

X5 camera configuration

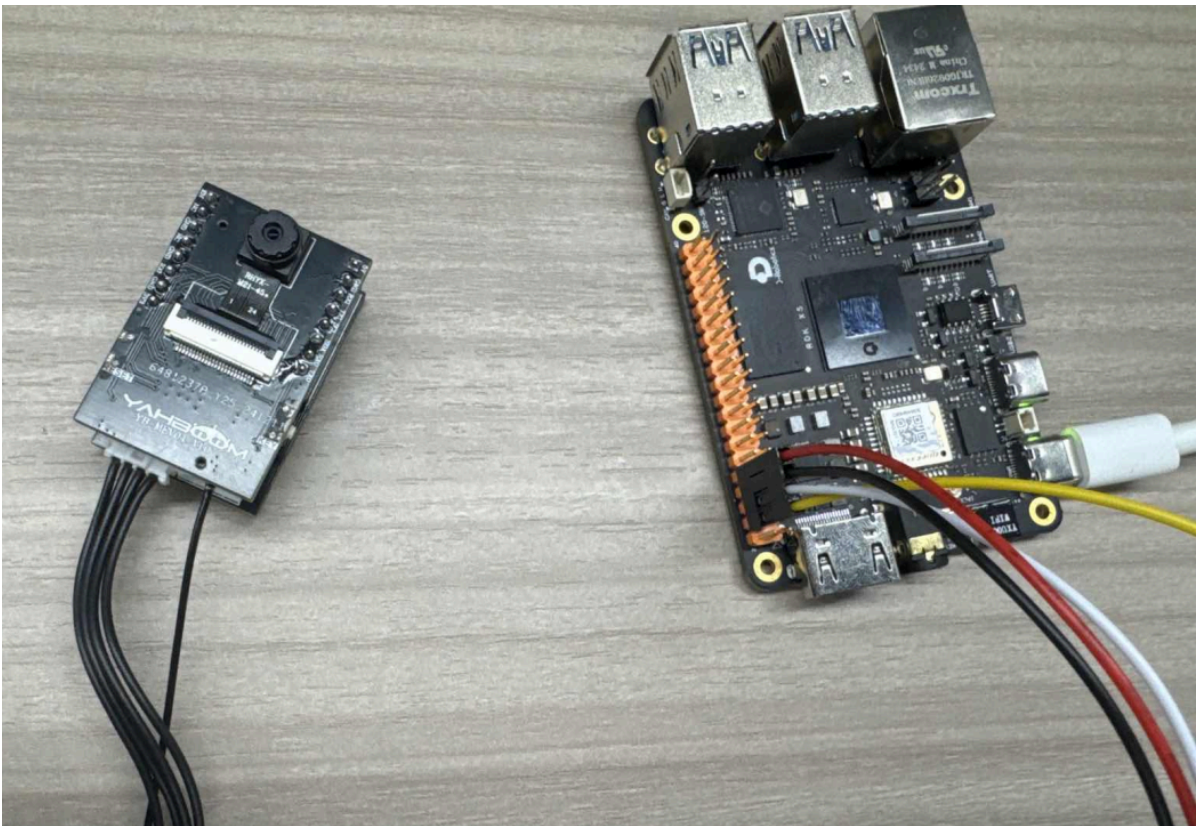
Note: The esp32 camera needs to be burned with factory firmware. If the esp32 camera has not been flashed with firmware after receiving it, it is not necessary. The factory default firmware, before using iic communication, you can use the serial port to configure the esp32 camera to the network, and iic is used for data reading

1. Experimental preparation

- One X5 motherboard
- One esp32 camera

2. Wiring diagram

X5	esp32 camera
BOARD8	RX
BOARD10	TX
GND	GND
5V	5V



Pin diagram:

