# Raspberry Pi 5 configure camera

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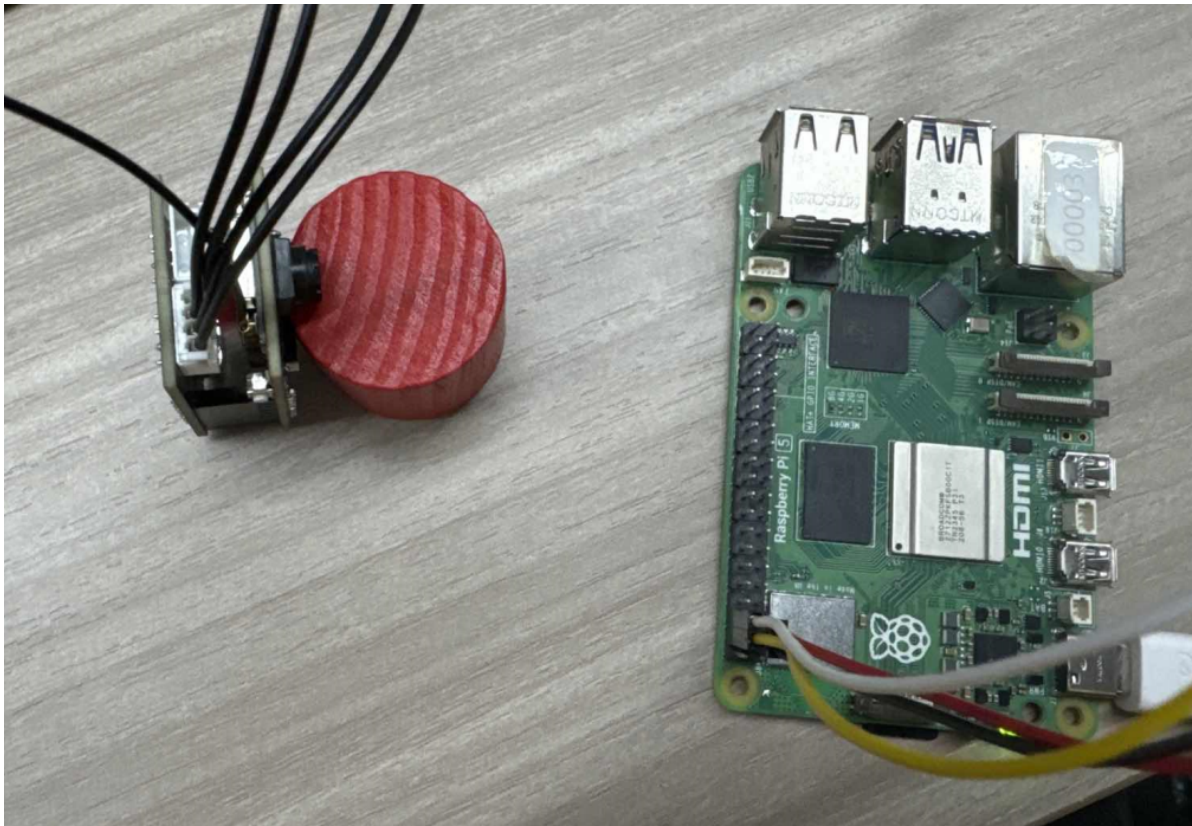
1. Experimental preparation

- A Raspberry Pi 5 main controller
- An esp32 camera

2. Wiring diagram

Raspberry Pi 5	esp32 camera
BOARD3	SDA
BOARD5	SCL
GND	GND
5V	5V
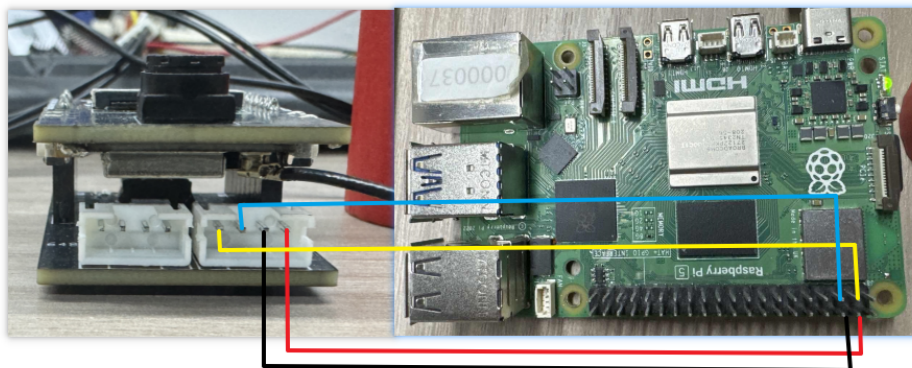
Physical connection diagram:

Raspberry Pi pin diagram:

树莓派 40Pin 引脚对照表

wiringPi 编码	BCM 编码	功能名	物理引脚 BOARD编码		功能名	BCM 编码	wiringPi 编码
		3.3V	1	2	5V		
8	2	SDA.1	3	4	5V		
9	3	SCL.1	5	6	GND		
7	4	GPIO.7	7	8	TXD	14	15
		GND	9	10	RXD	15	16
0	17	GPIO.0	11	12	GPIO.1	18	1
2	27	GPIO.2	13	14	GND		
3	22	GPIO.3	15	16	GPIO.4	23	4
		3.3V	17	18	GPIO.5	24	5
12	10	MOSI	19	20	GND		
13	9	MISO	21	22	GPIO.6	25	6
14	11	SCLK	23	24	CE0	8	10
		GND	25	26	CE1	7	11
30	0	SDA.0	27	28	SCL.0	1	31
21	5	GPIO.21	29	30	GND		
22	6	GPIO.22	31	32	GPIO.26	12	26
23	13	GPIO.23	33	34	GND		
24	19	GPIO.24	35	36	GPIO.27	16	27
25	26	GPIO.25	37	38	GPIO.28	20	28
		GND	39	40	GPIO.29	21	29

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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 change the position of the arrow in the figure to the corresponding 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 instructions, and the default data will be returned. This is because the camera recognition is not turned on.

```
python3 I2C_TEST.py
```

```
pi@raspberrypi:~ $ python3 I2C_TEST.py
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
读取的数据: data0:0  data1:160 data2:0  data3:120
arear:0
```

