Sonic Gesture

0.1

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Contents

Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 Blob Class Reference

`#include <blob.h>`

Public Member Functions

- Blob ()
- Blob (const vector< Point > &contour)
- Blob (const vector< Point > &contour, double inflate_size)

Public Attributes

- Rect position
- Point center
- int area
- vector< Point > contour

3.1.1 Constructor & Destructor Documentation

3.1.1.1 Blob::Blob ()

3.1.1.2 Blob::Blob (const vector< Point > & *contour*)

3.1.1.3 Blob::Blob (const vector< Point > & *contour*, double *inflate_size*)

3.1.2 Member Data Documentation

3.1.2.1 int Blob::area

3.1.2.2 Point Blob::center

3.1.2.3 vector<Point> Blob::contour

3.1.2.4 Rect Blob::position

The documentation for this class was generated from the following files:

- src/blob.h
- src/blob.cpp

3.2 BodyPart Class Reference

`#include <bodypart.h>`

Public Member Functions

- BodyPart ()
- ~BodyPart ()
- void update (const Blob &blob, const Mat &image)
- void update (const Mat &image)
- Size size ()

Public Attributes

- Blob blob
- vector< float > hog_features
- Mat hog_image

3.2.1 Constructor & Destructor Documentation

3.2.1.1 BodyPart::BodyPart ()

3.2.1.2 BodyPart::~BodyPart ()

3.2.2 Member Function Documentation

3.2.2.1 Size BodyPart::size ()

3.2.2.2 void BodyPart::update (const Mat & *image*)

3.2.2.3 void BodyPart::update (const Blob & *blob*, const Mat & *image*)

3.2.3 Member Data Documentation

3.2.3.1 Blob BodyPart::blob

3.2.3.2 vector<float> BodyPart::hog_features

3.2.3.3 Mat BodyPart::hog_image

The documentation for this class was generated from the following files:

- src/bodypart.h
- src/bodypart.cpp

3.3 BodyParts Class Reference

`#include <bodypart.h>`

Public Member Functions

- void update (const vector< vector< Point > > contours, Point face_center, const Mat &image)
- Mat draw_in_image ()

Public Attributes

- BodyPart head
- BodyPart left_hand
- BodyPart right_hand

3.3.1 Member Function Documentation

3.3.1.1 Mat BodyParts::draw_in_image ()

3.3.1.2 void BodyParts::update (const vector< vector< Point > > *contours*, Point *face_center*, const Mat & *image*)

3.3.2 Member Data Documentation

3.3.2.1 BodyPart BodyParts::head

3.3.2.2 BodyPart BodyParts::left_hand

3.3.2.3 BodyPart BodyParts::right_hand

The documentation for this class was generated from the following files:

- src/bodypart.h
- src/bodypart.cpp

3.4 Capture Class Reference

Public Member Functions

- Capture (const Source &source)
- void run ()

3.4.1 Constructor & Destructor Documentation

3.4.1.1 Capture::Capture (const Source & *source*)

3.4.2 Member Function Documentation

3.4.2.1 void Capture::run ()

The documentation for this class was generated from the following file:

- src/capture.cpp

3.5 Combiner Class Reference

`#include <combiner.h>`

Public Member Functions

- Combiner (const Size &frame_size, int num_of_win_in_x)
- Mat render ()
- void add_image (Mat &image)

Public Attributes

- vector< Mat * > images

3.5.1 Constructor & Destructor Documentation

3.5.1.1 Combiner::Combiner (const Size & *frame_size*, int *num_of_win_in_x*)

3.5.2 Member Function Documentation

3.5.2.1 void Combiner::add_image (Mat & *image*)

3.5.2.2 Mat Combiner::render ()

3.5.3 Member Data Documentation

3.5.3.1 vector<Mat*> Combiner::images

The documentation for this class was generated from the following files:

- src/combiner.h
- src/combiner.cpp

3.6 Finder Class Reference

Public Member Functions

- Finder (const Source &source)
- void run ()