X5 RDK 40Pin 功能对照表

功能说明	X5 管脚号	BCM 编码	CVM 功能名	物理引脚 BOARD编码		CVM 功能名	BCM 编码	X5 管脚号	功能说明
3.3V电源信号			VDD_3V3	1	2	VDD_5V			5V电源信号
I2C5数据信号	387	2	I2C5_SDA	3	4	VDD_5V			5V电源信号
I2C5时钟信号	389	3	I2C5_SCL	5	6	GND			地信号
I2S1 MCLK时钟信号	420	4	I2S1_MCLK	7	8	UART_TXD	14	383	UART1发送信号
地信号			GND	9	10	UART_RXD	15	384	UART1接收信号
GPIO17信号	380	17	GPIO17	11	12	I2S1_BCLK	18	421	I2S1 BCLK时钟信号
GPIO27信号	379	27	GPIO27	13	14	GND			地信号
GPIO22信号	388	22	GPIO22	15	16	GPIO23	23	382	GPIO23信号
3.3V电源信号			VDD_3V3	17	18	GPIO24	24	402	GPIO24信号
SPI1 MOSI信号	398	10	SPI1_MOSI	19	20	GND			地信号
SPI1 MISO信号	397	9	SPI1_MISO	21	22	GPIO25	25	387	GPIO25信号
SPI1 SCLK信号	395	11	SPI1_SCLK	23	24	SPI_CSN0	8	394	SPI1 SSN1信号
地信号			GND	25	26	SPI_CSN1	7	396	SPI1 SSN0信号
I2C0数据信号	355	0	I2C0_SDA	27	28	I2C0_SCL	1	354	I2C0时钟信号
GPIO5信号	399	5	GPIO5	29	30	GND			地信号
GPIO6信号	400	6	GPIO6	31	32	PWM6	12	356	PWM6信号
PWM7信号	357	13	PWM7	33	34	GND			地信号
I2S1 WS信号	422	19	I2S1_LRCK	35	36	GPIO16	16	381	
GPIO26信号	401	26	GPIO26	37	38	I2S1_SDIN	20	423	I2S1 DI信号
地信号			GND	39	40	I2S1_SDOUT	21	424	I2S1 DO信号

3. Experimental steps and experimental results

1. Open a new Raspberry Pi terminal and send the source code of this experiment to the Raspberry Pi
2. Open the code just uploaded and modify it to the wifi name and password you want to connect to. You can also modify the name of the hotspot, as well as the corresponding wifi mode and ai mode.

```
Normal = 0x00
Cat_Dog_Model = 0x01 #猫狗检测 Cat and Dog Detection
Face_Detection = 0x02 #人脸检测 Face Detection
Color_identify = 0x03 #颜色检测 Color Detection
Face_identify = 0x04 #人脸识别 Face Recognition

ai_mode = Cat_Dog_Model #修改这里的变量来切换模式 Modify the variables here to switch modes
```

3. Execute the following command, and the IP address of the current network connection and the address of the hotspot will be returned

