */
298 +
299 + /* [Calculation] */
300 +
301 + /* [Calculation] */
302 +
303 + /* [Calculation] */
304 +
305 + /* [Calculation] */
306 +
307 + /* [Calculation] */
308 +
309 + /* [Calculation] */
310 +
311 + /* [Calculation] */
312 +
313 + /* [Calculation] */
314 +
315 + /* [Calculation] */
316 +
317 + /* [Calculation] */
318 +
319 + /* [Calculation] */
320 +
321 + /* [Calculation] */
322 +
323 + /* [Calculation] */
324 +
325 + /* [Calculation] */
326 +
327 + /* [Calculation] */
328 +
329 + /* [Calculation] */
330 +
331 + /* [Calculation] */
332 +
333 + /* [Calculation] */
334 +
335 + /* [Calculation] */
336 +
337 + /* [Calculation] */
338 +
339 + /* [Calculation] */
340 +
341 + /* [Calculation] */
342 +
343 + /* [Calculation] */
344 +
345 + /* [Calculation] */
346 +
347 + /* [Calculation] */
348 +
349 + /* [Calculation] */
350 +
351 + /* [Calculation] */
352 +
353 + /* [Calculation] */
354 +
355 + /* [Calculation] */
356 +
357 + /* [Calculation] */
358 +
359 + /* [Calculation] */
360 +
361 + /* [Calculation] */
362 +
363 + /* [Calculation] */
364 +
365 + /* [Calculation] */
366 +
367 + /* [Calculation] */
368 +
369 + /* [Calculation] */
370 +
371 + /* [Calculation] */
372 +
373 + /* [Calculation] */
374 +
375 + /* [Calculation] */
376 +
377 + /* [Calculation] */
378 +
379 + /* [Calculation] */
380 +
381 + /* [Calculation] */
382 +
383 + /* [Calculation] */
384 +
385 + /* [Calculation] */
386 +
387 + /* [Calculation] */
388 +
389 + /* [Calculation] */
390 +
391 + /* [Calculation] */
392 +
393 + /* [Calculation] */
394 +
395 + /* [Calculation] */
396 +
397 + /* [Calculation] */
398 +
399 + /* [Calculation] */
400 +
401 + /* [Calculation] */
402 +
403 + /* [Calculation] */
404 +
405 + /* [Calculation] */
406 +
407 + /* [Calculation] */
408 +
409 + /* [Calculation] */
410 +
411 + /* [Calculation] */
412 +
413 + /* [Calculation] */
414 +
415 + /* [Calculation] */
416 +
417 + /* [Calculation] */
418 +
419 + /* [Calculation] */
420 +
421 + /* [Calculation] */
422 +
423 + /* [Calculation] */
424 +
425 + /* [Calculation] */
426 +
427 + /* [Calculation] */
428 +
429 + /* [Calculation] */
430 +
431 + /* [Calculation] */
432 +
433 + /* [Calculation] */
434 +
435 + /* [Calculation] */
436 +
437 + /* [Calculation] */
438 +
439 + /* [Calculation] */
440 +
441 + /* [Calculation] */
442 +
443 + /* [Calculation] */
444 +
445 + /* [Calculation] */
446 +
447 + /* [Calculation] */
448 +
449 + /* [Calculation] */
450 +
451 + /* [Calculation] */
452 +
453 + /* [Calculation] */
454 +
455 + /* [Calculation] */
456 +
457 + /* [Calculation] */
458 +
459 + /* [Calculation] */
460 +
461 + /* [Calculation] */
462 +
463 + /* [Calculation] */
464 +
465 + /* [Calculation] */
466 +
467 + /* [Calculation] */
468 +
469 + /* [Calculation] */
470 +
471 + /* [Calculation] */
472 +
473 + /* [Calculation] */
474 +
475 + /* [Calculation] */
476 +
477 + /* [Calculation] */
478 +
479 + /* [Calculation] */
480 +
481 + /* [Calculation] */
482 +
483 + /* [Calculation] */
484 +
485 + /* [Calculation] */
486 +
487 + /* [Calculation] */
488 +
489 + /* [Calculation] */
490 +
491 + /* [Calculation] */
492 +
493 + /* [Calculation] */
494 +
495 + /* [Calculation] */
496 +
497 + /* [Calculation] */
498 +
499 + /* [Calculation] */
500 +
501 + /* [Calculation] */
502 +
503 + /* [Calculation] */
504 +
505 + /* [Calculation] */
506 +
507 + /* [Calculation] */
508 +
509 + /* [Calculation] */
510 +
511 + /* [Calculation] */
512 +
513 + /* [Calculation] */
514 +
515 + /* [Calculation] */
516 +
517 + /* [Calculation] */
518 +
519 + /* [Calculation] */
520 +
521 + /* [Calculation] */
522 +
523 + /* [Calculation] */
524 +
525 + /* [Calculation] */
526 +
527 + /* [Calculation] */
528 +
529 + /* [Calculation] */
530 +
531 + /* [Calculation] */
532 +
533 + /* [Calculation] */
534 +
535 + /* [Calculation] */
536 +
537 + /* [Calculation] */
538 +
539 + /* [Calculation] */
540 +
541 + /* [Calculation] */
542 +
543 + /* [Calculation] */
544 +
545 + /* [Calculation] */
546 +
547 + /* [Calculation] */
548 +
549 + /* [Calculation] */
550 +
551 + /* [Calculation] */
552 +
553 + /* [Calculation] */
554 +
555 + /* [Calculation] */
556 +
557 + /* [Calculation] */
558 +
559 + /* [Calculation] */
560 +
561 + /* [Calculation] */
562 +
563 + /* [Calculation] */
564 +
565 + /* [Calculation] */
566 +
567 + /* [Calculation] */
568 +
569 + /* [Calculation] */
570 +
571 + /* [Calculation] */
572 +
573 + /* [Calculation] */
574 +
575 + /* [Calculation] */
576 +
577 + /* [Calculation] */
578 +
579 + /* [Calculation] */
580 +
581 + /* [Calculation] */
582 +
583 + /* [Calculation] */
584 +
585 + /* [Calculation] */
586 +
587 + /* [Calculation] */
588 +
589 + /* [Calculation] */
590 +
591 + /* [Calculation] */
592 +
593 + /* [Calculation] */
594 +
595 + /* [Calculation] */
596 +
597 + /* [Calculation] */
598 +
599 + /* [Calculation] */
600 +
601 + /* [Calculation] */
602 +
603 + /* [Calculation] */
604 +
605 + /* [Calculation] */
606 +
607 + /* [Calculation] */
608 +
609 + /* [Calculation] */
610 +
611 + /* [Calculation] */
612 +
613 + /* [Calculation] */
614 +
615 + /* [Calculation] */
616 +
617 + /* [Calculation] */
618 +
619 + /* [Calculation] */
620 +
621 + /* [Calculation] */
622 +
623 + /* [Calculation] */
624 +
625 + /* [Calculation] */
626 +
627 + /* [Calculation] */
628 +
629 + /* [Calculation] */
630 +
631 + /* [Calculation] */
632 +
633 + /* [Calculation] */
634 +
635 + /* [Calculation] */
636 +
637 + /* [Calculation] */
638 +
639 + /* [Calculation] */