3.6.1 Constructor & Destructor Documentation

3.6.1.1 Finder::Finder (const Source & *source*)

3.6.2 Member Function Documentation

3.6.2.1 void Finder::run ()

The documentation for this class was generated from the following file:

- src/finder.cpp

3.7 Histogram Class Reference

`#include <histogram.h>`

Public Member Functions

- Histogram ()
- ~Histogram ()
- void update (const Mat &image)
- Mat backproject (const Mat &image)

3.7.1 Constructor & Destructor Documentation

3.7.1.1 Histogram::Histogram ()

3.7.1.2 Histogram::~Histogram ()

3.7.2 Member Function Documentation

3.7.2.1 Mat Histogram::backproject (const Mat & *image*)

3.7.2.2 void Histogram::update (const Mat & *image*)

The documentation for this class was generated from the following files:

- src/histogram.h
- src/histogram.cpp

3.8 Matcher Class Reference

`#include <matcher.h>`

Public Member Functions

- Matcher (bool mirror=false)
- ~Matcher ()
- int match (const vector< float > &descriptors)

3.8.1 Constructor & Destructor Documentation

3.8.1.1 Matcher::Matcher (bool *mirror* = `false`)

3.8.1.2 Matcher::~Matcher ()

3.8.2 Member Function Documentation

3.8.2.1 int Matcher::match (const vector< float > & *descriptors*)

The documentation for this class was generated from the following files:

- src/matcher.h
- src/matcher.cpp

3.9 SkinFinder Class Reference

`#include <skinfinder.h>`

Public Member Functions

- SkinFinder ()
- vector< vector< Point > > compute (const Mat &frame)

Public Attributes

- vector< vector< Point > > contours
- Point face_center
- Mat frame
- Mat hsv
- Mat bw
- Mat facepixels
- Mat backproj
- Mat mask
- Mat blur
- Mat thresh

3.9.1 Constructor & Destructor Documentation

3.9.1.1 SkinFinder::SkinFinder ()

3.9.2 Member Function Documentation

3.9.2.1 vector< vector< Point > > SkinFinder::compute (const Mat & *frame*)

3.9.3 Member Data Documentation

3.9.3.1 Mat SkinFinder::backproj

3.9.3.2 Mat SkinFinder::blur

3.9.3.3 Mat SkinFinder::bw

3.9.3.4 vector<vector<Point> > SkinFinder::contours

3.9.3.5 Point SkinFinder::face_center

3.9.3.6 Mat SkinFinder::facepixels

3.9.3.7 Mat SkinFinder::frame

3.9.3.8 Mat SkinFinder::hsv

3.9.3.9 Mat SkinFinder::mask

3.9.3.10 Mat SkinFinder::thresh

The documentation for this class was generated from the following files:

- src/skinfinder.h
- src/skinfinder.cpp

3.10 Source Class Reference

`#include <source.h>`

Public Member Functions

- Source ()
- Source (int device)
- Source (const string &movie)
- ~Source ()
- Mat & grab ()

Public Attributes

- Size size

3.10.1 Constructor & Destructor Documentation

3.10.1.1 Source::Source ()

3.10.1.2 Source::Source (int *device*)

3.10.1.3 Source::Source (const string & *movie*)

3.10.1.4 Source::~Source ()

3.10.2 Member Function Documentation

3.10.2.1 Mat & Source::grab ()

3.10.3 Member Data Documentation

3.10.3.1 Size Source::size

The documentation for this class was generated from the following files:

- src/source.h
- src/source.cpp

3.11 Stabilizer Class Reference

`#include <matcher.h>`

Public Member Functions

- Stabilizer (int state_num=1)
- ~Stabilizer ()
- int update (int state)
- int get_state ()
- void set_callback ()
- bool is_active ()

3.11.1 Constructor & Destructor Documentation

3.11.1.1 Stabilizer::Stabilizer (int *state_num* = 1)

3.11.1.2 Stabilizer::~Stabilizer ()

3.11.2 Member Function Documentation

3.11.2.1 int Stabilizer::get_state ()

