```
13
14      %Specify the number of threads
15 -    K_Kern.ThreadBlockSize = [256, 1, 1];
16
17      %Specify the size fo the grid
18 -    GridsTotal = ceil(atoms/256)+1; %number of grids which is 407
19 -    K_Kern.GridSize = [GridsTotal, 1];
20
21 -    h = figure;
22 -    obj = VideoWriter('GPU_3D_damage.avi');
23 -    open(obj);
24
25 -    for i = 300:500
26
27          %returns the numbers of each column of damage
28 -        color = damage(:,i);
```

Command Window

```
97.50% Loaded
98.00% Loaded
98.50% Loaded
99.00% Loaded
99.50% Loaded
100.00% Loaded
Elapsed time is 10990.498333 seconds.
>>
```

10990.498333 seconds = 3 hours 3 minutes 10.498332999999548 seconds

Profile Summary

Generated 02-jun-2018 12:57:52 using performance time.

Function Name	Calls	**Total Time**	Self Time*	Total Time Plot (dark band = self time)
GPU_Sort_Data	1	10990.568 s	82.764 s	
getframe	201	10339.921 s	3443.026 s	
Scatter.doUpdate	201	6316.030 s	6293.463 s	
graphics/private/alternateGetframe	201	574.733 s	0.038 s	
getframeWithDecorations	201	574.690 s	574.651 s	
scatter3	201	561.080 s	0.447 s	
newplot	201	559.611 s	0.835 s	
newplot>ObserveAxesNextPlot	201	558.718 s	0.046 s	
cla	201	558.672 s	0.051 s	
graphics/private/clo	201	558.539 s	558.539 s	
Scatter.Scatter>Scatter.set.MarkerHandle	201	21.690 s	21.690 s	
Scatter.getXYZDataExtents	201	6.087 s	0.903 s	
...VideoWriter>VideoWriter.writeVideo	201	5.951 s	0.499 s	
IProfile>IProfile.writeVideoFrame	201	4.566 s	0.007 s	
...tionJpegAviFilePlugin.writeVideoFrame	201	4.559 s	0.028 s	
...ugin>AviFilePlugin.writeVideoFrame	201	4.532 s	0.017 s	
OutputStream>OutputStream.write	201	4.495 s	0.025 s	

GPU_Sort_Data (Calls: 1, Time: 10990.568 s)

Generated 02-jun-2018 13:02:17 using performance time.
script in file /home/eemaj/jborja/EE147_PROJECT/GPU_Sort_Data.m
Copy to new window for comparing multiple runs

Refresh

☑ Show parent functions ☑ Show busy lines ☑ Show child functions
☑ Show Code Analyzer results ☑ Show file coverage ☑ Show function listing

Parents (calling functions)
No parent

Lines where the most time was spent

Line Number	Code	Calls	Total Time	% Time	Time Plot
40	currentFrame = getframe(h);	201	10339.945 s	94.1%	
35	scatter3(coordinate(:,1,i),coo...	201	562.984 s	5.1%	
9	load('data_new.mat')	1	56.133 s	0.5%	
12	K_Kern = parallel.gpu.CUDAKern...	1	23.986 s	0.2%	
42	writeVideo(obj,currentFrame);	201	5.955 s	0.1%	
All other lines			1.566 s	0.0%	
Totals			10990.568 s	100%	

Children (called functions)

Function Name	Function Type	Calls	Total Time	% Time	Time Plot
getframe	function	201	10339.921 s	94.1%	
scatter3	function	201	561.080 s	5.1%	
...VideoWriter>VideoWriter.writeVideo	class method	201	5.951 s	0.1%	
...ideoWriter>VideoWriter.VideoWriter	class method	1	0.568 s	0.0%	
handleKernelArgs	function	1	0.073 s	0.0%	
view	function	201	0.070 s	0.0%	
defaultGPUIndex	function	1	0.063 s	0.0%	
...iter.VideoWriter>VideoWriter.close	class method	1	0.034 s	0.0%	
daspect	function	201	0.031 s	0.0%	
VideoWriter.VideoWriter>VideoWriter.open	class method	1	0.007 s	0.0%	
...eManager>GPUDeviceManager.selected	class method	1	0.005 s	0.0%	
Self time (built-ins, overhead, etc.)			82.764 s	0.8%	
Totals			10990.568 s	100%	

Code Analyzer results
No Code Analyzer messages.