640 +
641 + /* [Calculation] */
642 +
643 + /* [Calculation] */
644 +
645 + /* [Calculation] */
646 +
647 + /* [Calculation] */
648 +
649 + /* [Calculation] */
650 +
651 + /* [Calculation] */
652 +
653 + /* [Calculation] */
654 +
655 + /* [Calculation] */
656 +
657 + /* [Calculation] */
658 +
659 + /* [Calculation] */
660 +
661 + /* [Calculation] */
662 +
663 + /* [Calculation] */
664 +
665 + /* [Calculation] */
666 +
667 + /* [Calculation] */
668 +
669 + /* [Calculation] */
670 +
671 + /* [Calculation] */
672 +
673 + /* [Calculation] */
674 +
675 + /* [Calculation] */
676 +
677 + /* [Calculation] */
678 +
679 + /* [Calculation] */
680 +
681 + /* [Calculation] */
682 +
683 + /* [Calculation] */
684 +
685 + /* [Calculation] */
686 +
687 + /* [Calculation] */
688 +
689 + /* [Calculation] */
690 +
691 + /* [Calculation] */
692 +
693 + /* [Calculation] */
694 +
695 + /* [Calculation] */
696 +
697 + /* [Calculation] */
698 +
699 + /* [Calculation] */
700 +
701 + /* [Calculation] */
702 +
703 + /* [Calculation] */
704 +
705 + /* [Calculation] */
706 +
707 + /* [Calculation] */
708 +
709 + /* [Calculation] */
710 +
711 + /* [Calculation] */
712 +
713 + /* [Calculation] */
714 +
715 + /* [Calculation] */
716 +
717 + /* [Calculation] */
718 +
719 + /* [Calculation] */
720 +
721 + /* [Calculation] */
722 +
723 + /* [Calculation] */
724 +
725 + /* [Calculation] */
726 +
727 + /* [Calculation] */
728 +
729 + /* [Calculation] */
730 +
731 + /* [Calculation] */
732 +
733 + /* [Calculation] */
734 +
735 + /* [Calculation] */
736 +
737 + /* [Calculation] */
738 +
739 + /* [Calculation] */
740 +
741 + /* [Calculation] */
742 +
743 + /* [Calculation] */
744 +
745 + /* [Calculation] */
746 +
747 + /* [Calculation] */
748 +
749 + /* [Calculation] */
750 +
751 + /* [Calculation] */
752 +
753 + /* [Calculation] */
754 +
755 + /* [Calculation] */
756 +
757 + /* [Calculation] */
758 +
759 + /* [Calculation] */
760 +
761 + /* [Calculation] */
762 +
763 + /* [Calculation] */
764 +
765 + /* [Calculation] */
766 +
767 + /* [Calculation] */
768 +
769 + /* [Calculation] */
770 +
771 + /* [Calculation] */
772 +
773 + /* [Calculation] */
774 +
775 + /* [Calculation] */
776 +
777 + /* [Calculation] */
778 +
779 + /* [Calculation] */
780 +
781 + /* [Calculation] */
782 +
783 + /* [Calculation] */
784 +
785 + /* [Calculation] */
786 +
787 + /* [Calculation] */
788 +
789 + /* [Calculation] */
790 +
791 + /* [Calculation] */
792 +
793 + /* [Calculation] */
794 +
795 + /* [Calculation] */
796 +
797 + /* [Calculation] */
798 +
799 + /* [Calculation] */
800 +
801 + /* [Calculation] */
802 +
803 + /* [Calculation] */
804 +
805 + /* [Calculation] */
806 +
807 + /* [Calculation] */
808 +
809 + /* [Calculation] */
810 +
811 + /* [Calculation] */
812 +
813 + /* [Calculation] */
814 +
815 + /* [Calculation] */
816 +
817 + /* [Calculation] */
818 +
819 + /* [Calculation] */
820 +
821 + /* [Calculation] */
822 +
823 + /* [Calculation] */
824 +
825 + /* [Calculation] */
826 +
827 + /* [Calculation] */
828 +
829 + /* [Calculation] */
830 +
831 + /* [Calculation] */
832 +
833 + /* [Calculation] */
834 +
835 + /* [Calculation] */
836 +
837 + /* [Calculation] */
838 +
839 + /* [Calculation] */
840 +
841 + /* [Calculation] */
842 +
843 + /* [Calculation] */
844 +
845 + /* [Calculation] */
846 +
847 + /* [Calculation] */
848 +
849 + /* [Calculation] */
850 +
851 + /* [Calculation] */
852 +
853 + /* [Calculation] */
854 +
855 + /* [Calculation] */
856 +
857 + /* [Calculation] */
858 +
859 + /* [Calculation] */
860 +
861 + /* [Calculation] */
862 +
863 + /* [Calculation] */
864 +
865 + /* [Calculation] */
866 +
867 + /* [Calculation] */
868 +
869 + /* [Calculation] */
870 +
871 + /* [Calculation] */
872 +
873 + /* [Calculation] */
874 +
875 + /* [Calculation] */
876 +
877 + /* [Calculation] */
878 +
879 + /* [Calculation] */
880 +
881 + /* [Calculation] */
882 +
883 + /* [Calculation] */
884 +
885 + /* [Calculation] */
886 +
887 + /* [Calculation] */
888 +
889 + /* [Calculation] */
890 +
891 + /* [Calculation] */
892 +
893 + /* [Calculation] */
894 +
895 + /* [Calculation] */
896 +
897 + /* [Calculation] */
898 +
899 + /* [Calculation] */
900 +
901 + /* [Calculation] */
902 +
903 + /* [Calculation] */
904 +
905 + /* [Calculation] */
906 +
907 + /* [Calculation] */
908 +
909 + /* [Calculation] */
910 +
911 + /* [Calculation] */
912 +
913 + /* [Calculation] */
914 +
915 + /* [Calculation] */
916 +
917 + /* [Calculation] */
918 +
919 + /* [Calculation] */
920 +
921 + /* [Calculation] */
922 +
923 + /* [Calculation] */
924 +
925 + /* [Calculation] */
926 +
927 + /* [Calculation] */
928 +
929 + /* [Calculation] */
930 +
931 + /* [Calculation] */
932 +
933 + /* [Calculation] */
934 +
935 + /* [Calculation] */
936 +
937 + /* [Calculation] */
938 +
939 + /* [Calculation] */
940 +
941 + /* [Calculation] */
942 +
943 + /* [Calculation] */
944 +
945 + /* [Calculation] */
946 +
947 + /* [Calculation] */
948 +
949 + /* [Calculation] */
950 +
951 + /* [Calculation] */
952 +
953 + /* [Calculation] */
954 +
955 + /* [Calculation] */
956 +
957 + /* [Calculation] */
958 +
959 + /* [Calculation] */
960 +
961 + /* [Calculation] */
962 +
963 + /* [Calculation] */
964 +
965 + /* [Calculation] */
966 +
967 + /* [Calculation] */
968 +
969 + /* [Calculation] */
970 +
971 + /* [Calculation] */
972 +
973 + /* [Calculation] */
974 +
975 + /* [Calculation] */
976 +
977 + /* [Calculation] */
978 +
979 + /* [Calculation] */
980 +
98
```

