# OpenCV Lib

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# **Chapter 1**

# **Class Index**

# 1.1 Class List

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

CamCtrl .										 			 				 						
<b>KNNClass</b>										 			 				 						6
ObjectCnt										 			 				 						Ç

2 Class Index

# **Chapter 2**

# File Index

# 2.1 File List

Here is	a list	of all	files	with	brief	descri	otions
---------	--------	--------	-------	------	-------	--------	--------

/Users/Leakey/git/CVLib/CVLib/CVLib.cpp															11
/Users/Leakey/git/CVLib/CVLib/CVLib.h .															18

File Index

# **Chapter 3**

# **Class Documentation**

# 3.1 CamCtrl Class Reference

```
#include <CVLib.h>
```

#### **Public Member Functions**

- CamCtrl ()
- void opnCam (int CamIndex=-1)

Open camera and display frame.

• void saveVideo (CvCapture \*pCapture\_n, char \*FilePath\_n)

Save frames in camera captureed frame.

#### 3.1.1 Constructor & Destructor Documentation

```
3.1.1.1 CamCtrl::CamCtrl ( )
```

#### 3.1.2 Member Function Documentation

```
3.1.2.1 void CamCtrl::opnCam ( int \it CamIndex = -1 )
```

Open camera and display frame.

**Parameters** 

CamIndex	Camera index
Callillucx	L Callicia illucx

3.1.2.2 void CamCtrl::saveVideo ( CvCapture \* pCapture\_n, char \* FilePath\_n )

Save frames in camera captureed frame.

6 Class Documentation

#### **Parameters**

pCapture←	Video ptr
_n	
FilePath_n	Save path

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

- /Users/Leakey/git/CVLib/CVLib/CVLib.h
- /Users/Leakey/git/CVLib/CVLib/CVLib.cpp

## 3.2 KNNClass Class Reference

```
#include <CVLib.h>
```

#### **Public Member Functions**

- KNNClass (int k n=5, int SmpClass n=5, int ClassQuty n=200, int SmpSize n=400)
- ∼KNNClass ()
- void setK (int n)

Set K number.

void setThresA (int n)

Set threshold.

void setThresB (int n)

Set threshold.

void setSmpSize (int n)

Set sample data's size.

void setSmpClass (int n)

Set sample data's classes.

void setClassQuty (int n)

Set number of data in each class.

void setFilePath (char \*FilePath\_n)

Set root folder path.

• float classify (char \*FilePath\_n)

Classify a pic.

void selfTest (char \*FilePath\_n, int TestClass, int Max)

System test.

• void loadData (char \*FilePath\_n, int SmpClass\_n, int ClassQuty\_n)

I oad local data

• void enhceData (char \*SrcFilePath\_n, char \*DstFilePath\_n, int SmpClass\_n=5, int ClassQuty\_n=20) Copy data to increase sum number of data.

#### 3.2.1 Constructor & Destructor Documentation

```
3.2.1.1 KNNClass::KNNClass ( int k_n = 5, int SmpClass_n = 5, int ClassQuty_n = 200, int SmpSize_n = 400)
```

3.2.1.2 KNNClass::~KNNClass()

#### 3.2.2 Member Function Documentation

3.2.2.1 float KNNClass::classify ( char \* FilePath\_n )

Classify a pic.

### **Parameters**

FilePath⊷	Pic path
_n	

#### Returns

Class of pic

3.2.2.2 void KNNClass::enhceData ( char \* SrcFilePath\_n, char \* DstFilePath\_n, int SmpClass\_n = 5, int ClassQuty\_n = 20 )

Copy data to increase sum number of data.

#### **Parameters**

SrcFilePath←	Data path
_n	
DstFilePath⊷	Copyed data path
_n	
SmpClass_n	Number of copyed sample classes
ClassQuty_n	Number of copyed data in each class

3.2.2.3 void KNNClass::loadData ( char \* FilePath\_n, int SmpClass\_n, int ClassQuty\_n )

Load local data.

