## WebCam Project

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# Chapter 1

# **Class Index**

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Here are the classes, structs, unions and interfaces with brief descriptions:	
Buf	5
5 jpg dst	5

2 Class Index

# **Chapter 2**

# File Index

## 2.1 File List

Here is a list of all documented files with brief descriptions:

include/common.h	
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include/ <b>query.h</b>	
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include/ <b>sock.h</b>	
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src/ <b>query.c</b>	
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src/sock.c	
Webserverhttp , 1socket 2http/	23
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src/ <b>yuv2jpeg.c</b>	
Yuvjpeg This file has implements changing YUYV format to JPEG format	29

File Index

## **Chapter 3**

## **Class Documentation**

## 3.1 Buf Struct Reference

## **Public Attributes**

- char \* start
- int len

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

• include/common.h

## 3.2 Cam\_conf Struct Reference

```
#include <common.h>
```

### **Public Attributes**

- int cam\_fd
- fmt\_t fmt
- · int width
- int heightint fps
- int n\_buf

## 3.2.1 Detailed Description

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

• include/common.h

## 3.3 jpg\_dst Struct Reference

#### **Public Attributes**

struct jpeg\_destination\_mgr jpg\_p

6 Class Documentation

- JOCTET \* buffer
- int out\_buf\_size
- int \* written
- unsigned char \* out\_buf\_cur
- unsigned char \* out\_buf

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

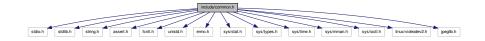
• include/yuv2jpeg.h

## **Chapter 4**

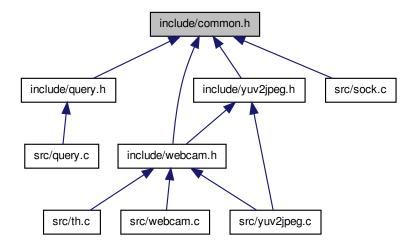
## **File Documentation**

## 4.1 include/common.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <assert.h>
#include <fcntl.h>
#include <unistd.h>
#include <errno.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <sys/time.h>
#include <sys/ioctl.h>
#include <inux/videodev2.h>
#include <jpeglib.h>
Include dependency graph for common.h:
```



This graph shows which files directly or indirectly include this file:



#### Classes

- struct Cam\_conf
- struct Buf

## Macros

- #define **DHT\_SIZE** 432
- #define **CLEAR**(x) memset(&x, 0, sizeof(x))
- #define WIDTH 640
- #define **HEIGHT** 480

## **Typedefs**

- typedef struct v4l2\_capability Cap
- typedef struct v4l2\_input Input
- typedef struct v4l2\_fmtdesc Fmtd
- typedef struct v4l2\_format Fmt
- typedef struct v4l2\_streamparm Fps
- typedef struct v4l2\_requestbuffers ReqBuf
- typedef struct v4l2\_buffer Vbuf

## **Enumerations**

• enum fmt\_t { MJPEG = V4L2\_PIX\_FMT\_MJPEG, YUYV = V4L2\_PIX\_FMT\_YUYV }

## **Variables**

- ReqBuf reqbuf
- Vbuf vbuf
- Buf \* bufs
- · Buf tmp\_buf
- · Buf share\_buf
- · Cam\_conf conf

## 4.1.1 Detailed Description

#### **Author**

```
Jack Jin - gjinjian@gmail.com
```

Version

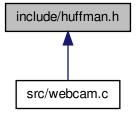
v0.1

Date

2013-09-11

## 4.2 include/huffman.h File Reference

This graph shows which files directly or indirectly include this file:



#### **Macros**

- #define **DHT\_SIZE** 432
- #define JPG\_HUFFMAN\_TABLE\_LENGTH 0x1A0

## **Variables**

• const unsigned char **JPEGHuffmanTable** [JPG\_HUFFMAN\_TABLE\_LENGTH]

## 4.2.1 Detailed Description

Author

Jack Jin - gjinjian@gmail.com

Version

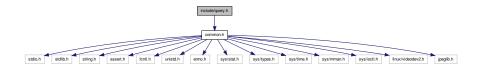
v0.1

Date

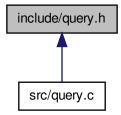
2013-09-11

## 4.3 include/query.h File Reference

#include "common.h"
Include dependency graph for query.h:



This graph shows which files directly or indirectly include this file:



## **Functions**

void query\_cap (int fd)

query\_cap :struct v4l2\_capability

• void query\_priority (int fd)

query\_priority enum v4l2\_priority

void query\_input (int fd)

query\_input ,G\_INPUTS\_INPUTinput struct v4l2\_input

void query\_fps (int fd)

query\_fps VIDIOC\_G\_PARM