```

75 + /*
76 + * Second row of input.
77 + * By adding the 'width * 1' to the offset we get the next row of data at the same column position.
78 + * middleData is not loaded because it is not used in any of the calculations.
79 + */
80 + leftLoad = vload16(0, inputImage + (offset + width * 1 + 0));
81 + rightLoad = vload16(0, inputImage + (offset + width * 1 + 2));
82 +
83 + leftData = convert_short16(leftLoad);
84 + rightData = convert_short16(rightLoad);
85 +
86 + /*
87 + * Calculate the results for the second row.
88 + * The dX calculation is the sum of -2 * leftData, 0 * middleData, and -2 * rightData.
89 + * There is no dY calculation to do: sum of 0 * leftData, 0 * middleData, and 0 * rightData.
90 + */
91 + dx += (rightData - leftData) * (short)2;
92 +
93 + /* Third row of input.*/
94 + leftLoad = vload16(0, inputImage + (offset + width * 2 + 0));
95 + middleLoad = vload16(0, inputImage + (offset + width * 2 + 1));
96 + rightLoad = vload16(0, inputImage + (offset + width * 2 + 2));
97 +
98 + leftData = convert_short16(leftLoad);
99 + middleData = convert_short16(middleLoad);
100 + rightData = convert_short16(rightLoad);
101 +
102 + /*
103 + * Calculate the results for the third row.
104 + * The dX calculation is the sum of -1 * leftData, 0 * middleData, and -1 * rightData.
105 + * The dY calculation is the sum of -1 * leftData, -2 * middleData, and -1 * rightData.
106 + */
107 + dx += rightData - leftData;
108 + dy -= rightData + leftData + middleData * (short)2;
109 +
110 + /* [Store] */
111 + /*
112 + * Store the results.
113 + * The range of outputs from our Sobel calculations is [-1020, 1020].
114 + * In order to output this as an 8-bit signed char we must divide it by 8 (or shift right 3 times).
115 + * This gives the range [-128, 128]. Depending on what type of output you require,
116 + * (signed/unsigned, seperate/combined gradients) it is possible to do more of the calculations on the GPU using OpenCL.
117 + * In this sample we're assuming that the application requires signed uncombined gradient outputs.
118 + */
119 + vstore16(convert_char16(dx >> 3), 0, outputImageDX + offset + width + 1);
120 + vstore16(convert_char16(dy >> 3), 0, outputImageDY + offset + width + 1);
121 + /* [Store] */
122 + }

```

### 247 samples/sobel/sobel.cpp

| ... | ... | @@ -0,0 +1,247 @@                                                                                                                                                                                                                                                                                                                                                               |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | +   | /*<br>* This confidential and proprietary software may be used only as<br>* authorised by a licensing agreement from ARM Limited<br>* (C) COPYRIGHT 2013 ARM Limited<br>* ALL RIGHTS RESERVED<br>* The entire notice above must be reproduced on all authorised<br>* copies and copies may only be made to the extent permitted<br>* by a licensing agreement from ARM Limited. |
| 11  | +   | #include "common.h"<br>#include "image.h"                                                                                                                                                                                                                                                                                                                                       |
| 14  | +   | #include <CL/cl.h>                                                                                                                                                                                                                                                                                                                                                              |
| 15  | +   | #include <iostream>                                                                                                                                                                                                                                                                                                                                                             |
| 16  | +   | #include <fstream>                                                                                                                                                                                                                                                                                                                                                              |

```

17 + #include <sstream>
18 + #include <cstddef>
19 + #include <cmath>
20 +
21 + using namespace std;
22 +
23 + /**
24 + * \brief Simple Sobel filter OpenCL sample.
25 + * \details A sample which loads a bitmap and then passes it to the GPU.
26 + * An OpenCL kernel which does Sobel filtering is then run on the data.
27 + * The gradients of the image in x and y directions are returned by the GPU
28 + * and are combined on the CPU to form the filtered data.
29 + * The input image is loaded from assets/input.bmp. The output gradients in X and Y,
30 + * as well as the combined gradient image are stored in output-dX.bmp, output-dY.bmp
31 + * and output.bmp respectively.
32 + * \return The exit code of the application, non-zero if a problem occurred.
33 + */
34 + int main(void)
35 + {
36 + /*
37 + * Name of the bitmap to load and run the sobel filter on.
38 + * It's width must be divisible by 16.
39 + */
40 + string filename = "assets/input.bmp";
41 +
42 + cl_context context = 0;
43 + cl_command_queue commandQueue = 0;
44 + cl_program program = 0;
45 + cl_device_id device = 0;
46 + cl_kernel kernel = 0;
47 + const unsigned int numberOfMemoryObjects = 3;
48 + cl_mem memoryObjects[numberOfMemoryObjects] = {0, 0, 0};
49 + cl_int errorNumber;
50 +
51 + if (!createContext(&context))
52 + {
53 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
54 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
55 + return 1;
56 + }
57 +
58 + if (!createCommandQueue(context, &commandQueue, &device))
59 + {
60 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
61 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
62 + return 1;
63 + }
64 +
65 + if (!createProgram(context, device, "assets/sobel.cl", &program))
66 + {
67 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
68 + cerr << "Failed to create OpenCL program." << __FILE__ << ":" << __LINE__ << endl;
69 + return 1;
70 + }
71 +
72 + kernel = clCreateKernel(program, "sobel", &errorNumber);
73 + if (!checkSuccess(errorNumber))
74 + {
75 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
76 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
77 + return 1;
78 + }
79 +
80 + /* Load 24-bits per pixel RGB data from a bitmap. */
81 + cl_int width;
82 + cl_int height;
83 + unsigned char* imageData = NULL;
84 + if (!loadFromBitmap(filename, &width, &height, &imageData))
85 + {

```