3. Log in through the wifi ip configured by the serial port, or through the hotspot connected to the camera. Because wifi has been configured before, the following figure directly uses the previously configured wifi ip address to log in to the webpage and open the camera
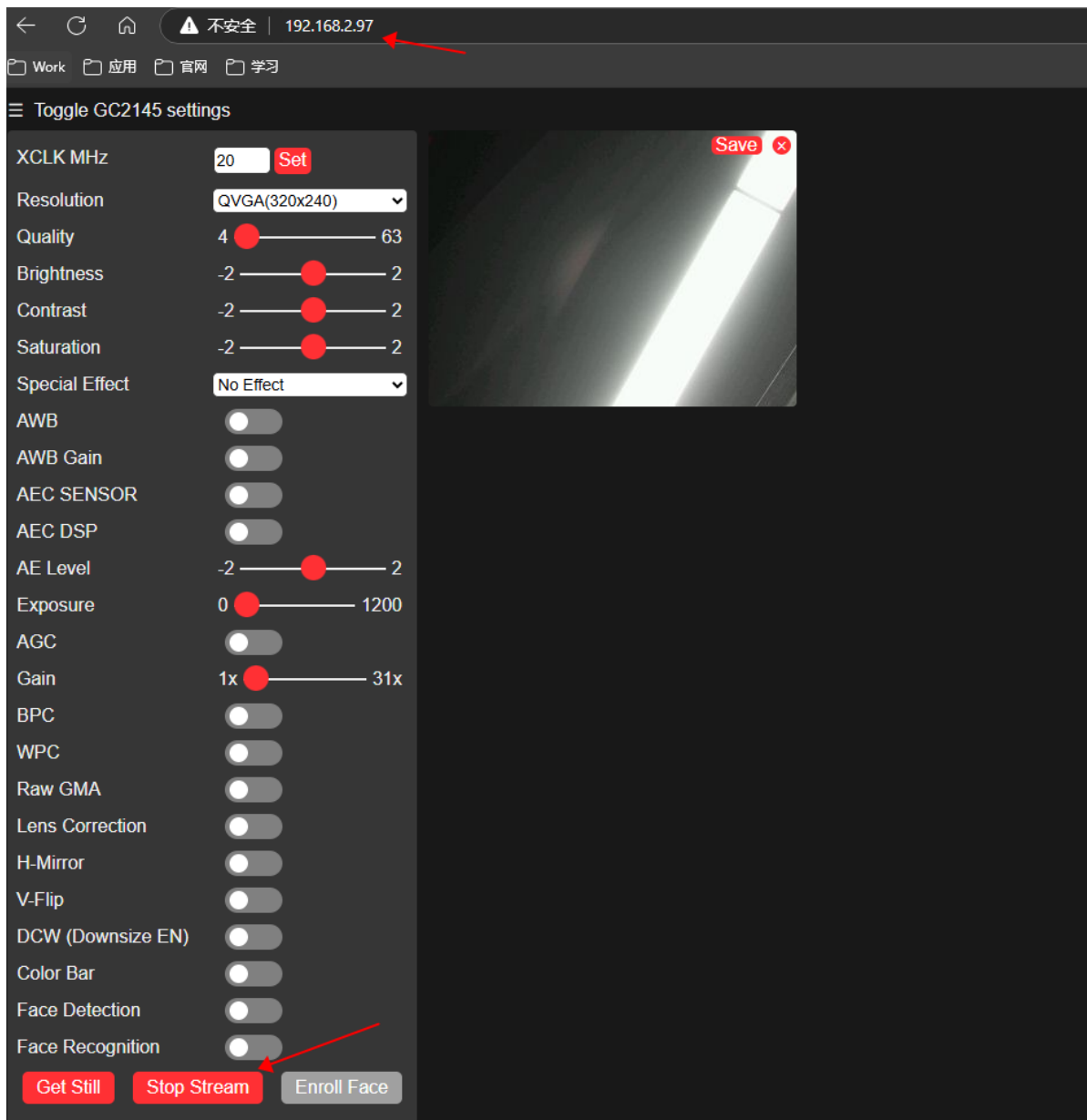
4. Because we set it to cat and dog mode, we put the cat or dog in front of the camera and the cat or dog will be selected.
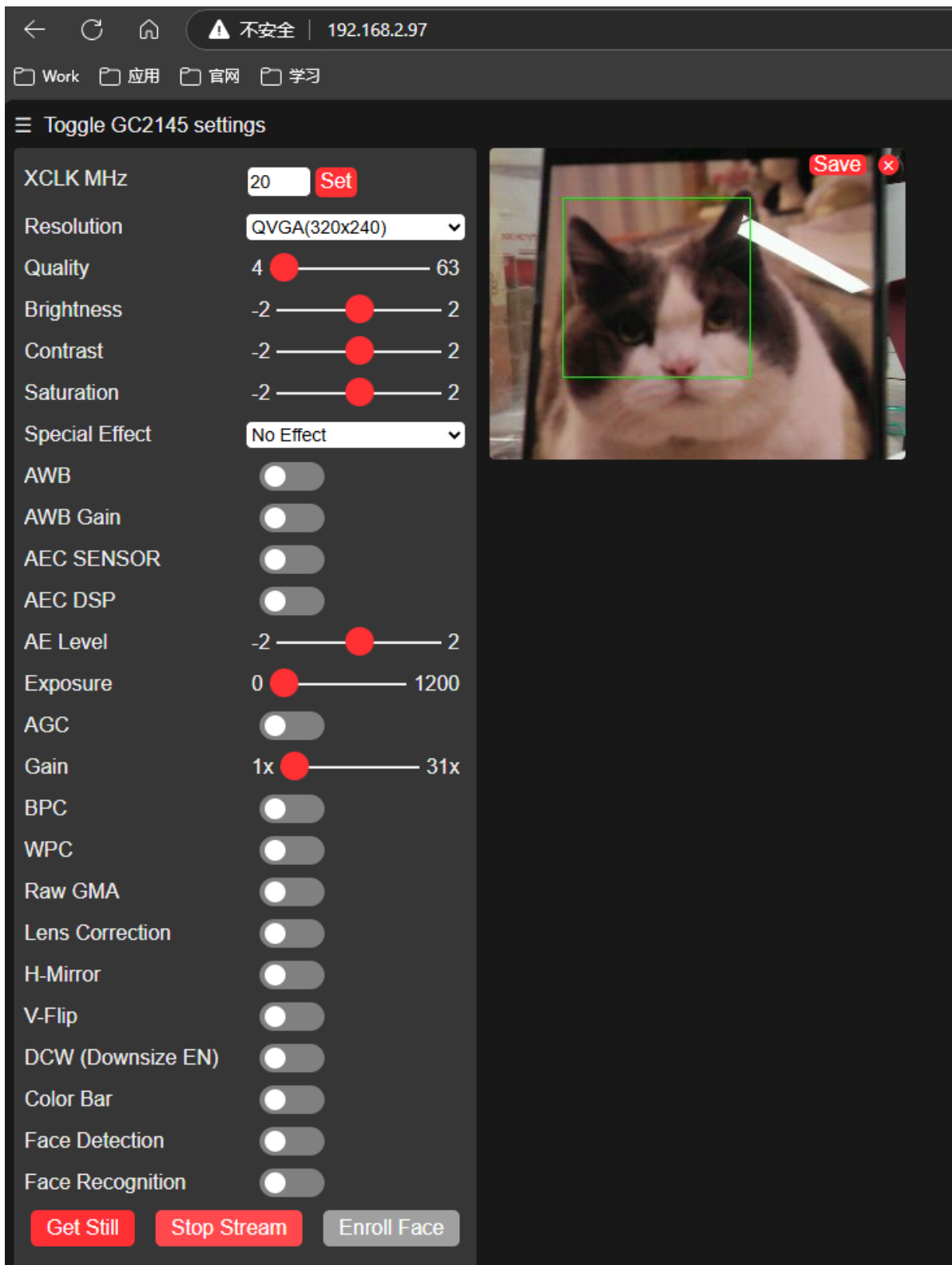
At the same time, the terminal will print out the current center coordinates and the area has been selected.

```
0
读取的数据: data0:0  data1:160 data2:0  data3:80
14200
读取的数据: data0:0  data1:139 data2:0  data3:109
17040
读取的数据: data0:0  data1:129 data2:0  data3:101
16520
读取的数据: data0:0  data1:126 data2:0  data3:100
16497
读取的数据: data0:0  data1:125 data2:0  data3:100
15340
读取的数据: data0:0  data1:120 data2:0  data3:109
14272
读取的数据: data0:0  data1:129 data2:0  data3:118
16779
读取的数据: data0:0  data1:126 data2:0  data3:106
16874
读取的数据: data0:0  data1:127 data2:0  data3:108
17545
读取的数据: data0:0  data1:131 data2:0  data3:108
16166
读取的数据: data0:0  data1:130 data2:0  data3:118
18056
读取的数据: data0:0  data1:130 data2:0  data3:107
17190
读取的数据: data0:0  data1:126 data2:0  data3:106
16844
读取的数据: data0:0  data1:131 data2:0  data3:108
15295
读取的数据: data0:0  data1:131 data2:0  data3:115
16029
读取的数据: data0:0  data1:130 data2:0  data3:118
14888
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
读取的数据: data0:0  data1:118 data2:0  data3:158
21546
```