#### **Parameters**

FilePath_n	Data path
SmpClass←	Number of sample classes
_n	
ClassQuty←	Number of data in each calss
_n	

3.2.2.4 void KNNClass::selfTest ( char \* FilePath\_n, int TestClass, int Max )

System test.

FilePath⊷	Root folder path
_n	
TestClass	Number of sample classes

8 Class Documentation

3.2.2.5 void KNNClass::setClassQuty (int n) Set number of data in each class. **Parameters** *n* Number of data in each calss 3.2.2.6 void KNNClass::setFilePath ( char \* FilePath\_n ) Set root folder path. **Parameters** FilePath⇔ Root folder path \_n 3.2.2.7 void KNNClass::setK (int n) Set K number. **Parameters** n Number 3.2.2.8 void KNNClass::setSmpClass (int n) Set sample data's classes. **Parameters** n Number of sample classes 3.2.2.9 void KNNClass::setSmpSize ( int n ) Set sample data's size. **Parameters** Data size(width=heigh)

```
3.2.2.10 void KNNClass::setThresA (int n)
Set threshold.
Parameters
     Threshold
3.2.2.11 void KNNClass::setThresB (int n)
Set threshold.
Parameters
     Threshold
The documentation for this class was generated from the following files:
    • /Users/Leakey/git/CVLib/CVLib/CVLib.h
    • /Users/Leakey/git/CVLib/CVLib/CVLib.cpp
3.3
       ObjectCnt Class Reference
#include <CVLib.h>
Public Member Functions

    ObjectCnt ()

    ∼ObjectCnt ()

    • int cntObjects (char *pFilePath)
         Load a pic and count objects.
    • int cntObjects (IpIImage *pSrcImg)
         Count objects in image.
    • IpIImage * cntPrePrs (IpIImage *pSrcImg)
         Pre-Process image.
    • void objPrtPara ()
         Print para.
```

#### 3.3.1 Constructor & Destructor Documentation

```
3.3.1.1 ObjectCnt::ObjectCnt ( )
3.3.1.2 ObjectCnt::~ObjectCnt ( )
```

#### 3.3.2 Member Function Documentation

3.3.2.1 int ObjectCnt::cntObjects ( char \* pFilePath )

Load a pic and count objects.

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Pa	ra	m	ല	ſΑ	rς

pFilePath	Pic path
-----------	----------

Returns

Number of object

3.3.2.2 int ObjectCnt::cntObjects ( lpllmage \* pSrcImg )

Count objects in image.

**Parameters** 

```
pSrcImg Image ptr
```

Returns

Number of object

Pre-Process image.

**Parameters** 

```
pSrcImg Image ptr
```

Returns

Processed image

3.3.2.4 void ObjectCnt::objPrtPara ( )

Print para.

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

- /Users/Leakey/git/CVLib/CVLib/CVLib.h
- /Users/Leakey/git/CVLib/CVLib/CVLib.cpp

# **Chapter 4**

# **File Documentation**

# 4.1 /Users/Leakey/git/CVLib/CVLib/CVLib.cpp File Reference

```
#include "CVLib.h"
```

#### **Functions**

void findX (IpIImage \*SrcImg, int \*Min, int \*Max)

Find the first and last effective pixel in image.

void findY (IpIImage \*SrcImg, int \*Min, int \*Max)

Find the first and last effective pixel in image.

CvRect findMinRect (IpIImage \*SrcImg)

Get a pic's min non-empty pixel region.

IpIImage \* cvGetSubImage (IpIImage \*SrcImg, CvRect Roi)

Crop image from a ROI.

• IpIImage \* prePrs (IpIImage \*SrcImg, int W\_n, int H\_n, int Mode)

Prepress a pic, get a min binary region. 1 for turn pixel into  $\sim$ .