```
    void query_fmt (int fd)

         query_fmt VIDIOC_G_FMT

    void query_fmt2 (int fd)

         query_fmt2 VIDIOC_ENUM_FMT
    • void enumerate_ctrl (int fd)
         enumerate_ctrl VIDIOC_QUERYCTRL
       Detailed Description
4.3.1
Author
     Jack Jin - gjinjian@gmail.com
Version
     v0.1
Date
     2013-09-11
4.3.2 Function Documentation
4.3.2.1 void enumerate_ctrl ( int fd )
enumerate_ctrl VIDIOC_QUERYCTRL
Parameters
                fd
4.3.2.2 void query_cap ( int fd )
query_cap :struct v4l2_capability
Parameters
                fd
Returns
     Cap *
Parameters
                fd
4.3.2.3 void query_fmt ( int fd )
query_fmt VIDIOC_G_FMT
```

Parameters
fd
4.3.2.4 void query_fmt2 ( int fd )
query_fmt2 VIDIOC_ENUM_FMT
Parameters
fd
4.3.2.5 void query_fps ( int fd )
query_fps VIDIOC_G_PARM
Parameters
fd
4.3.2.6 void query_input ( int fd )
query_input ,G_INPUTS_INPUTinput struct v4l2_input
Parameters
fd
4.3.2.7 void query_priority ( int fd )
query_priority enum v4l2_priority
Parameters
fd
<u> </u>

## 4.4 include/sock.h File Reference

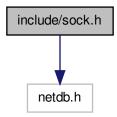
webserverhttp , 1socket 2http/

12

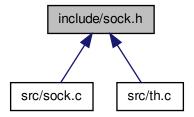
File Documentation

#include <netdb.h>

Include dependency graph for sock.h:



This graph shows which files directly or indirectly include this file:



## Macros

- #define LISTENQ 1024 /\* second argument to listen() \*/
- #define MAX 1024

## **Typedefs**

- · typedef struct sockaddr SA
- typedef struct sockaddr\_in SA\_in

#### **Functions**

• int Open\_listenfd (int port)

open\_listenfd socketsetsockoptIP

• int Accept (int listenfd, SA \*addr, socklen\_t \*addrlen)

Accep

• void send\_picture (int confd, Cam\_conf \*conf)

send\_picture 1URL 2http 3 4

void Client\_Info (SA\_in \*client\_addr)

Client\_Info IP

## 4.4.1 Detailed Description

webserverhttp , 1socket 2http/

Author

Jack Jin - gjinjian@gmail.com

Version

v0.1

Date

2013-09-11

#### 4.4.2 Function Documentation

4.4.2.1 int Accept ( int listenfd, SA \* addr,  $socklen_t * addrlen$  )

#### Accept

#### **Parameters**

listenfd	socket
addr	
addrlen	

Returns

socket

4.4.2.2 void Client\_Info ( SA\_in \* client\_addr )

Client Info IP

**Parameters** 

client\_addr

4.4.2.3 int Open\_listenfd ( int port )

open\_listenfd socketsetsockoptIP

**Parameters** 

port

Returns

socket

**Parameters** 

```
port
```

Returns

socket-1

4.4.2.4 void send\_picture ( int confd, Cam\_conf \* conf )

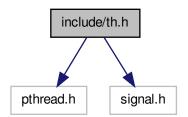
send\_picture 1URL 2http 3 4

**Parameters** 

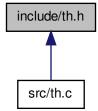
confd	
conf	

## 4.5 include/th.h File Reference

#include <pthread.h>
#include <signal.h>
Include dependency graph for th.h:



This graph shows which files directly or indirectly include this file:



```
Functions
```

```
void * cam_th (void *arg)
         cam_th
    void * cli_th (void *arg)
         cli_th
    • void signal_handler (int signo)
         signal_handler SIGINT
4.5.1 Detailed Description
Author
     Jack Jin - gjinjian@gmail.com
Version
     v0.1
Date
     2013-09-11
4.5.2 Function Documentation
4.5.2.1 void* cam_th ( void * arg )
cam_th
Parameters
               arg
Returns
4.5.2.2 void* cli_th ( void * arg )
cli th
Parameters
               arg
Returns
4.5.2.3 void signal_handler ( int signo )
signal_handler SIGINT
```

#### **Parameters**

signo

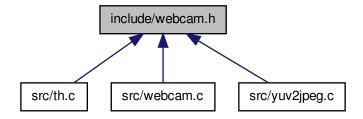
## 4.6 include/webcam.h File Reference

#include "common.h"
#include "yuv2jpeg.h"

Include dependency graph for webcam.h:



This graph shows which files directly or indirectly include this file:



## **Functions**

• int cam\_open (int argc, char \*argv[])

cam\_open

• void cam\_close (int fd)

cam\_close

void cam\_init (Cam\_conf \*conf)

cam\_init,

• void **start\_capturing** (int fd)

start\_capturing

• void stop\_capturing (int fd)

stop\_capturing

• int get\_frame (Cam\_conf \*conf)

get\_frame temp\_buf

• void process (Cam\_conf \*conf)

process

```
• int print_picture (int fd, unsigned char *buf, int size)
         print_picture fd
       Detailed Description
4.6.1
Author
     Jack Jin - gjinjian@gmail.com
Version
     v0.1
Date
     2013-09-11
4.6.2 Function Documentation
4.6.2.1 void cam_close ( int fd )
cam_close
Parameters
                fd
4.6.2.2 void cam_init ( Cam_conf * conf )
cam_init,
Parameters
                fd
4.6.2.3 int cam_open ( int argc, char * argv[] )
cam_open
Parameters
              argc
              argv
```

4.6.2.4 int get\_frame ( Cam\_conf \* conf ) get\_frame temp\_buf

Returns

Parameters
conf
Returns
0-1
get_frame temp_buf
Parameters
conf
Returns
0-1
4.6.2.5 int print_picture ( int fd, unsigned char * buf, int size )
print_picture fd
Parameters
fd
buf
size
Returns
4606 yaid massac ( Comp. comf., comf.)
4.6.2.6 void process ( Cam_conf * conf )
process
Parameters
conf
4.6.2.7 void start_capturing ( int fd )
start_capturing
Parameters
fd
4.6.2.8 void stop_capturing ( int fd )
stop_capturing

#### **Parameters**

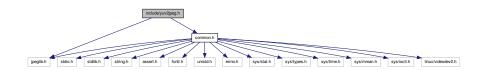
fd

## 4.7 include/yuv2jpeg.h File Reference

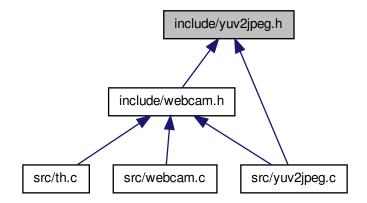
#### yuvjpeg