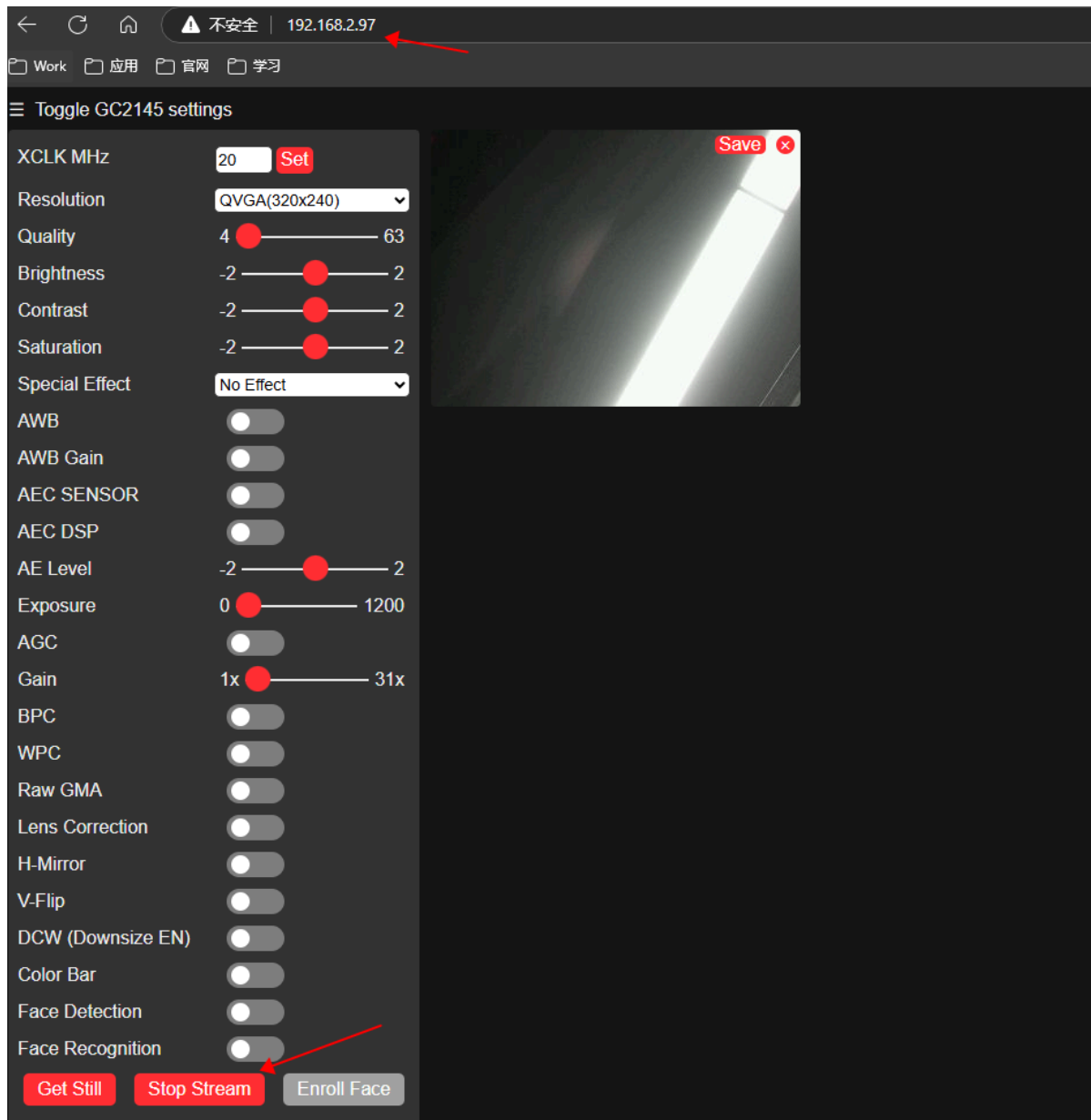
```
sudo python3 sunrise_wifi.py
```

```
sunrise@ubuntu:~$ python3 sunrise_wifi.py
serial_start ...
set_wifi_mode