• IpIImage \* resizeImg (char \*FilePath\_n, CvSize Size\_n)

Resize pic into setted size.

void showImg (int TA, int TB)

Display image in window with para threshold setted.

void min\_Trackbar (int Threshold)

Set threshold, also as a callback func.

void max\_Trackbar (int Threshold)

Set threshold, also as a callback func.

void getThreshold (IpIImage \*pSrcImg, int \*TA, int \*TB)

Create a window to display image and modify threshold.

void getThreshold (char \*FilePath n, int \*TA, int \*TB)

Create a window to display image and modify threshold.

void findRegion (IpIImage \*SrcImg, int \*x, int \*y, int Flag)

Find the pixel region for a binary pic.

void findXRange (IpIImage \*SrcImg, int \*Min, int \*Max, int Flag)

Find the first and last effective pixel in image.

void findYRange (IpIImage \*SrcImg, int \*Min, int \*Max, int Flag)

Find the first and last effective pixel in image.

• lpllmage \* picStcer\_sub (lpllmage \*ImgA, lpllmage \*ImgB, int mode)

Stitching pics simply.

• lpllmage \* picStcer (lpllmage \*SrclmgQue[], int lenth, int mode)

Stitching pics simply.

• IpIImage \* autoStcer (IpIImage \*SrcImgQueen[], int lenth)

Stitching pics with feature matching.

• void InsertSort (unsigned char a[], int count)

Sort algorithm.

• void showImg (int TA, int TB, int pKnlSize, int pErode, int pDilate)

Create a window to display image and modify paras.

void setTa (int Threshold)

Set threshold.

void setTb (int Threshold)

Set threshold.

• void setKnlSize (int pKnlSize)

Set kernel size.

• void setErode (int pErode)

Set erode times.

void setDilate (int pDilate)

Set dilate times.

#### **Variables**

- IpIImage \* GrayImg
- IpIImage \* CannyImg
- IpIImage \* ExpImg

#### 4.1.1 Function Documentation

Stitching pics with feature matching.

#### Parameters

SrcImgQueen	Image ptrs array
lenth	Sum width/heigh

#### Returns

Stitched image

4.1.1.2 IpIImage\* cvGetSubImage ( IpIImage \* SrcImg, CvRect Roi )

Crop image from a ROI.

#### **Parameters**

SrcImg	Image ptr
Roi	ROI

#### Returns

Croped image

4.1.1.3 CvRect findMinRect ( IpIImage \* SrcImg )

Get a pic's min non-empty pixel region.

#### **Parameters**

SrcImg   Image ptr
--------------------

#### Returns

Min non-empty pixel region

4.1.1.4 void find Region ( IpII mage \* SrcImg, int \* x, int \* y, int Flag = 1 )

Find the pixel region for a binary pic.

### **Parameters**

SrcImg	Sourcelmage
X	X pos
У	Y pos
Flag	White/Black background,1 for white, 0 for black

4.1.1.5 void findX ( IplImage \* SrcImg, Int \* Min, Int \* Max )

Find the first and last effective pixel in image.

SrcImg	Image ptr
Min	First X pos
Мах	Last X pos

4.1.1.6 void find XRange (IpIImage \* SrcImg, int \* Min, int \* Max, int Flag = 1)

Find the first and last effective pixel in image.

#### **Parameters**

SrcImg	Image ptr
Min	First X pos
Max	Last X pos
Flag	White/Black background,1 for white, 0 for black

4.1.1.7 void findY ( IplImage \* SrcImg, Int \* Min, Int \* Max )

Find the first and last effective pixel in image.

#### **Parameters**

SrcImg	Image ptr
Min	First Y pos
Мах	Last Y pos

4.1.1.8 void find YRange (IpIImage \* SrcImg, int \* Min, int \* Max, int Flag = 1)

Find the first and last effective pixel in image.

## Parameters

SrcImg	Image ptr
Min	First Y pos
Max	Last Y pos
Flag	White/Black background,1 for white, 0 for black

4.1.1.9 void getThreshold ( IpIImage \* pSrcImg, int \* TA, int \* TB )

Create a window to display image and modify threshold.

pSrcImg	Image ptr
TA	Threshold A
TB	Threshold B

4.1.1.10 void getThreshold ( char \* FilePath\_n, int \* TA, int \* TB )

Create a window to display image and modify threshold.

Call a window and show a pic to ensure the threshold for binary a pic.