```

86 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
87 + cerr << "Failed loading bitmap. " << __FILE__ << ":"<< __LINE__ << endl;
88 + return 1;
89 +
90 +
91 + /* All buffers are the size of the image data. */
92 + size_t bufferSize = width * height * sizeof(cl_uchar);
93 +
94 + bool createMemoryObjectsSuccess = true;
95 + /* Create one input buffer for the image data, and two output buffers for the gradients in X and Y respectively. */
96 + memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
97 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
98 + memoryObjects[1] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
99 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
100 + memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
101 + createMemoryObjectsSuccess &= checkSuccess(errorNumber);
102 + if (!createMemoryObjectsSuccess)
103 + {
104 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
105 + cerr << "Failed to create OpenCL buffers. " << __FILE__ << ":"<< __LINE__ << endl;
106 + return 1;
107 + }
108 +
109 + /* Map the input luminance memory object to a host side pointer. */
110 + cl_uchar* luminance = (cl_uchar*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, &errorNumber);
111 + if (!checkSuccess(errorNumber))
112 + {
113 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
114 + cerr << "Mapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
115 + return 1;
116 + }
117 +
118 + /* Convert 24-bits per pixel RGB into 8-bits per pixel luminance data. */
119 + RGBToLuminance(imageData, luminance, width, height);
120 +
121 + delete [] imageData;
122 +
123 + /* Unmap the memory so we can pass it to the kernel. */
124 + if (!checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[0], luminance, 0, NULL, NULL)))
125 + {
126 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
127 + cerr << "Unmapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
128 + return 1;
129 + }
130 +
131 + bool setKernelArgumentsSuccess = true;
132 + /* Setup the kernel arguments. */
133 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
134 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_int), &width));
135 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_mem), &memoryObjects[1]));
136 + setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 3, sizeof(cl_mem), &memoryObjects[2]));
137 + if (!setKernelArgumentsSuccess)
138 + {
139 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
140 + cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":"<< __LINE__ << endl;
141 + return 1;
142 + }
143 +
144 + /* An event to associate with the Kernel. Allows us to retrieve profiling information later. */
145 + cl_event event = 0;
146 +
147 + /* [Kernel size] */
148 + /*
149 + * Each instance of the kernel operates on a 16 * 1 portion of the image.
150 + * Therefore, the global work size must be width / 16 by height / 1 work items.
151 + */
152 + size_t globalWorksize[2] = {width / 16, height / 1};
153 + /* [Kernel size] */
154 +

```

```

155 + /* Enqueue the kernel */
156 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 2, NULL, globalWorksize, NULL, 0, NULL, &event)))
157 + {
158 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
159 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
160 + return 1;
161 + }
162 +
163 + /* Wait for completion */
164 + if (!checkSuccess(clFinish(commandQueue)))
165 + {
166 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
167 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
168 + return 1;
169 + }
170 +
171 + /* Print the profiling information for the event. */
172 + printProfilingInfo(event);
173 + /* Release the event object. */
174 + if (!checkSuccess(clReleaseEvent(event)))
175 + {
176 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
177 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
178 + return 1;
179 + }
180 +
181 + /* Map the arrays holding the output gradients. */
182 + bool mapMemoryObjectsSuccess = true;
183 + cl_char* outputDx = (cl_char*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
184 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
185 + cl_char* outputDy = (cl_char*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
186 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
187 + if (!mapMemoryObjectsSuccess)
188 + {
189 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
190 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
191 + return 1;
192 + }
193 +
194 + /*
195 + * In order to better visualise the data, we take the absolute
196 + * value of the gradients and then combine them together.
197 + * This is work which could be done in the OpenCL kernel, it all depends
198 + * on what type of output you require.
199 + */
200 +
201 + /* To visualise the data we take the absolute values of the gradients. */
202 + unsigned char *absDX = new unsigned char[width * height];
203 + unsigned char *absDY = new unsigned char[width * height];
204 + for (int i = 0; i < width * height; i++)
205 + {
206 + absDX[i] = abs(outputDx[i]);
207 + absDY[i] = abs(outputDy[i]);
208 + }
209 +
210 + /* Unmap the memory. */
211 + bool unmapMemoryObjectsSuccess = true;
212 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], outputDx, 0, NULL, NULL));
213 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], outputDy, 0, NULL, NULL));
214 + if (!unmapMemoryObjectsSuccess)
215 + {
216 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
217 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
218 + return 1;
219 + }
220 +
221 + /* Release OpenCL objects. */
222 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
223 +

```

```

224 + /* Convert the two output luminance arrays to RGB and save them out to files. */
225 + unsigned char* rgbOut = new unsigned char[width * height * 3];
226 + luminanceToRGB(absDX, rgbOut, width, height);
227 + saveToBitmap("output-dX.bmp", width, height, rgbOut);
228 +
229 + luminanceToRGB(absDY, rgbOut, width, height);
230 + saveToBitmap("output-dY.bmp", width, height, rgbOut);
231 +
232 + /* Calculate the total gradient of the image, convert it to RGB and store it out to a file. */
233 + unsigned char* totalOutput = new unsigned char[width * height];
234 + for (int index = 0; index < width * height; index++)
235 + {
236 + totalOutput[index] = sqrt(pow(absDX[index], 2) + pow(absDY[index], 2));
237 + }
238 + luminanceToRGB(totalOutput, rgbOut, width, height);
239 + saveToBitmap("output.bmp", width, height, rgbOut);
240 +
241 + delete [] absDX;
242 + delete [] absDY;
243 + delete [] rgbOut;
244 + delete [] totalOutput;
245 +
246 + return 0;
247 +

```

▼ 48 samples/sobel\_no\_vectors/Makefile □

| ... | ... |                                                                                   |
|-----|-----|-----------------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,48 @@                                                                  |
| 1   |     | + # This confidential and proprietary software may be used only as                |
| 2   |     | + # authorised by a licensing agreement from ARM Limited                          |
| 3   |     | + # (C) COPYRIGHT 2013 ARM Limited                                                |
| 4   |     | + # ALL RIGHTS RESERVED                                                           |
| 5   |     | + # The entire notice above must be reproduced on all authorised                  |
| 6   |     | + # copies and copies may only be made to the extent permitted                    |
| 7   |     | + # by a licensing agreement from ARM Limited.                                    |
| 8   |     | +                                                                                 |
| 9   |     | + ROOT:=../../                                                                    |
| 10  |     | +                                                                                 |
| 11  |     | + include \$(ROOT)/platform.mk                                                    |
| 12  |     | +                                                                                 |
| 13  |     | + CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I.                       |
| 14  |     | +                                                                                 |
| 15  |     | + LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon                     |
| 16  |     | +                                                                                 |
| 17  |     | + SOURCES:=sobel_no_vectors.cpp                                                   |
| 18  |     | + HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h                       |
| 19  |     | +                                                                                 |
| 20  |     | + OBJECTS:=\$(SOURCES:.cpp=.o)                                                    |
| 21  |     | +                                                                                 |
| 22  |     | + EXECUTABLE:=sobel_no_vectors                                                    |
| 23  |     | +                                                                                 |
| 24  |     | + all: \$(EXECUTABLE)                                                             |
| 25  |     | +                                                                                 |
| 26  |     | + \$(EXECUTABLE): \$(OBJECTS) libOpenCL libCommon                                 |
| 27  |     | +     \$(CC) \$(OBJECTS) -o \$@ \$(LDFLAGS)                                       |
| 28  |     | +                                                                                 |
| 29  |     | + .cpp.o:                                                                         |
| 30  |     | +     \$(CC) \$(CFLAGS) \$< -o \$@                                                |
| 31  |     | +                                                                                 |
| 32  |     | + \$(OBJECTS): \$(HEADERS)                                                        |
| 33  |     | +                                                                                 |
| 34  |     | + install: \$(EXECUTABLE)                                                         |
| 35  |     | +     -\$(MKDIR) "\$(ROOT)/bin/\$(EXECUTABLE)/assets"                             |
| 36  |     | +     \$(CP) "\$(EXECUTABLE)" "\$(ROOT)/bin/\$(EXECUTABLE)/\$(EXECUTABLE)"        |
| 37  |     | +     cd assets \$(CONCATENATE) \$(CP) * "../\$(ROOT)/bin/\$(EXECUTABLE)/assets/" |
| 38  |     | +                                                                                 |
| 39  |     | + .PHONY: clean libOpenCL libCommon                                               |
| 40  |     | +                                                                                 |