set_ai_mode
set_sta_wifi
set_ap_wifi
YAHBOOM Board VerSion:AI_V1.5.2

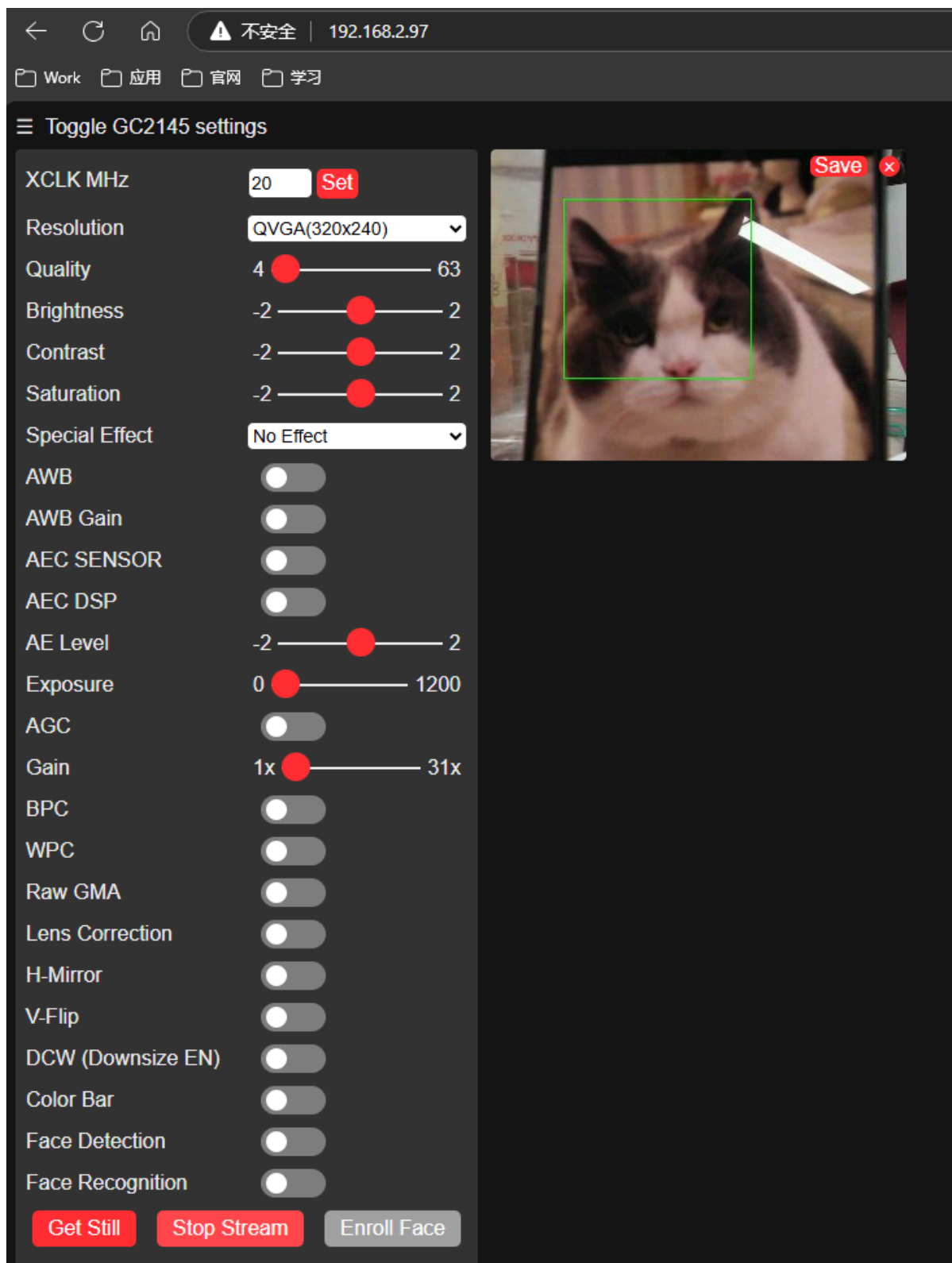
ap_ip:192.168.4.1

sta_ip:192.168.2.97
```