#### **Parameters**

pSrcImg	Image path
TA	Threshold A
TB	Threshold B

4.1.1.11 void InsertSort ( unsigned char a[], int count )

Sort algorithm.

#### **Parameters**

а	Char array	
count	Lenth of char array	

4.1.1.12 void max\_Trackbar ( int Threshold )

Set threshold, also as a callback func.

# **Parameters**

Threshold	Threshold needed

4.1.1.13 void min\_Trackbar ( int Threshold )

Set threshold, also as a callback func.

## **Parameters**

Threshold	Threshold needed
THESHOLD	Threshold needed

4.1.1.14 IpIImage\* picStcer ( IpIImage \* SrcImgQueen[], int lenth, int mode )

Stitching pics simply.

SrcImgQueen	Image ptrs array	
lenth	Sum width/heigh	
mode	Vertical/Horizontal, 1 for vertical, 0 for horizontal	

#### Returns

Stitched image

4.1.1.15 IpIlmage\* picStcer\_sub ( IpIlmage \* ImgA, IpIlmage \* ImgB, int mode )

Stitching pics simply.

#### **Parameters**

ImgA	Image ptr A
ImgB	Image ptr B
mode	Vertical/Horizontal, 1 for vertical, 0 for horizontal

#### Returns

Stitched image

4.1.1.16 IpIImage\* prePrs ( IpIImage \* SrcImg, int  $W_n$ , int  $H_n$ , int Mode = 1 )

Prepress a pic, get a min binary region. 1 for turn pixel into  $\sim$ .

# **Parameters**

SrcImg	Image ptr	
W_n	Expectant width	
H_n	Expectant heigh	
Mode	White/Black background	

#### Returns

Processed image

Resize pic into setted size.

FilePath⊷	Pic path
_n	
Size_n	Expectant height*width

4.1 /Users/Leakey/git/CVLib/CVLib/CVLib.cpp File Reference
Returns
Resized pic
4.1.1.18 void setDilate ( int <i>pDilate</i> )
Set dilate times.
Parameters
pDilate Dilate times
4.1.1.19 void setErode ( int <i>pErode</i> )
Set erode times.
Parameters
pErode Erode times
4.1.1.20 void setKnlSize ( int <i>pKnlSize</i> )
Set kernel size.
Parameters
pKnlSize Kernel size(width=heigh)
4.1.1.21 void setTa ( int Threshold )
Set threshold.
Parameters
Threshold Threshold
4.1.1.22 void setTb ( int Threshold )

Generated by Doxygen

Set threshold.

Threshold

Threshold

#### 4.1.1.23 void showlmg (int TA, int TB)

Display image in window with para threshold setted.

#### **Parameters**

TA	Threshold A
TB	Threshold B

4.1.1.24 void showlmg ( int TA, int TB, int pKnlSize, int pErode, int pDilate )

Create a window to display image and modify paras.

#### **Parameters**

TA	Threshold A
TB	Threshold B
pKnlSize	Kernel size
pErode	Erode times
pDilate	Dilate times