Coverage results
Show coverage for parent directory

Total lines in function	50
Non-code lines (comments, blank lines)	23
Code lines (lines that can run)	27
Code lines that did run	27
Code lines that did not run	0
Coverage (did run/can run)	100.00 %

Function listing

Color highlight code according to time

time	Calls	line	
0.04	1	3	tic
		4	
		5	%% change directory
< 0.01	1	6	cd('/home/eemaj/jborja/EE147_PROJECT')
		7	
		8	%% load data
56.13	1	9	load('data_new.mat')
		10	
		11	%Create the KERNEL
23.99	1	12	K_Kern = parallel.gpu.CUDAKernel('GlassKernel.ptx','GlassKernel.cu');
		13	
		14	%Specify the number of threads
< 0.01	1	15	K_Kern.ThreadBlockSize = [256, 1, 1];
		16	
		17	%Specify the size fo the grid
< 0.01	1	18	GridsTotal = ceil(atoms/256)+1; %number of grids which is 407
< 0.01	1	19	K_Kern.GridSize = [GridsTotal, 1];
		20	
0.14	1	21	h = figure;
0.68	1	22	obj = VideoWriter('GPU_3D_damage.avi');
< 0.01	1	23	open(obj);
		24	
< 0.01	1	25	for i = 300:500
		26	
		27	%returns the numbers of each column of damage
0.09	201	28	color = damage(:,i);
		29	
		30	%Call GPU ArrAY
0.18	201	31	G1 = gpuArray(single(color));
0.03	201	32	G2 = feval(K_Kern,G1,atoms);
0.09	201	33	color = double(gather(G2));
		34	
562.98	201	35	scatter3(coordinate(:,1,i),coordinate(:,2,i),coordinate(:,3,i),color)
0.04	201	36	daspect([1 1 1])
0.07	201	37	view([70 50])
< 0.01	201	38	pos_h = [0 0 1362 687]; % Adjusted to indidual user's PC
0.02	201	39	set(h,'Position',pos_h)
10339.95	201	40	currentFrame = getframe(h);
		41	
5.95	201	42	writeVideo(obj,currentFrame);
		43	
		44	%Display percent complete
< 0.01	201	45	num = (i-300)/200 * 100;
0.12	201	46	fprintf('%.2f%% Loaded\n',num)
< 0.01	201	47	end
		48	
0.03	1	49	close(obj);
		50	
		51	%End the stopwatch
0.03	1	52	toc

getframe (Calls: 201, Time: 10339.921 s)

Generated 02-Jun-2018 13:05:39 using performance time.
function in file /usr/local/MATLAB/R2016b/toolbox/matlab/graphics/getframe.m
Copy to new window for comparing multiple runs

Refresh

☑ Show parent functions ☑ Show busy lines ☑ Show child functions
☑ Show Code Analyzer results ☑ Show file coverage ☑ Show function listing

Parents (calling functions)

Function Name	Function Type	Calls
GPU_Sort_Data	script	201

Lines where the most time was spent

Line Number	Code	Calls	Total Time	% Time	Time Plot
53	drawnow;	201	9740.481 s	94.2%	
111	x = alternateGetframe(parentFi...	201	574.745 s	5.6%	
54	drawnow;	201	24.654 s	0.2%	
56	parentFig = ancestor(h, 'figur...	201	0.020 s	0.0%	
42	if isa(h,'matlab.ui.control.UI...	201	0.006 s	0.0%	
All other lines			0.016 s	0.0%	
Totals			10339.921 s	100%	

Children (called functions)

Function Name	Function Type	Calls	Total Time	% Time	Time Plot
Scatter.doUpdate	function	201	6316.030 s	61.1%	
graphics/private/alternateGetframe	function	201	574.733 s	5.6%	
Scatter.getXYZDataExtents	function	201	6.087 s	0.1%	
Scatter.getColorAlphaDataExtents	function	201	0.046 s	0.0%	
Self time (built-ins, overhead, etc.)			3443.026 s	33.3%	
Totals			10339.921 s	100%	

Code Analyzer results
No Code Analyzer messages.