Face recognition mode

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

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

```
python3 I2C_TEST.py
```

读取的数据: data0:-121 data1:-121 data2:-121 data3:-121
arear:-30873
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
id:0
读取的数据: data0:0 data1:160 data2:0 data3:120
arear:0
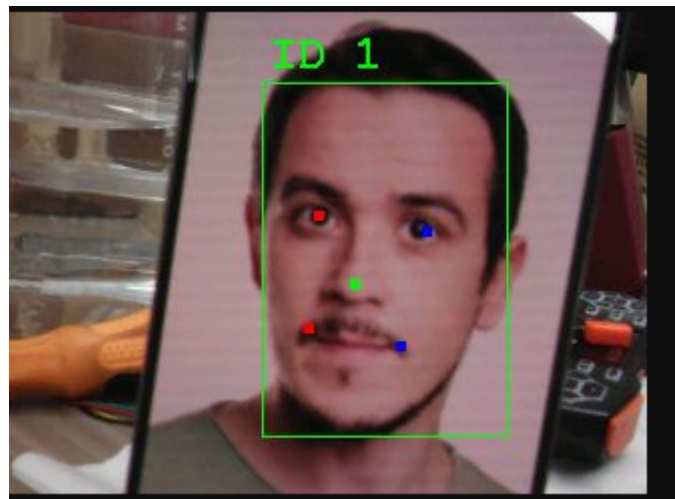id:0
读取的数据: data0:0 data1:160 data2:0 data3:120