#### 4.1.2 Variable Documentation

```
4.1.2.1 IplImage* CannyImg
```

4.1.2.2 Ipllmage\* Explmg

4.1.2.3 IplImage\* GrayImg

# 4.2 /Users/Leakey/git/CVLib/CVLib/CVLib.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <fstream>
#include <iostream>
#include <cv.h>
#include <ml.h>
#include <math.h>
#include <highgui.h>
#include "opencv2/highgui/highgui.hpp"
#include "opencv2/stitching/stitcher.hpp"
#include <opencv2/opencv.hpp>
#include <imgproc/imgproc.hpp>
```

#### **Classes**

- · class CamCtrl
- class KNNClass
- · class ObjectCnt

#### **Macros**

- #define VERTICAL 1
- #define HORIZONTAL 0

#### **Functions**

• IpIImage \* resizeImg (char \*FilePath n, CvSize Size n)

Resize pic into setted size.

IpIImage \* cvGetSubImage (IpIImage \*SrcImg, CvRect Roi)

Crop image from a ROI.

void InsertSort (unsigned char a[], int count)

Sort algorithm.

CvRect findMinRect (IpIImage \*SrcImg)

Get a pic's min non-empty pixel region.

void findRegion (IpIImage \*SrcImg, int \*x, int \*y, int Flag=1)

Find the pixel region for a binary pic.

void findXRange (IpIImage \*SrcImg, int \*Min, int \*Max, int Flag=1)

Find the first and last effective pixel in image.

• void findYRange (IpIImage \*SrcImg, int \*Min, int \*Max, int Flag=1)

Find the first and last effective pixel in image.

void findX (IpIImage \*SrcImg, int \*Min, int \*Max)

Find the first and last effective pixel in image.

void findY (IpIImage \*SrcImg, int \*Min, int \*Max)

Find the first and last effective pixel in image.

• IpIImage \* prePrs (IpIImage \*SrcImg, int W\_n, int H\_n, int Mode=1)

Prepress a pic, get a min binary region. 1 for turn pixel into  $\sim$ .

void getThreshold (char \*FilePath\_n, int \*TA, int \*TB)

Call a window and show a pic to ensure the threshold for binary a pic.

• void min\_Trackbar (int Threshold)

Set threshold, also as a callback func.

void max\_Trackbar (int Threshold)

Set threshold, also as a callback func.

void getThreshold (IpIImage \*pSrcImg, int \*TA, int \*TB)

Create a window to display image and modify threshold.

• void showImg (int TA, int TB)

Display image in window with para threshold setted.

• IpIImage \* picStcer (IpIImage \*SrcImgQueen[], int lenth, int mode)

Stitching pics simply.

IpIImage \* autoStcer (IpIImage \*SrcImgQueen[], int lenth)

Stitching pics with feature matching.

IpIImage \* picStcer sub (IpIImage \*ImgA, IpIImage \*ImgB, int mode)

Stitching pics simply.

void showImg (int TA, int TB, int pKnlSize, int pErode, int pDilate)

Create a window to display image and modify paras.

• void setTa (int Threshold)

Set threshold.

void setTb (int Threshold)

Set threshold.

• void setKnlSize (int pKnlSize)

Set kernel size.

void setErode (int pErode)

Set erode times.

• void setDilate (int pDilate)

Set dilate times.

#### 4.2.1 Macro Definition Documentation

- 4.2.1.1 #define HORIZONTAL 0
- 4.2.1.2 #define VERTICAL 1
- 4.2.2 Function Documentation

Stitching pics with feature matching.

## Parameters

SrcImgQueen	Image ptrs array
lenth	Sum width/heigh

#### Returns

Stitched image

4.2.2.2 IpIlmage\* cvGetSubImage ( IpIlmage \* SrcImg, CvRect Roi )

Crop image from a ROI.

#### **Parameters**

SrcImg	Image ptr
Roi	ROI

#### Returns

Croped image

4.2.2.3 CvRect findMinRect ( IplImage \* SrcImg )

Get a pic's min non-empty pixel region.

#### **Parameters**

Srcimg   image pir	SrcImg	Image ptr
--------------------	--------	-----------

#### Returns

Min non-empty pixel region

4.2.2.4 void findRegion ( IpIImage \* SrcImg, int \* x, int \* y, int Flag = 1 )

Find the pixel region for a binary pic.

#### **Parameters**

SrcImg	Sourcelmage
X	X pos
У	Y pos
Flag	White/Black background,1 for white, 0 for black

4.2.2.5 void findX ( IplImage \* SrcImg, Int \* Min, Int \* Max )