```
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a
```

✓ BIN ■■■■■ samples/sobel\_no\_vectors/assets/input.bmp □

Binary file not shown.

✓ 118 ■■■■■ samples/sobel\_no\_vectors/assets/sobel\_no\_vectors.cl □

```
... ... @@ -0,0 +1,118 @@
1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 +/**
12 + * \brief Sobel filter kernel function which doesn't use vectors.
13 + * \param[in] inputImage Input image data in row-major format.
14 + * \param[in] width Width of the image passed in as inputImage.
15 + * \param[out] outputImageDX Output image of the calculated gradient in the X direction.
16 + * \param[out] outputImageDY Output image of the calculated gradient in the Y direction.
17 + */
18 +__kernel void sobel_no_vectors(__global const uchar* restrict inputImage,
19 + const int width,
20 + __global char* restrict outputImageDX,
21 + __global char* restrict outputImageDY)
22 +{
23 + /* [Kernel size] */
24 + /*
25 + * Each kernel calculates a single output pixels in the same row.
26 + * column is in the range [0, width].
27 + * row is in the range [0, height].
28 + */
29 + const int column = get_global_id(0);
30 + const int row = get_global_id(1);
31 +
32 + /* Offset calculates the position in the linear data for the row and the column. */
33 + const int offset = row * width + column;
34 + /* [Kernel size] */
35 +
36 + /* [Load row] */
37 + /*
38 + * First row of input.
39 + * Load 1 value for leftLoad, middleLoad and rightLoad.
40 + */
41 + uchar leftLoad = *(inputImage + (offset + 0));
42 + uchar middleLoad = *(inputImage + (offset + 1));
43 + uchar rightLoad = *(inputImage + (offset + 2));
44 + /* [Load row] */
45 +
46 + /* [Convert data] */
47 + /*
48 + * Convert the data from unsigned chars to shorts (8-bit unsigned to 16-bit signed).
49 + * The calculations can overflow 8-bits so we require larger intermediate storage.
50 + * Additionally, the values can become negative so we need a signed type.
51 + */
52 + short leftData = convert_short(leftLoad);
```

```

53 + short middleData = convert_short(middleLoad);
54 + short rightData = convert_short(rightLoad);
55 + /* [Convert data] */
56 +
57 + /* [Calculation] */
58 + /*
59 + * Calculate the results for the first row.
60 + * Looking at the Sobel masks above for the first line of input,
61 + * the dX calculation is the sum of 1 * leftData, 0 * middleData, and -1 * rightData.
62 + * The dY calculation is the sum of 1 * leftData, 2 * middleData, and 1 * rightData.
63 + * This is what is being calculated below, except we have removed the
64 + * unnecessary calculations (multiplications by 1 or 0).
65 + * This pattern repeats for the other 2 rows of data.
66 + */
67 + short dx = rightData - leftData;
68 + short dy = rightData + leftData + middleData * (short)2;
69 + /* [Calculation] */
70 +
71 + /*
72 + * Second row of input.
73 + * By adding the 'width * 1' to the offset we get the next row of data at the same column position.
74 + * middleData is not loaded because it is not used in any of the calculations.
75 + */
76 + leftLoad = *(inputImage + (offset + width * 1 + 0));
77 + rightLoad = *(inputImage + (offset + width * 1 + 2));
78 +
79 + leftData = convert_short(leftLoad);
80 + rightData = convert_short(rightLoad);
81 +
82 + /*
83 + * Calculate the results for the second row.
84 + * The dX calculation is the sum of -2 * leftData, 0 * middleData, and -2 * rightData.
85 + * There is no dY calculation to do: sum of 0 * leftData, 0 * middleData, and 0 * rightData.
86 + */
87 + dx += (rightData - leftData) * (short)2;
88 +
89 + /* Third row of input. */
90 + leftLoad = *(inputImage + (offset + width * 2 + 0));
91 + middleLoad = *(inputImage + (offset + width * 2 + 1));
92 + rightLoad = *(inputImage + (offset + width * 2 + 2));
93 +
94 + leftData = convert_short(leftLoad);
95 + middleData = convert_short(middleLoad);
96 + rightData = convert_short(rightLoad);
97 +
98 + /*
99 + * Calculate the results for the third row.
100 + * The dX calculation is the sum of -1 * leftData, 0 * middleData, and -1 * rightData.
101 + * The dY calculation is the sum of -1 * leftData, -2 * middleData, and -1 * rightData.
102 + */
103 + dx += rightData - leftData;
104 + dy -= rightData + leftData + middleData * (short)2;
105 +
106 + /* [Store] */
107 + /*
108 + * Store the results.
109 + * The range of outputs from our Sobel calculations is [-1020, 1020].
110 + * In order to output this as an 8-bit signed char we must divide it by 8 (or shift right 3 times).
111 + * This gives the range [-128, 128]. Depending on what type of output you require,
112 + * (signed/unsigned, separate/combined gradients) it is possible to do more of the calculations on the GPU using OpenCL.
113 + * In this sample we're assuming that the application requires signed uncombined gradient outputs.
114 + */
115 + *(outputImageDX + offset + width + 1) = convert_char(dx >> 3);
116 + *(outputImageDY + offset + width + 1) = convert_char(dy >> 3);
117 + /* [Store] */
118 + }

```