Recognize face. When you see a face, press the key button to record the face
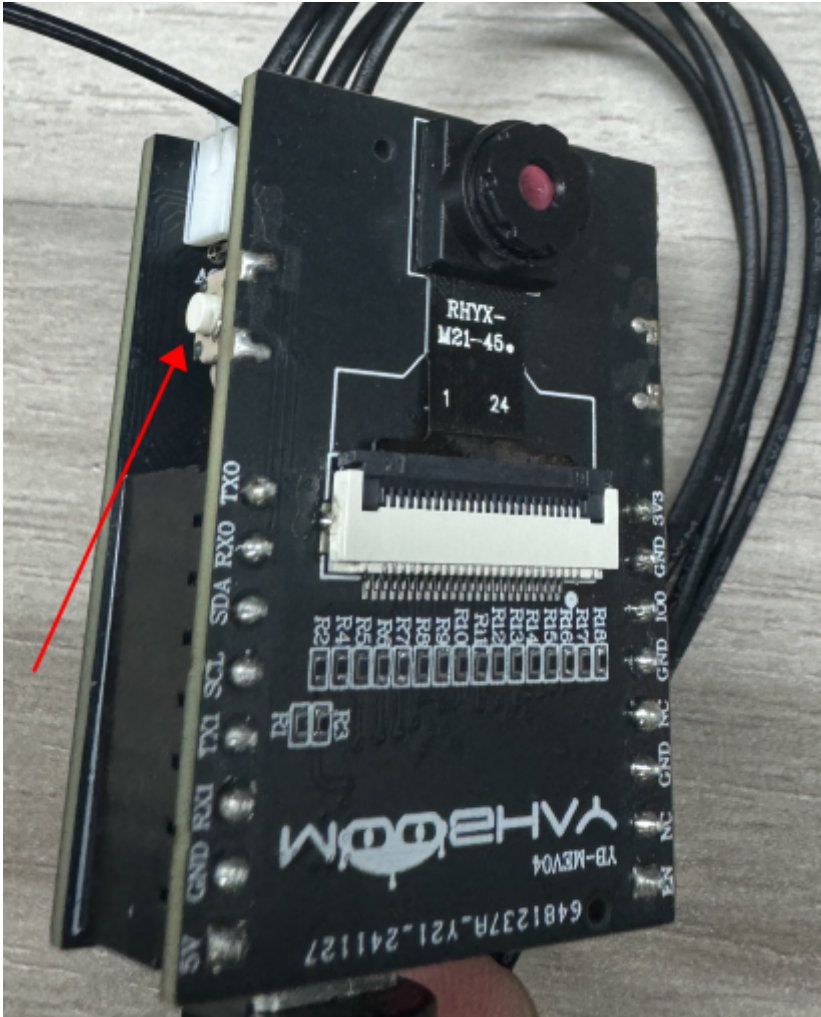
The following picture appears, which means the recording is successful, and the face 1 is recorded
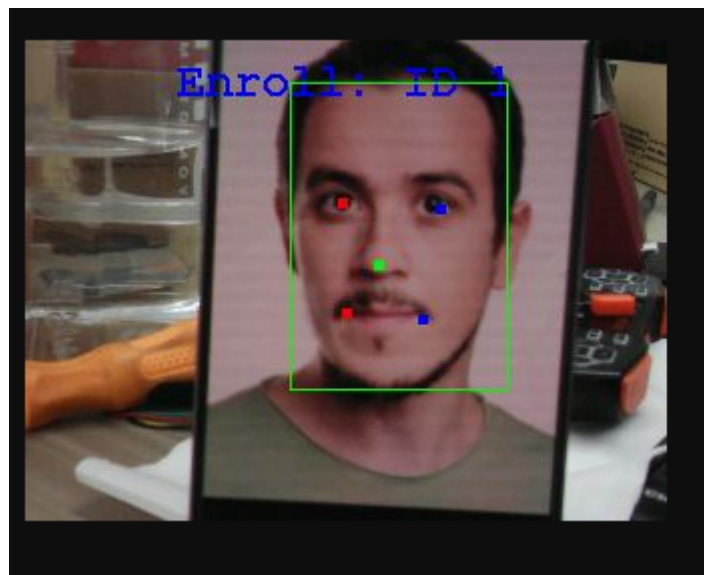
At this time, you can press and hold the button for two seconds, then release it and press the button again to recognize the current face

At the same time, the terminal will print out the current center coordinates and the recognized face.

```
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
读取的数据: data0:0   data1:142 data2:0   data3:102
arear:20196
id:1
```

Color detection mode

When we switch to color detection mode,

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

```
python3 I2C_TEST.py
```

```
读取的数据: data0:-121   data1:-121 data2:-121   data3:-121
arear:-30976
读取的数据: data0:0   data1:160 data2:0   data3:120
arear:0
读取的数据: data0:0   data1:160 data2:0   data3:120
arear:0
读取的数据: data0:0   data1:160 data2:0   data3:120
arear:0
读取的数据: data0:0   data1:160 data2:0   data3:120
arear:0
读取的数据: data0:0   data1:160 data2:0   data3:120
arear:0
```