Coverage results
Show coverage for parent directory

Total lines in function	116
Non-code lines (comments, blank lines)	66
Code lines (lines that can run)	50
Code lines that did run	15
Code lines that did not run	35
Coverage (did run/can run)	30.00 %

```
                    33
< 0.01      201     34  if nargin<1
                    35      h = gca;
                    36  end
< 0.01      201     37  if nargin < 2
< 0.01      201     38      offsetRect = [];
< 0.01      201     39  end
                    40
                    41  % Do not support printing uiaxes
< 0.01      201     42  if isa(h,'matlab.ui.control.UIAxes')
                    43      error(message('MATLAB:ui:uiaxes:general'));
                    44  end
                    45
                    46  % Only support using a figure or axes as the component handle
< 0.01      201     47  if ~(isgraphics(h, 'figure') || isgraphics(h, 'axes') || isgraphics(h,'polaraxes'))
                    48      error(message('MATLAB:capturescreen:BadObject'));
                    49  end
                    50
                    51  % Give any pending updates a chance to occur.  A second drawnow is required
                    52  % to ensure axes consistently render into their reported plot box.
9740.48     201     53  drawnow;
  24.65     201     54  drawnow;
                    55
   0.02     201     56  parentFig = ancestor(h, 'figure');
                    57
```

Scatter.doUpdate (Calls: 201, Time: 6316.030 s)

Generated 02-jun-2018 13:07:27 using performance time.
function in file /usr/local/MATLAB/R2016b/toolbox/matlab/specgraph/+matlab/+graphics/+chart/+primitive/@Scatter/doUpdate.p
Copy to new window for comparing multiple runs

This is a P-file for which there is no corresponding MATLAB code file

Refresh

☑ Show parent functions ☑ Show busy lines ☑ Show child functions
☑ Show Code Analyzer results ☑ Show file coverage ☑ Show function listing

Parents (calling functions)

Function Name	Function Type	Calls
getframe	function	201

Lines where the most time was spent
No MATLAB code to display

Children (called functions)

Function Name	Function Type	Calls	Total Time	% Time	Time Plot
Scatter.Scatter>Scatter.set.MarkerHandle	class method	201	21.690 s	0.3%	
isInvalidInLogScale	function	603	0.547 s	0.0%	
Scatter.cacheLegendIconColors	function	201	0.140 s	0.0%	
...catter>Scatter.get.MarkerFaceColor	class method	402	0.045 s	0.0%	
...catter>Scatter.get.MarkerEdgeColor	class method	402	0.033 s	0.0%	
Scatter.Scatter>Scatter.get.Marker	class method	201	0.017 s	0.0%	
Scatter.Scatter>Scatter.get.SizeData	class method	201	0.017 s	0.0%	
...catter>Scatter.get.MarkerFaceAlpha	class method	201	0.016 s	0.0%	
...catter>Scatter.get.MarkerEdgeAlpha	class method	201	0.014 s	0.0%	
Scatter.Scatter>Scatter.get.LineWidth	class method	201	0.014 s	0.0%	
Scatter.Scatter>Scatter.get.CData	class method	201	0.010 s	0.0%	
Scatter.Scatter>Scatter.get.BrushHandles	class method	529	0.007 s	0.0%	
Scatter.Scatter>Scatter.set.MarkerOrder	class method	201	0.006 s	0.0%	
Scatter.Scatter>Scatter.get.MarkerHandle	class method	312	0.006 s	0.0%	
...catter>Scatter.get.SelectionHandle	class method	201	0.005 s	0.0%	
Self time (built-ins, overhead, etc.)			6293.463 s	99.6%	
Totals			6316.030 s	100%	