```
#include <jpeglib.h>
#include "common.h"
```

Include dependency graph for yuv2jpeg.h:



This graph shows which files directly or indirectly include this file:



## Classes

struct jpg\_dst

## **Typedefs**

• typedef jpg\_dst \* jpg\_ptr

#### **Functions**

- void **dst\_buffer** (j\_compress\_ptr, unsigned char \*, int, int \*)
- int yuv\_to\_jpeg (unsigned char \*, unsigned char \*, int, int)

## 4.7.1 Detailed Description

yuvjpeg

Author

Jack Jin - gjinjian@gmail.com

Version

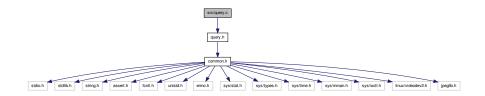
v0.1

Date

2013-09-11

## 4.8 src/query.c File Reference

#include "query.h"
Include dependency graph for query.c:



#### **Functions**

- void query\_cap (int fd)
  - query\_cap :struct v4l2\_capability
- void query\_priority (int fd)
  - query\_priority enum v4l2\_priority
- void query\_input (int fd)
  - query\_input ,G\_INPUTS\_INPUTinput struct v4l2\_input
- void query\_fps (int fd)
  - query\_fps VIDIOC\_G\_PARM
- void query\_fmt (int fd)
  - query\_fmt VIDIOC\_G\_FMT
- void query\_fmt2 (int fd)
  - query\_fmt2 VIDIOC\_ENUM\_FMT
- void enumerate\_ctrl (int fd)
  - enumerate\_ctrl VIDIOC\_QUERYCTRL

## 4.8.1 Detailed Description

**Author** 

Jack Jin - gjinjian@gmail.com

Version v0.1 Date 2013-09-11 4.8.2 Function Documentation 4.8.2.1 void enumerate\_ctrl ( int fd ) enumerate\_ctrl VIDIOC\_QUERYCTRL **Parameters** fd 4.8.2.2 void query\_cap ( int fd ) query\_cap :struct v4l2\_capability **Parameters** fd 4.8.2.3 void query\_fmt ( int fd ) query\_fmt VIDIOC\_G\_FMT **Parameters** fd 4.8.2.4 void query\_fmt2 ( int fd ) query\_fmt2 VIDIOC\_ENUM\_FMT **Parameters** fd 4.8.2.5 void query\_fps ( int fd ) query\_fps VIDIOC\_G\_PARM **Parameters** fd 4.8.2.6 void query\_input ( int fd ) query\_input ,G\_INPUTS\_INPUTinput struct v4l2\_input **Parameters** 

fd

4.8.2.7 void query\_priority (int fd)

query\_priority enum v4l2\_priority

**Parameters** 

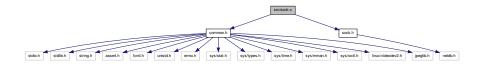
fd

## 4.9 src/sock.c File Reference

webserverhttp , 1socket 2http/

#include "common.h"
#include "sock.h"

Include dependency graph for sock.c:



## **Functions**

• int Open\_listenfd (int port)

open\_listenfd socketsetsockoptIP

• int Accept (int listenfd, SA \*addr, socklen\_t \*addrlen)

Accept

• void send\_picture (int confd, Cam\_conf \*conf)

send\_picture 1URL 2http 3 4

void Client\_Info (SA\_in \*client\_addr)

Client\_Info IP

## 4.9.1 Detailed Description

webserverhttp , 1socket 2http/

Author

Jack Jin - gjinjian@gmail.com

Version

v0.1

Date

2013-09-11

## 4.9.2 Function Documentation

4.9.2.1 int Accept ( int listenfd, SA \* addr, socklen\_t \* addrlen )

Accept

**Parameters** 

listenfd	socket
addr	
addrlen	

Returns

socket

```
4.9.2.2 void Client_Info ( SA_in * client_addr )
```

Client\_Info IP

**Parameters** 

```
client_addr
```

4.9.2.3 int Open\_listenfd ( int port )

open\_listenfd socketsetsockoptIP

**Parameters** 

```
port
```

Returns

socket-1

4.9.2.4 void send\_picture ( int confd, Cam\_conf \* conf )

send\_picture 1URL 2http 3 4

**Parameters** 

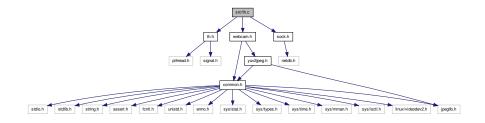
confd	
conf	

## 4.10 src/th.c File Reference