Recognize the color. Press the button and a box will appear. You can use this box to select the color you want to use.
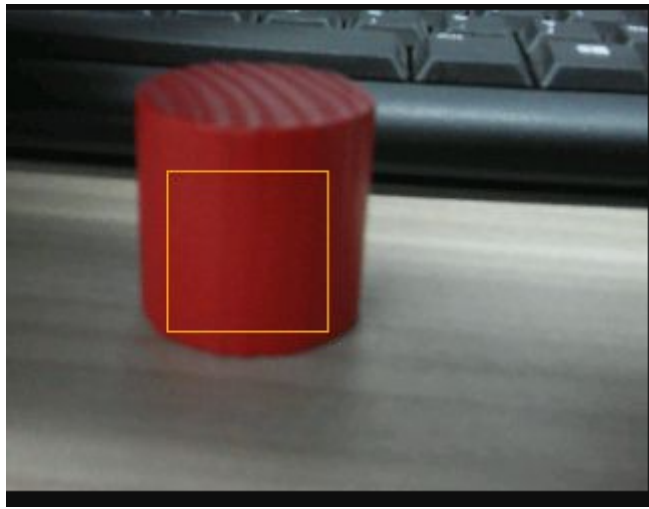
Press and hold the button for two seconds, release it and press it again to identify the currently selected color, and a red frame will appear.
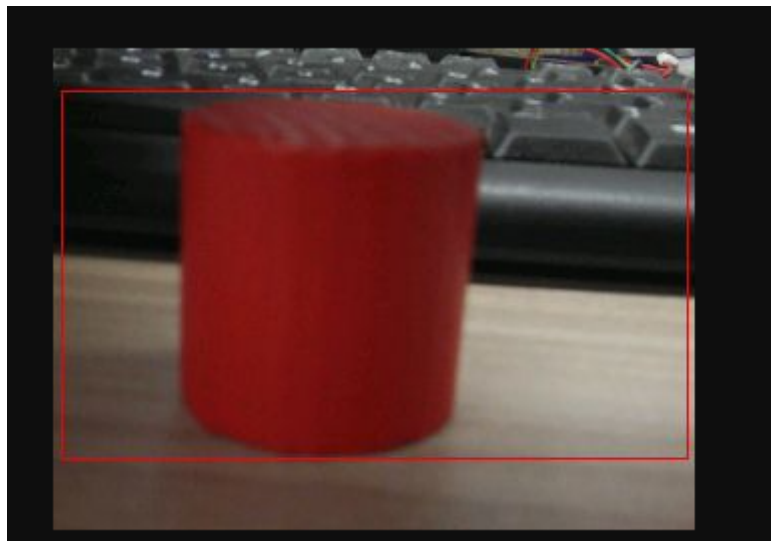
At the same time, the terminal will print out the current center coordinates.

读取的数据: data0:0　data1:160 data2:0　data3:135
arear:33708
读取的数据: data0:0　data1:112 data2:0　data3:141
arear:32128
读取的数据: data0:0　data1:108 data2:0　data3:139
arear:30880
读取的数据: data0:0　data1:174 data2:0　data3:144
arear:38916
读取的数据: data0:0　data1:132 data2:0　data3:147
arear:30804
读取的数据: data0:0　data1:106 data2:0　data3:120
arear:36556
读取的数据: data0:0　data1:100 data2:0　data3:129
arear:16200
读取的数据: data0:0　data1:116 data2:0　data3:150
arear:22380
读取的数据: data0:0　data1:90 data2:0　data3:150
arear:40200
读取的数据: data0:0　data1:138 data2:0　data3:150
arear:38340
读取的数据: data0:0　data1:100 data2:0　data3:151
arear:48184
读取的数据: data0:0　data1:114 data2:0　data3:147
arear:17516
读取的数据: data0:0　data1:96 data2:0　data3:157
arear:42660
读取的数据: data0:0　data1:90 data2:0　data3:157
arear:42660
读取的数据: data0:0　data1:90 data2:0　data3:157
arear:42660
读取的数据: data0:0　data1:90 data2:0　data3:157
arear:42660
读取的数据: data0:0　data1:90 data2:0　data3:157
arear:11264