3.11.2.2 bool Stabilizer::is_active ()

3.11.2.3 void Stabilizer::set_callback ()

3.11.2.4 int Stabilizer::update (int *state*)

The documentation for this class was generated from the following files:

- src/matcher.h
- src/matcher.cpp

Chapter 4

File Documentation

4.1 src/blob.cpp File Reference

```
#include "blob.h"
#include "cv.h"
#include "cvtypes.h"
#include "highgui.h"
#include "ml.h"
#include "cvaux.h"
#include "cmake.h"
#include "tools.h"
#include "boost/filesystem.hpp"
```

Functions

- bool compare_blob_size (const Blob &a, const Blob &b)
- bool compare_blob_xpos (const Blob &a, const Blob &b)

4.1.1 Function Documentation

4.1.1.1 bool compare_blob_size (const Blob & *a*, const Blob & *b*)

4.1.1.2 bool compare_blob_xpos (const Blob & *a*, const Blob & *b*)

4.2 src/blob.h File Reference

```
#include "cv.h"
```

Classes

- class Blob

Functions

- bool compare_blob_size (const Blob &a, const Blob &b)
- bool compare_blob_xpos (const Blob &a, const Blob &b)

4.2.1 Function Documentation

4.2.1.1 bool compare_blob_size (const Blob & *a*, const Blob & *b*)

4.2.1.2 bool compare_blob_xpos (const Blob & *a*, const Blob & *b*)

4.3 src/bodypart.cpp File Reference

```
#include "bodypart.h"
#include "cv.h"
#include "cvaux.h"
#include "blob.h"
#include "settings.h"
```

4.4 src/bodypart.h File Reference

```
#include "cv.h"
#include "cvaux.h"
#include "blob.h"
```

Classes

- class BodyPart
- class BodyParts

4.5 src/capture.cpp File Reference

```
#include "common.h"
#include "source.h"
#include <string.h>
#include "cv.h"
#include "highgui.h"
#include "bodypart.h"
#include "boost/filesystem.hpp"
#include "boost/date_time/gregorian/gregorian.hpp"
#include "boost/date_time/posix_time/posix_time.hpp"
```

Classes

- class Capture

Functions

- int main (int argc, char **argv)

4.5.1 Function Documentation

4.5.1.1 int main (int *argc*, char ** *argv*)

4.6 src/combiner.cpp File Reference

```
#include <iostream>
#include "combiner.h"
```

4.7 src/combiner.h File Reference

```
#include "cv.h"
```

Classes

- class Combiner

4.8 src/common.h File Reference

```
#include "cv.h"
#include "cvtypes.h"
#include "highgui.h"
#include "ml.h"
#include "cvaux.h"
#include "settings.h"
#include "tools.h"
#include "boost/filesystem.hpp"
```

Defines

- #define SOLFEGE_FILES { "00_do.jpg", "01_di.jpg", "02_re.jpg", "03_ri.jpg", "04_mi.jpg", "05_-fa.jpg", "06_fi.jpg", "07_sol.jpg", "08_si.jpg", "09_la.jpg", "10_li.jpg", "11_ti.jpg"}
- #define CV_NO_BACKWARD_COMPATIBILITY

Typedefs

- typedef vector< Point > contour
- typedef vector< contour > contours

4.8.1 Define Documentation

4.8.1.1 #define CV_NO_BACKWARD_COMPATIBILITY

4.8.1.2 #define SOLFEGE_FILES { "00_do.jpg", "01_di.jpg", "02_re.jpg", "03_ri.jpg", "04_mi.jpg", "05_fa.jpg", "06_fi.jpg", "07_sol.jpg", "08_si.jpg", "09_la.jpg", "10_li.jpg", "11_ti.jpg"}