Find the first and last effective pixel in image.

#### **Parameters**

SrcImg	Image ptr
Min	First X pos
Мах	Last X pos

4.2.2.6 void find XRange (IplImage \* SrcImg, int \* Min, int \* Max, int Flag = 1)

Find the first and last effective pixel in image.

SrcImg	Image ptr
Min	First X pos
Мах	Last X pos
Flag	White/Black background,1 for white, 0 for black

4.2.2.7 void findY ( IplImage \* SrcImg, Int \* Min, Int \* Max )

Find the first and last effective pixel in image.

#### **Parameters**

SrcImg	Image ptr
Min	First Y pos
Мах	Last Y pos

4.2.2.8 void findYRange ( IpIImage \* SrcImg, int \* Min, int \* Max, int Flag = 1 )

Find the first and last effective pixel in image.

#### **Parameters**

SrcImg	Image ptr
Min	First Y pos
Max	Last Y pos
Flag	White/Black background,1 for white, 0 for black

4.2.2.9 void getThreshold (  $char * FilePath_n$ , int \* TA, int \* TB )

Call a window and show a pic to ensure the threshold for binary a pic.

Create a window to display image and modify threshold.

#### **Parameters**

FilePath⊷	Image path
_n	
TA	Threshold A
TB	Threshold B
pSrcImg	Image path
TA	Threshold A
TB	Threshold B

Call a window and show a pic to ensure the threshold for binary a pic.

pSrcImg	Image path
TA	Threshold A
TB	Threshold B

4.2.2.10 void getThreshold ( IplImage \* pSrcImg, int \* TA, int \* TB )

Create a window to display image and modify threshold.

#### **Parameters**

pSrcImg	Image ptr
TA	Threshold A
TB	Threshold B

4.2.2.11 void InsertSort ( unsigned char a[], int count )

Sort algorithm.

#### **Parameters**

а	Char array
count	Lenth of char array

4.2.2.12 void max\_Trackbar ( int Threshold )

Set threshold, also as a callback func.

#### **Parameters**

Threshold	Threshold needed
-----------	------------------

4.2.2.13 void min\_Trackbar ( int Threshold )

Set threshold, also as a callback func.

#### **Parameters**

Threshold	Threshold needed

4.2.2.14 IpIImage\* picStcer ( IpIImage \* SrcImgQueen[], int lenth, int mode )

Stitching pics simply.

SrcImgQueen	Image ptrs array
lenth	Sum width/heigh
mode	Vertical/Horizontal, 1 for vertical, 0 for horizontal

#### Returns

Stitched image

4.2.2.15 IpIImage \* IpIImage \* ImgA, IpIImage \* ImgB, int mode )

Stitching pics simply.

#### **Parameters**

ImgA	Image ptr A
ImgB	Image ptr B
mode	Vertical/Horizontal, 1 for vertical, 0 for horizontal

#### Returns

Stitched image

4.2.2.16 IpIImage\* prePrs ( IpIImage \* SrcImg, int  $W_n$ , int  $H_n$ , int Mode = 1 )

Prepress a pic, get a min binary region. 1 for turn pixel into  $\sim$ .

### **Parameters**

SrcImg	Image ptr
W_n	Expectant width
H_n	Expectant heigh
Mode	White/Black background

#### Returns

Processed image

Resize pic into setted size.

FilePath⊷	Pic path
_n	
Size_n	Expectant height*width

4.2 /Users/Leakey/git/CVLib/CVLib/CVLib.n File Reference
Returns
Resized pic
4.2.2.18 void setDilate ( int <i>pDilate</i> )
Set dilate times.
Parameters
pDilate Dilate times
4.2.2.19 void setErode ( int <i>pErode</i> )
Set erode times.
Parameters
pErode Erode times
4.2.2.20 void setKnlSize ( int <i>pKnlSize</i> )
Set kernel size.
Parameters
pKnlSize Kernel size(width=heigh)
4.2.2.21 void setTa ( int <i>Threshold</i> )
Set threshold.
Parameters
Threshold Threshold
4.2.2.22 void setTb ( int <i>Threshold</i> )

Generated by Doxygen

Threshold

Set threshold.

**Parameters** Threshold

# 4.2.2.23 void showImg ( int TA, int TB )

Display image in window with para threshold setted.

#### **Parameters**

TA	Threshold A	
TB	Threshold B	

4.2.2.24 void showlmg ( int TA, int TB, int pKnlSize, int pErode, int pDilate )

Create a window to display image and modify paras.

TA	Threshold A
TB	Threshold B
pKnlSize	Kernel size
pErode	Erode times
pDilate	Dilate times

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