```
#include "th.h"
#include "webcam.h"
#include "sock.h"
```

4.10 src/th.c File Reference 25

Include dependency graph for th.c:



## **Functions**

void \* cam\_th (void \*arg)

cam\_th

• void \*  $cli_th$  (void \*arg)

cli\_th

• void **signal\_handler** (int signo)

signal\_handler SIGINT

#### **Variables**

- int **cam\_stop** = 0
- pthread\_mutex\_t \_db = PTHREAD\_MUTEX\_INITIALIZER
- pthread\_cond\_t \_db\_update = PTHREAD\_COND\_INITIALIZER

## 4.10.1 Detailed Description

**Author** 

Jack Jin - gjinjian@gmail.com

Version

v0.1

Date

2013-09-11

#### 4.10.2 Function Documentation

4.10.2.1 void\* cam\_th ( void \* arg )

cam\_th

**Parameters** 

arg

Returns

4.10.2.2 void\* cli\_th ( void \* arg )

cli\_th

**Parameters** 

arg

Returns

4.10.2.3 void signal\_handler ( int signo )

signal\_handler SIGINT

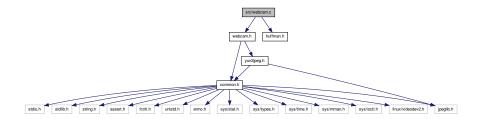
**Parameters** 

signo

## 4.11 src/webcam.c File Reference

#include "webcam.h"
#include "huffman.h"

Include dependency graph for webcam.c:



#### **Macros**

• #define **HEADERFREAM** 0xaf

## **Functions**

• int cam\_open (int argc, char \*argv[])

cam\_open

• void cam\_close (int fd)

cam\_close

void cam\_init (Cam\_conf \*conf)

cam\_init,

• void start\_capturing (int fd)

start\_capturing

• void stop\_capturing (int fd)

stop\_capturing

• int get\_frame (Cam\_conf \*conf)

get\_frame

void process (Cam\_conf \*conf)

```
process
```

- int  $\textbf{print\_picture}$  (int fd, unsigned char \*buf, int size)

```
print_picture fd
```

## 4.11.1 Detailed Description

**Author** 

```
Jack Jin - gjinjian@gmail.com
```

Version

v0.1

Date

2013-09-11

## 4.11.2 Function Documentation

```
4.11.2.1 void cam_close ( int fd )
```

cam\_close

**Parameters** 

fd

4.11.2.2 void cam\_init ( Cam\_conf \* conf )

cam\_init,

**Parameters** 

fd

4.11.2.3 int cam\_open ( int argc, char \* argv[] )

cam\_open

**Parameters** 

argc	
argv	

Returns

```
4.11.2.4 int get_frame ( Cam_conf * conf )
```

get\_frame

get\_frame temp\_buf

**Parameters** 

```
conf
```

Returns

0-1

4.11.2.5 int print\_picture ( int fd, unsigned char \* buf, int size )

print\_picture fd

**Parameters** 

fd	
buf	
size	

**Returns** 

```
4.11.2.6 void process ( Cam_conf * conf )
```

process

**Parameters** 

```
conf
```

4.11.2.7 void start\_capturing ( int fd )

start\_capturing

**Parameters** 

```
fd
```

4.11.2.8 void stop\_capturing ( int fd )

stop\_capturing

**Parameters** 

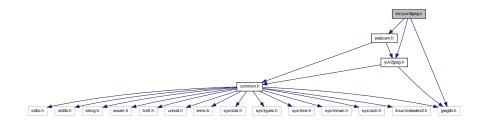
```
fd |
```

## 4.12 src/yuv2jpeg.c File Reference

yuvjpeg This file has implements changing YUYV format to JPEG format

```
#include "webcam.h"
#include "yuv2jpeg.h"
#include <jpeglib.h>
```

Include dependency graph for yuv2jpeg.c:



#### **Macros**

• #define OUTPUT\_BUF\_SIZE 4096

## **Functions**

- METHODDEF (METHODDEF() term\_dst(j\_compress\_ptr) void)
- METHODDEF (boolean)
- METHODDEF (void)
- void **dst\_buffer** (j\_compress\_ptr cinfo, unsigned char \*buffer, int size, int \*written)
- int yuv\_to\_ipeg (unsigned char \*buf, unsigned char \*buffer, int size, int quality)

## 4.12.1 Detailed Description

yuvjpeg This file has implements changing YUYV format to JPEG format

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