3. You can view the camera screen on the web page according to the above two addresses. When using ap_ip, you need to connect to the hotspot of the esp32 camera. When using sta_ip, the computer needs to be in the same network. Enter **192.168.2.97** through the browser below This access camera screen



4. Because we set it to cat and dog mode, we put the cat or dog in front of the camera and the cat or dog will be selected.



At the same time, the terminal will print out the current upper left corner coordinates and lower right corner coordinates, and the area has been selected.

```

sunrise@ubuntu:~$ python3 sunrise_wifi.py
serial start ...
set_wifi_mode
set_ai_mode
set_sta_wifi
set_ap_wifi
YAHBOOM Board VerSion:AI_V1.5.2

ap_ip:192.168.4.1

sta_ip:192.168.2.97

$106,028,237,151,#$103,052,215,147,#
$108,065,210,152,#$117,057,230,153,#
$126,073,234,156,#
$115,059,228,156,#$118,048,238,151,#
$118,038,239,150,#
$118,038,238,151,#
$116,045,230,152,#$104,027,217,136,#
$112,038,219,143,#

```

Face recognition mode

When switching to face recognition mode, the terminal will additionally print the current face id

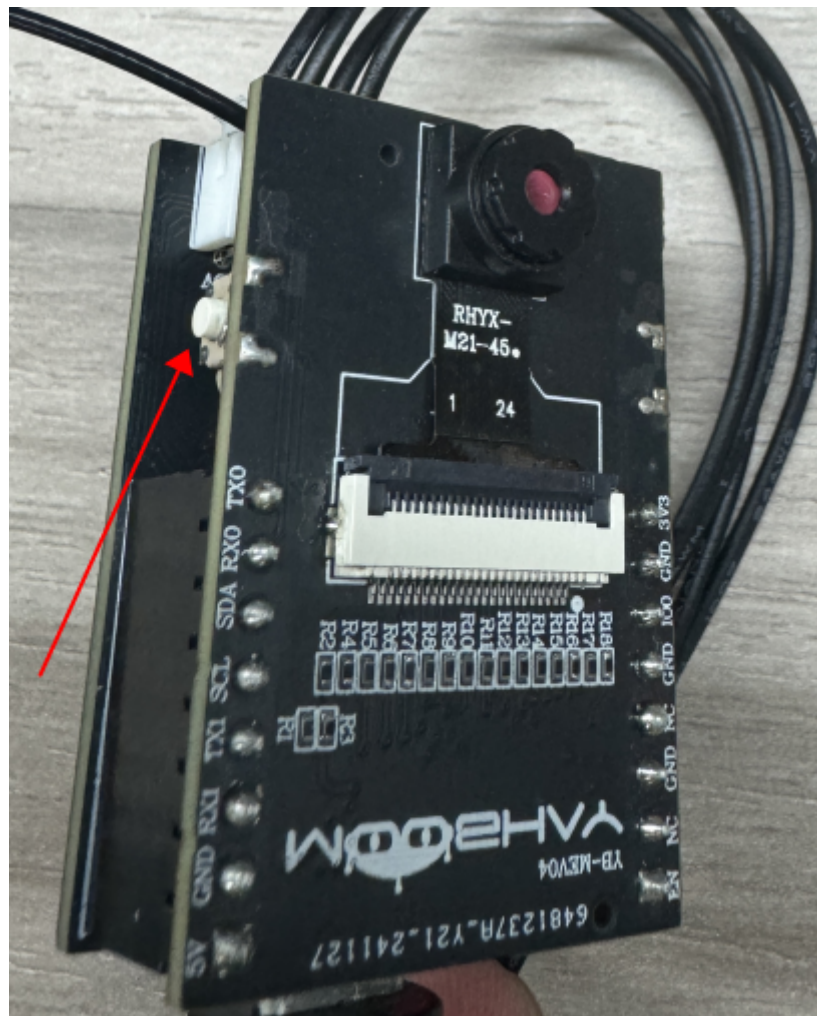
```

3
) ai_mode = Face_identify #修改这里的变量来切换模式
L
def set_level_mode(data):

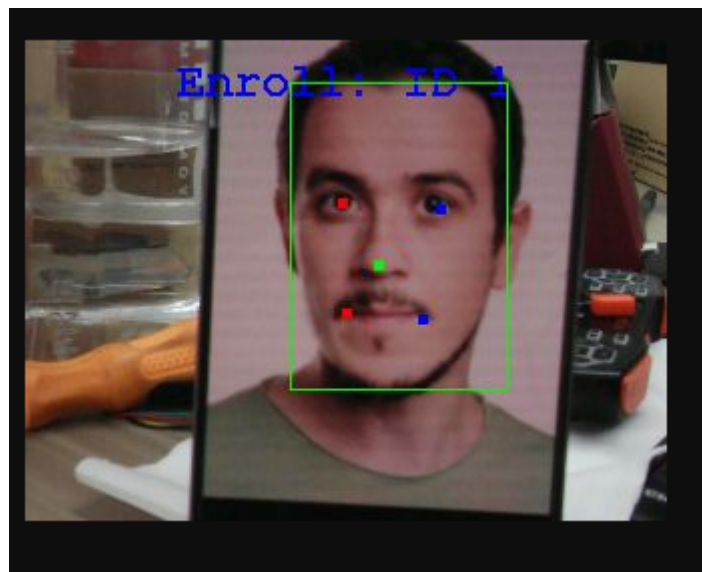
```

```
sudo python3 sunrise_wifi.py
```

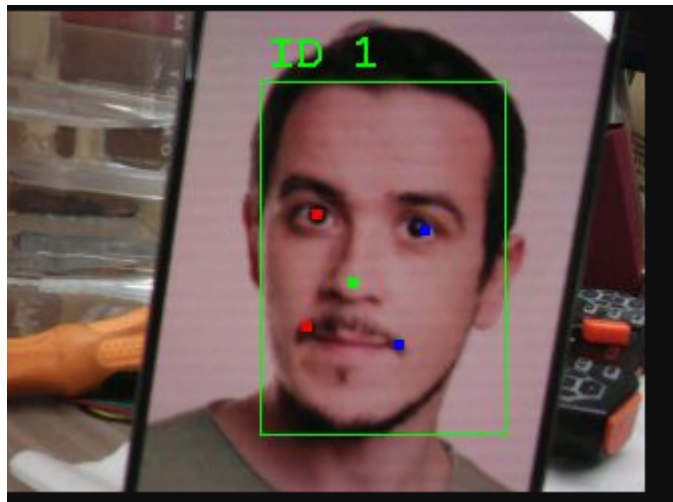
Recognize face. When you see a face, press the key button to record the face