```
... @@ -0,0 +1,240 @@
1 + /*
2 + * This confidential and proprietary software may be used only as
3 + * authorised by a licensing agreement from ARM Limited
4 + * (C) COPYRIGHT 2013 ARM Limited
5 + * ALL RIGHTS RESERVED
6 + * The entire notice above must be reproduced on all authorised
7 + * copies and copies may only be made to the extent permitted
8 + * by a licensing agreement from ARM Limited.
9 + */
10 +
11 + #include "common.h"
12 + #include "image.h"
13 +
14 + #include <CL/cl.h>
15 + #include <iostream>
16 + #include <fstream>
17 + #include <sstream>
18 + #include <cstddef>
19 + #include <cmath>
20 +
21 + using namespace std;
22 +
23 + /**
24 + * \brief Simple Sobel filter OpenCL sample which doesn't use vectors.
25 + * \details A sample which loads a bitmap and then passes it to the GPU.
26 + * An OpenCL kernel which does Sobel filtering is then run on the data.
27 + * The gradients of the image in x and y directions are returned by the GPU
28 + * and are combined on the CPU to form the filtered data.
29 + * The input image is loaded from assets/input.bmp. The output gradients in X and Y,
30 + * as well as the combined gradient image are stored in output-dX.bmp, output-dY.bmp
31 + * and output.bmp respectively.
32 + * No vectors are used in this sample's OpenCL kernel to provide a comparison with
33 + * the vectorized version.
34 + * \return The exit code of the application, non-zero if a problem occurred.
35 + */
36 + int main(void)
37 + {
38 + /*
39 + * Name of the bitmap to load and run the sobel filter on.
40 + */
41 + string filename = "assets/input.bmp";
42 +
43 + cl_context context = 0;
44 + cl_command_queue commandQueue = 0;
45 + cl_program program = 0;
46 + cl_device_id device = 0;
47 + cl_kernel kernel = 0;
48 + const unsigned int numberOfMemoryObjects = 3;
49 + cl_mem memoryObjects[numberOfMemoryObjects] = {0, 0, 0};
50 + cl_int errorNumber;
51 +
52 + if (!createContext(&context))
53 + {
54 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
55 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
56 + return 1;
57 + }
58 +
59 + if (!createCommandQueue(context, &commandQueue, &device))
60 + {
61 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
62 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
63 + return 1;
64 + }
65 +
66 + if (!createProgram(context, device, "assets/sobel_no_vectors.cl", &program))
67 + {
68 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
```

```

69+ cerr << "Failed to create OpenCL program." << __FILE__ << ":"<< __LINE__ << endl;
70+ return 1;
71+
72+
73+ kernel = clCreateKernel(program, "sobel_no_vectors", &errorNumber);
74+ if (!checkSuccess(errorNumber))
75+ {
76+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
77+ cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":"<< __LINE__ << endl;
78+ return 1;
79+ }
80+
81+ /* Load 24-bits per pixel RGB data from a bitmap. */
82+ cl_int width;
83+ cl_int height;
84+ unsigned char* imageData = NULL;
85+ if (!loadFromBitmap(filename, &width, &height, &imageData))
86+ {
87+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
88+ cerr << "Failed loading bitmap. " << __FILE__ << ":"<< __LINE__ << endl;
89+ return 1;
90+ }
91+
92+ /* All buffers are the size of the image data. */
93+ size_t bufferSize = width * height * sizeof(cl_uchar);
94+
95+ /* Create one input buffer for the image data, and two output buffers for the gradients in X and Y respectively. */
96+ bool createMemoryObjectsSuccess = true;
97+ memoryObjects[0] = clCreateBuffer(context, CL_MEM_READ_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
98+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
99+ memoryObjects[1] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
100+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
101+ memoryObjects[2] = clCreateBuffer(context, CL_MEM_WRITE_ONLY | CL_MEM_ALLOC_HOST_PTR, bufferSize, NULL, &errorNumber);
102+ createMemoryObjectsSuccess &= checkSuccess(errorNumber);
103+ if (!createMemoryObjectsSuccess)
104+ {
105+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
106+ cerr << "Failed to create OpenCL buffers. " << __FILE__ << ":"<< __LINE__ << endl;
107+ return 1;
108+ }
109+
110+ /* Map the input luminance memory object to a host side pointer. */
111+ cl_uchar* luminance = (cl_uchar*)clEnqueueMapBuffer(commandQueue, memoryObjects[0], CL_TRUE, CL_MAP_WRITE, 0, bufferSize, 0, NULL, &errorNumber);
112+ if (!checkSuccess(errorNumber))
113+ {
114+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
115+ cerr << "Mapping memory objects failed " << __FILE__ << ":"<< __LINE__ << endl;
116+ return 1;
117+ }
118+
119+ /* Convert 24-bits per pixel RGB into 8-bits per pixel luminance data. */
120+ RGBToLuminance(imageData, luminance, width, height);
121+
122+ delete [] imageData;
123+
124+ /* Setup the kernel arguments. */
125+ bool setKernelArgumentsSuccess = true;
126+ setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 0, sizeof(cl_mem), &memoryObjects[0]));
127+ setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 1, sizeof(cl_int), &width));
128+ setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 2, sizeof(cl_mem), &memoryObjects[1]));
129+ setKernelArgumentsSuccess &= checkSuccess(clSetKernelArg(kernel, 3, sizeof(cl_mem), &memoryObjects[2]));
130+ if (!setKernelArgumentsSuccess)
131+ {
132+ cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
133+ cerr << "Failed setting OpenCL kernel arguments. " << __FILE__ << ":"<< __LINE__ << endl;
134+ return 1;
135+ }
136+
137+ /* An event to associate with the Kernel. Allows us to retrieve profiling information later. */

```