4.8.2 Typedef Documentation

4.8.2.1 typedef vector<Point> contour

4.8.2.2 typedef vector<contour > contours

4.9 src/finder.cpp File Reference

```
#include <iostream>
#include "settings.h"
#include "tools.h"
#include "bodypart.h"
#include "common.h"
#include "source.h"
#include "skinfinder.h"
#include "matcher.h"
#include "combiner.h"
```

Classes

- class Finder

Functions

- int main (int, char **)

4.9.1 Function Documentation

4.9.1.1 int main (int, char **)

4.10 src/histogram.cpp File Reference

```
#include "histogram.h"
```

4.11 src/histogram.h File Reference

```
#include "cv.h"
```

Classes

- class Histogram

4.12 src/matcher.cpp File Reference

```
#include "matcher.h"
#include <boost/algorithm/string/predicate.hpp>
```

4.13 src/matcher.h File Reference

```
#include "common.h"
```

Classes

- class Stabilizer
- class Matcher

Defines

- #define STATE_MAX 10
- #define STATE_MIN 0
- #define STATE_THRESH 8

4.13.1 Define Documentation

4.13.1.1 #define STATE_MAX 10

4.13.1.2 #define STATE_MIN 0

4.13.1.3 #define STATE_THRESH 8

4.14 src/settings.h File Reference

```
#include "cmake.h"
```

Defines

- #define MIRROR false
- #define SKIN DATA_DIR + "/hand/skin.png"
- #define HEAD DATA_DIR + "/hand/head.png"
- #define HANDA DATA_DIR + "/hand/a.png"
- #define HANDB DATA_DIR + "/hand/b.png"
- #define HANDC DATA_DIR + "/hand/c.png"
- #define HANDD DATA_DIR + "/hand/d.png"
- #define FACEHAAR DATA_DIR + "/storage/haarcascade_frontalface_alt.xml"
- #define TRAIN_PATH DATA_DIR + "/train"
- #define NEWTRAIN_PATH DATA_DIR + "/train_new"
- #define EXAMPLES_PATH DATA_DIR + "/examples"
- #define DEVICE DATA_DIR + "/movies/gijs_train_movie.mov"
- #define MAKE_MOVIE TRUE
- #define WORKSIZE 300
- #define XWINDOWS 2
- #define INFLATE_SIZE 1.1
- #define THRESHOLD 20

4.14.1 Define Documentation

4.14.1.1 #define DEVICE DATA_DIR + "/movies/gijs_train_movie.mov"

4.14.1.2 #define EXAMPLES_PATH DATA_DIR + "/examples"

4.14.1.3 #define FACEHAAR DATA_DIR + "/storage/haarcascade_frontalface_alt.xml"

4.14.1.4 #define HANDA DATA_DIR + "/hand/a.png"

4.14.1.5 #define HANDB DATA_DIR + "/hand/b.png"

4.14.1.6 #define HANDC DATA_DIR + "/hand/c.png"

4.14.1.7 #define HANDD DATA_DIR + "/hand/d.png"

4.14.1.8 #define HEAD DATA_DIR + "/hand/head.png"

4.14.1.9 #define INFLATE_SIZE 1.1

4.14.1.10 #define MAKE_MOVIE TRUE

4.14.1.11 #define MIRROR false

4.14.1.12 #define NEWTRAIN_PATH DATA_DIR + "/train_new"

4.14.1.13 #define SKIN DATA_DIR + "/hand/skin.png"

4.14.1.14 #define THRESHOLD 20

4.14.1.15 #define TRAIN_PATH DATA_DIR + "/train"

4.14.1.16 #define WORKSIZE 300

4.14.1.17 #define XWINDOWS 2

4.15 src/skinfinder.cpp File Reference

```
#include "skinfinder.h"
#include "settings.h"
#include "tools.h"
#include "boost/filesystem.hpp"
```

4.16 src/skinfinder.h File Reference

```
#include "histogram.h"
```

Classes

- class SkinFinder

4.17 src/source.cpp File Reference

```
#include <iostream>
#include <highgui.h>
#include "source.h"
#include "settings.h"
```