The following picture appears, which means the recording is successful, and the face 1 is recorded



At this time, you can press and hold the button for two seconds, then release it and press the button again to recognize the current face



At the same time, the terminal will print the coordinates of the upper left corner and the lower right corner, as well as the recognized face.

```

serial start ...
set_wifi_mode
set_ai_mode
set_sta_wifi
set_ap_wifi

key_down!! flag:1
key_down!! flag:1
key_long_down!!
key_down!! flag:2
$134,066,229,207,#@ID:2!
key_down!! flag:2
$128,070,221,208,#@ID:2!

```

Color detection mode

When we switch to color detection mode,

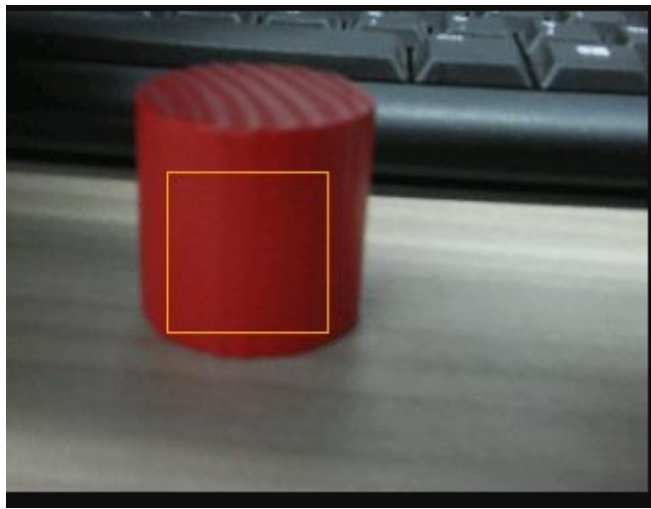
```

9
0 ai_mode = Color_identify #修改这里的变量来切换模式
1

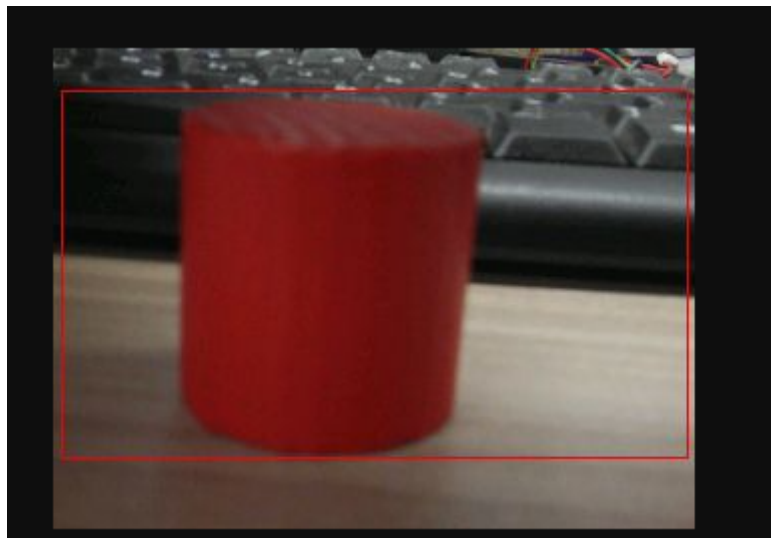
```

```
sudo python3 sunrise_wifi.py
```

Recognize the color. Press the button and a box will appear. You can use this box to select the color you want to use.



Press and hold the button for two seconds, release it and press it again to identify the currently selected color, and a red frame will appear.