```

138 + cl_event event = 0;
139 +
140 + /* [Kernel size] */
141 + /*
142 + * Each instance of the kernel operates on a single pixel portion of the image.
143 + * Therefore, the global work size is the number of pixel.
144 + */
145 + size_t globalWorksize[2] = {width, height};
146 + /* [Kernel size] */
147 +
148 + /* Enqueue the kernel */
149 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, 2, NULL, globalWorksize, NULL, 0, NULL, &event)))
150 + {
151 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
152 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
153 + return 1;
154 + }
155 +
156 + /* Wait for completion */
157 + if (!checkSuccess(clFinish(commandQueue)))
158 + {
159 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
160 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
161 + return 1;
162 + }
163 +
164 + /* Print the profiling information for the event. */
165 + printProfilingInfo(event);
166 + /* Release the event object. */
167 + if (!checkSuccess(clReleaseEvent(event)))
168 + {
169 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
170 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
171 + return 1;
172 + }
173 +
174 + /* Map the arrays holding the output gradients. */
175 + bool mapMemoryObjectsSuccess = true;
176 + cl_char* outputDx = (cl_char*)clEnqueueMapBuffer(commandQueue, memoryObjects[1], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
177 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
178 + cl_char* outputDy = (cl_char*)clEnqueueMapBuffer(commandQueue, memoryObjects[2], CL_TRUE, CL_MAP_READ, 0, bufferSize, 0, NULL,
179 + mapMemoryObjectsSuccess &= checkSuccess(errorNumber);
180 + if (!mapMemoryObjectsSuccess)
181 + {
182 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
183 + cerr << "Mapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
184 + return 1;
185 + }
186 +
187 + /*
188 + * In order to better visualise the data, we take the absolute
189 + * value of the gradients and then combine them together.
190 + * This is work which could be done in the OpenCL kernel, it all depends
191 + * on what type of output you require.
192 + */
193 +
194 + /* To visualise the data we take the absolute values of the gradients. */
195 + unsigned char *absDX = new unsigned char[width * height];
196 + unsigned char *absDY = new unsigned char[width * height];
197 + for (int i = 0; i < width * height; i++)
198 + {
199 + absDX[i] = abs(outputDx[i]);
200 + absDY[i] = abs(outputDy[i]);
201 + }
202 +
203 + /* Unmap the memory. */
204 + bool unmapMemoryObjectsSuccess = true;
205 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[1], outputDx, 0, NULL, NULL));
206 + unmapMemoryObjectsSuccess &= checkSuccess(clEnqueueUnmapMemObject(commandQueue, memoryObjects[2], outputDy, 0, NULL, NULL));

```

```

207 + if (!unmapMemoryObjectsSuccess)
208 + {
209 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
210 + cerr << "Unmapping memory objects failed " << __FILE__ << ":" << __LINE__ << endl;
211 + return 1;
212 + }
213 +
214 + /* Release OpenCL objects. */
215 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numberOfMemoryObjects);
216 +
217 + /* Convert the two output luminance arrays to RGB and save them out to files. */
218 + unsigned char* rgbOut = new unsigned char[width * height * 3];
219 + luminanceToRGB(absDX, rgbOut, width, height);
220 + saveToBitmap("output-dX.bmp", width, height, rgbOut);
221 +
222 + luminanceToRGB(absDY, rgbOut, width, height);
223 + saveToBitmap("output-dY.bmp", width, height, rgbOut);
224 +
225 + /* Calculate the total gradient of the image, convert it to RGB and store it out to a file. */
226 + unsigned char* totalOutput = new unsigned char[width * height];
227 + for (int index = 0; index < width * height; index++)
228 + {
229 + totalOutput[index] = sqrt(pow(absDX[index], 2) + pow(absDY[index], 2));
230 + }
231 + luminanceToRGB(totalOutput, rgbOut, width, height);
232 + saveToBitmap("output.bmp", width, height, rgbOut);
233 +
234 + delete [] absDX;
235 + delete [] absDY;
236 + delete [] rgbOut;
237 + delete [] totalOutput;
238 +
239 + return 0;
240 + }

```

▼ 48 samples/template/Makefile □

| ... | ... |                                                                  |
|-----|-----|------------------------------------------------------------------|
| 1   | 1   | @@ -0,0 +1,48 @@                                                 |
| 2   | +   | # This confidential and proprietary software may be used only as |
| 3   | +   | # authorised by a licensing agreement from ARM Limited           |
| 4   | +   | # (C) COPYRIGHT 2013 ARM Limited                                 |
| 5   | +   | # ALL RIGHTS RESERVED                                            |
| 6   | +   | # The entire notice above must be reproduced on all authorised   |
| 7   | +   | # copies and copies may only be made to the extent permitted     |
| 8   | +   | # by a licensing agreement from ARM Limited.                     |
| 9   | +   | ROOT:=..../..                                                    |
| 10  | +   |                                                                  |
| 11  | +   | include \$(ROOT)/platform.mk                                     |
| 12  | +   |                                                                  |
| 13  | +   | CFLAGS:=-c -Wall -I\$(ROOT)/include -I\$(ROOT)/common -I.        |
| 14  | +   |                                                                  |
| 15  | +   | LDFLAGS:=-L\$(ROOT)/lib -L\$(ROOT)/common -lOpenCL -lCommon      |
| 16  | +   |                                                                  |
| 17  | +   | SOURCES:=template.cpp                                            |
| 18  | +   | HEADERS:=\$(ROOT)/common/common.h \$(ROOT)/common/image.h        |
| 19  | +   |                                                                  |
| 20  | +   | OBJECTS:=\$(SOURCES:.cpp=.o)                                     |
| 21  | +   |                                                                  |
| 22  | +   | EXECUTABLE:=template                                             |
| 23  | +   |                                                                  |
| 24  | +   | all: \$(EXECUTABLE)                                              |
| 25  | +   |                                                                  |
| 26  | +   | \$(EXECUTABLE): \$(OBJECTS) libOpenCL libCommon                  |
| 27  | +   | \$(CC) \$(OBJECTS) -o \$@ \$(LDFLAGS)                            |
| 28  | +   |                                                                  |
| 29  | +   | .cpp.o:                                                          |
| 30  | +   | \$(CC) \$(CFLAGS) \$< -o \$@                                     |