4.18 src/source.h File Reference

```
#include <string.h>
#include "cv.h"
#include "highgui.h"
```

Classes

- class Source

4.19 src/test.cpp File Reference

```
#include "cv.h"
#include "settings.h"
#include "source.h"
#include "skinfinder.h"
#include "bodypart.h"
#include <iostream>
```

Functions

- Mat size_rounder (Mat image, int target)
- int main (int, char **)

4.19.1 Function Documentation

4.19.1.1 int main (int, char **)

4.19.1.2 Mat size_rounder (Mat *image*, int *target*)

4.20 src/tools.cpp File Reference

```
#include <iostream>
#include "cv.h"
#include "highgui.h"
#include "tools.h"
#include "settings.h"
```

Functions

- float sum (const vector< float > &x)
- Rect sub_region (Rect region)
- void show_mat (Mat M)
- Mat round_kernel (int dia)
- vector< vector< Point > > scale_contours (const vector< vector< Point > > contours, float scale)
- vector< Point > scale_contour (vector< Point > contour, float scale)
- vector< Point > dilate_contour (const vector< Point > &contour, Size window_size)
- vector< Point > inflate_contour (vector< Point > contour, float scale)
- bool is_number (const string &str)
- vector< Mat > load_example_hands (const Size &target_size, const bool mirror)
- Rect rect_in_mat (Rect rectange, const Mat &matrix)

4.20.1 Function Documentation

4.20.1.1 vector<Point> dilate_contour (const vector< Point > & *contour*, Size *window_size*)

4.20.1.2 vector<Point> inflate_contour (vector< Point > *contour*, float *scale*)

4.20.1.3 bool is_number (const string & *str*)

4.20.1.4 vector<Mat> load_example_hands (const Size & *target_size*, const bool *mirror*)

4.20.1.5 Rect rect_in_mat (Rect *rectange*, const Mat & *matrix*)

4.20.1.6 Mat round_kernel (int *dia*)

4.20.1.7 vector<Point> scale_contour (vector< Point > *contour*, float *scale*)

4.20.1.8 vector<vector<Point> > scale_contours (const vector< vector< Point > > *contours*, float *scale*)

4.20.1.9 void show_mat (Mat *M*)

4.20.1.10 Rect sub_region (Rect *region*)

4.20.1.11 float sum (const vector< float > & *x*)

4.21 src/tools.h File Reference

```
#include "common.h"
```

Functions

- float sum (const vector< float > &x)
- Rect sub_region (Rect region)
- void show_mat (Mat M)
- Mat round_kernel (int dia)
- vector< vector< Point > > scale_contours (vector< vector< Point > > contours, float scale)
- vector< Point > scale_contour (vector< Point > contour, float scale)
- vector< Point > dilate_contour (vector< Point > contour, Size window_size)
- vector< Point > inflate_contour (vector< Point > contour, float scale)
- bool is_number (const string &s)
- vector< Mat > load_example_hands (const Size &target_size, bool mirror)
- Rect rect_in_mat (Rect rectangle, Mat matrix)

4.21.1 Function Documentation

4.21.1.1 vector<Point> dilate_contour (vector< Point > *contour*, Size *window_size*)

4.21.1.2 vector<Point> inflate_contour (vector< Point > *contour*, float *scale*)

4.21.1.3 bool is_number (const string & *s*)

4.21.1.4 vector<Mat> load_example_hands (const Size & *target_size*, bool *mirror*)

4.21.1.5 Rect rect_in_mat (Rect *rectangle*, Mat *matrix*)

4.21.1.6 Mat round_kernel (int *dia*)

4.21.1.7 vector<Point> scale_contour (vector< Point > *contour*, float *scale*)

4.21.1.8 vector<vector<Point> > scale_contours (vector< vector< Point > > *contours*, float *scale*)

4.21.1.9 void show_mat (Mat *M*)

4.21.1.10 Rect sub_region (Rect *region*)

4.21.1.11 float sum (const vector< float > & *x*)

Index