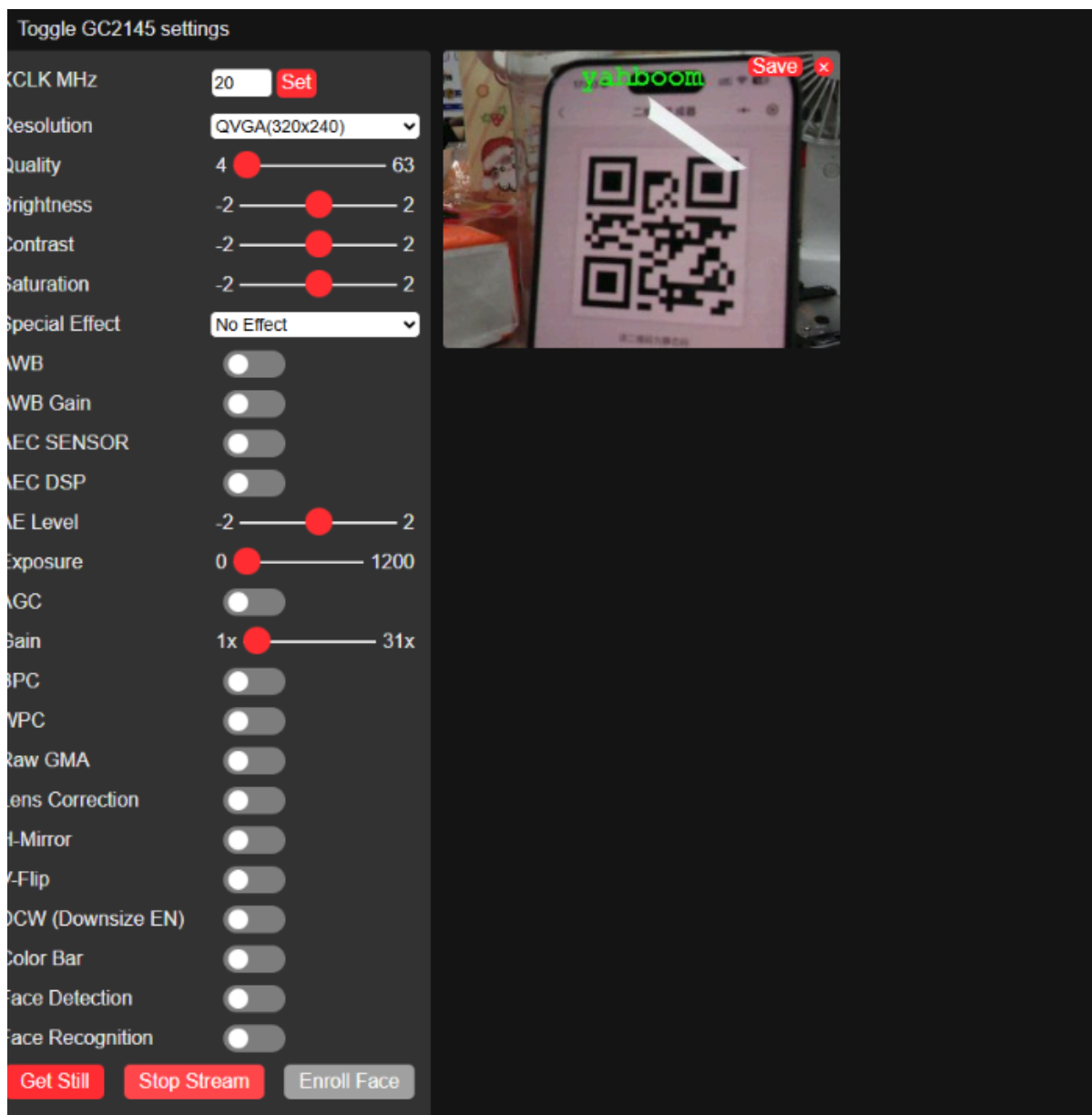
At the same time, the terminal will print out the current upper left corner coordinates and lower right corner coordinates.

QR code detection mode

When we switch to **QR code detection mode**,

```
4 ai_mode = QR_AI #ai模式选择
5
6
```

Use the WeChat applet on your mobile phone to search for the QR code generator. A QR code will be generated for the corresponding text and saved to the album. The following is the QR code recognition.



At the same time, the terminal will print out the recognized text.

[illegible]

```
ap_ip:192.168.4.1
```

```
sta_ip:192.168.2.97
```

```
$yahboom#
```

```
$yahboom#
```

```
$yahboom#
```

```
$yahboom#
```

```
$yahboom#
```

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$yahboom#
```

```
$yahboom#
```

```
$yahboom#
yahboom#
```

```
$yanboom#
$yanboom#
```

```
$yahboom#
$yahboom#
```

```
$yanboom#
$yahboom#
```

```
$yanboom#  
$yahboom#
```

```
$yanboom#
$yahboom#
```

```
$yahboom#
```

\$yanboom

1