```

31 +
32 + $(OBJECTS): $(HEADERS)
33 +
34 + install: $(EXECUTABLE)
35 + -$(MKDIR) "$(ROOT)/bin/$(EXECUTABLE)/assets"
36 + $(CP) "$(EXECUTABLE)" "$(ROOT)/bin/$(EXECUTABLE)/$(EXECUTABLE)"
37 + cd assets $(CONCATENATE) $(CP) * "../$(ROOT)/bin/$(EXECUTABLE)/assets/"
38 +
39 + .PHONY: clean libOpenCL libCommon
40 +
41 + clean:
42 + $(RM) $(OBJECTS) $(EXECUTABLE)
43 +
44 + libOpenCL:
45 + cd $(ROOT)/lib $(CONCATENATE) $(MAKE) libOpenCL.so
46 +
47 + libCommon:
48 + cd $(ROOT)/common/ $(CONCATENATE) $(MAKE) libCommon.a -
```

▼ 16 ████ samples/template/assets/template.cl □

|     |     |                                                                  |
|-----|-----|------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,16 @@                                                 |
| 1   | +   | /*                                                               |
| 2   | +   | * This confidential and proprietary software may be used only as |
| 3   | +   | * authorised by a licensing agreement from ARM Limited           |
| 4   | +   | (C) COPYRIGHT 2013 ARM Limited                                   |
| 5   | +   | ALL RIGHTS RESERVED                                              |
| 6   | +   | * The entire notice above must be reproduced on all authorised   |
| 7   | +   | * copies and copies may only be made to the extent permitted     |
| 8   | +   | * by a licensing agreement from ARM Limited.                     |
| 9   | +   | */                                                               |
| 10  | +   |                                                                  |
| 11  | +   | /**                                                              |
| 12  | +   | * \brief Template empty kernel.                                  |
| 13  | +   | */                                                               |
| 14  | +   | <b>__kernel void template()</b>                                  |
| 15  | +   | {                                                                |
| 16  | +   | } <span style="color:red">-</span>                               |

▼ 135 ████ samples/template/template.cpp □

|     |     |                                                                             |
|-----|-----|-----------------------------------------------------------------------------|
| ... | ... | @@ -0,0 +1,135 @@                                                           |
| 1   | +   | /*                                                                          |
| 2   | +   | * This confidential and proprietary software may be used only as            |
| 3   | +   | * authorised by a licensing agreement from ARM Limited                      |
| 4   | +   | (C) COPYRIGHT 2013 ARM Limited                                              |
| 5   | +   | ALL RIGHTS RESERVED                                                         |
| 6   | +   | * The entire notice above must be reproduced on all authorised              |
| 7   | +   | * copies and copies may only be made to the extent permitted                |
| 8   | +   | * by a licensing agreement from ARM Limited.                                |
| 9   | +   | */                                                                          |
| 10  | +   |                                                                             |
| 11  | +   | #include "common.h"                                                         |
| 12  | +   | #include "image.h"                                                          |
| 13  | +   |                                                                             |
| 14  | +   | #include <CL/cl.h>                                                          |
| 15  | +   | #include <iostream>                                                         |
| 16  | +   |                                                                             |
| 17  | +   | using namespace std;                                                        |
| 18  | +   |                                                                             |
| 19  | +   | /**                                                                         |
| 20  | +   | * \brief Simple template OpenCL sample.                                     |
| 21  | +   | * \details The basic code to run a kernel with no arguments.                |
| 22  | +   | * \return The exit code of the application, non-zero if a problem occurred. |
| 23  | +   | */                                                                          |
| 24  | +   | <b>int main(void)</b>                                                       |
| 25  | +   | {                                                                           |
| 26  | +   | cl_context context = 0;                                                     |

```

27 + cl_command_queue commandQueue = 0;
28 + cl_program program = 0;
29 + cl_device_id device = 0;
30 + cl_kernel kernel = 0;
31 + const int numMemoryObjects = 1;
32 + cl_mem memoryObjects[numMemoryObjects] = {0};
33 + cl_int errorNumber;
34 +
35 +
36 + /* Set up OpenCL environment: create context, command queue, program and kernel. */
37 +
38 + /* [Create Context] */
39 + if (!createContext(&context))
40 + {
41 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
42 + cerr << "Failed to create an OpenCL context. " << __FILE__ << ":" << __LINE__ << endl;
43 + return 1;
44 + }
45 + /* [Create Context] */
46 +
47 + /* [Create Command Queue] */
48 + if (!createCommandQueue(context, &commandQueue, &device))
49 + {
50 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
51 + cerr << "Failed to create the OpenCL command queue. " << __FILE__ << ":" << __LINE__ << endl;
52 + return 1;
53 + }
54 + /* [Create Command Queue] */
55 +
56 + /* [Create Program] */
57 + if (!createProgram(context, device, "assets/template.cl", &program))
58 + {
59 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
60 + cerr << "Failed to create OpenCL program. " << __FILE__ << ":" << __LINE__ << endl;
61 + return 1;
62 + }
63 + /* [Create Program] */
64 +
65 + /* [Create kernel] */
66 + kernel = clCreateKernel(program, "template", &errorNumber);
67 + if (!checkSuccess(errorNumber))
68 + {
69 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
70 + cerr << "Failed to create OpenCL kernel. " << __FILE__ << ":" << __LINE__ << endl;
71 + return 1;
72 + }
73 + /* [Create kernel] */
74 +
75 +
76 + /*
77 + * Add code here to set up memory/data, for example:
78 + * - Create memory buffers.
79 + * - Initialise the input data.
80 + * - Set up kernel arguments.
81 + */
82 +
83 +
84 + /* Execute the kernel instances. */
85 +
86 + /* [Set the kernel work size] */
87 + const int workDimensions = 1;
88 + size_t globalWorkSize[workDimensions] = {1};
89 + /* [Set the kernel work size] */
90 +
91 + /* [Enqueue the kernel] */
92 + /* An event to associate with the kernel. Allows us to retrieve profiling information later. */
93 + cl_event event = 0;
94 +
95 + if (!checkSuccess(clEnqueueNDRangeKernel(commandQueue, kernel, workDimensions, globalWorkSize, NULL, 0, NULL, &event)))

```

```
96 + {
97 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
98 + cerr << "Failed enqueueing the kernel. " << __FILE__ << ":" << __LINE__ << endl;
99 + return 1;
100 + }
101 + /* [Enqueue the kernel] */
102 +
103 + /* [Wait for kernel execution completion] */
104 + if (!checkSuccess(clFinish(commandQueue)))
105 + {
106 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
107 + cerr << "Failed waiting for kernel execution to finish. " << __FILE__ << ":" << __LINE__ << endl;
108 + return 1;
109 + }
110 + /* [Wait for kernel execution completion] */
111 +
112 +
113 + /* After execution. */
114 +
115 + /* [Print the profiling information for the event] */
116 + printProfilingInfo(event);
117 + /* Release the event object. */
118 + if (!checkSuccess(clReleaseEvent(event)))
119 + {
120 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
121 + cerr << "Failed releasing the event object. " << __FILE__ << ":" << __LINE__ << endl;
122 + return 1;
123 + }
124 + /* [Print the profiling information for the event] */
125 +
126 +
127 + /* Add code here to retrieve results of the kernel execution. */
128 +
129 +
130 + /* [Release OpenCL objects] */
131 + cleanUpOpenCL(context, commandQueue, program, kernel, memoryObjects, numMemoryObjects);
132 + /* [Release OpenCL objects] */
133 +
134 + return 0;
135 + }
```

0 comments on commit [d659399](#)