STM32 remote control servo gimbal

Note: esp32 camera needs to be burned with factory firmware. If you have not flashed the firmware after receiving the esp32 camera, it does not need to be burned. The factory default firmware

1. Experimental preparation

- ESP32 camera
- stm32 development board
- 2-DOF gimbal
- Dupont line

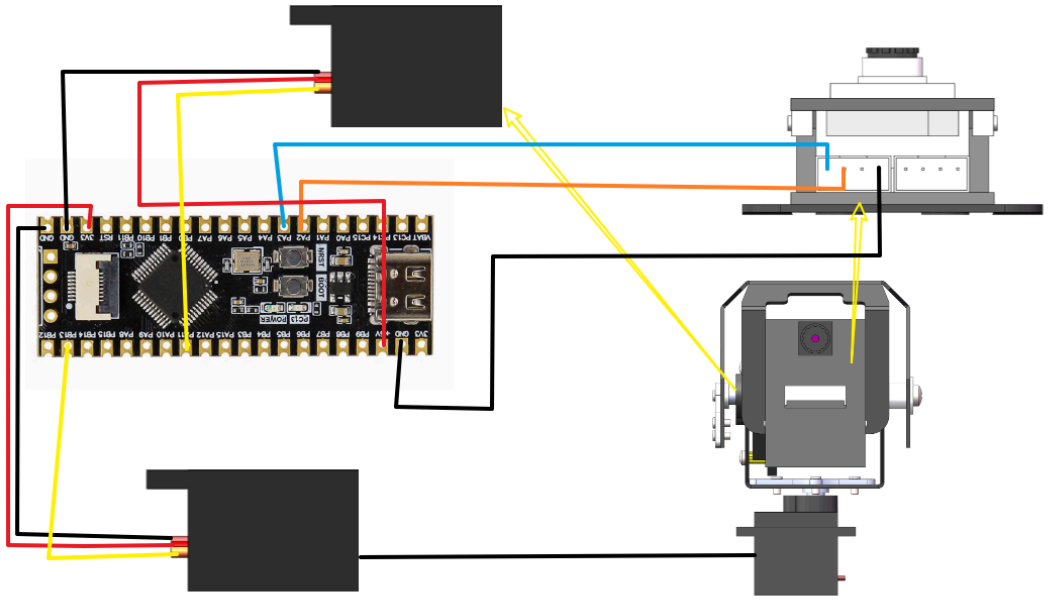
2. Wiring diagram

Note: Due to insufficient voltage, esp32 camera and STM32 development board need additional power supply via type-c data cable

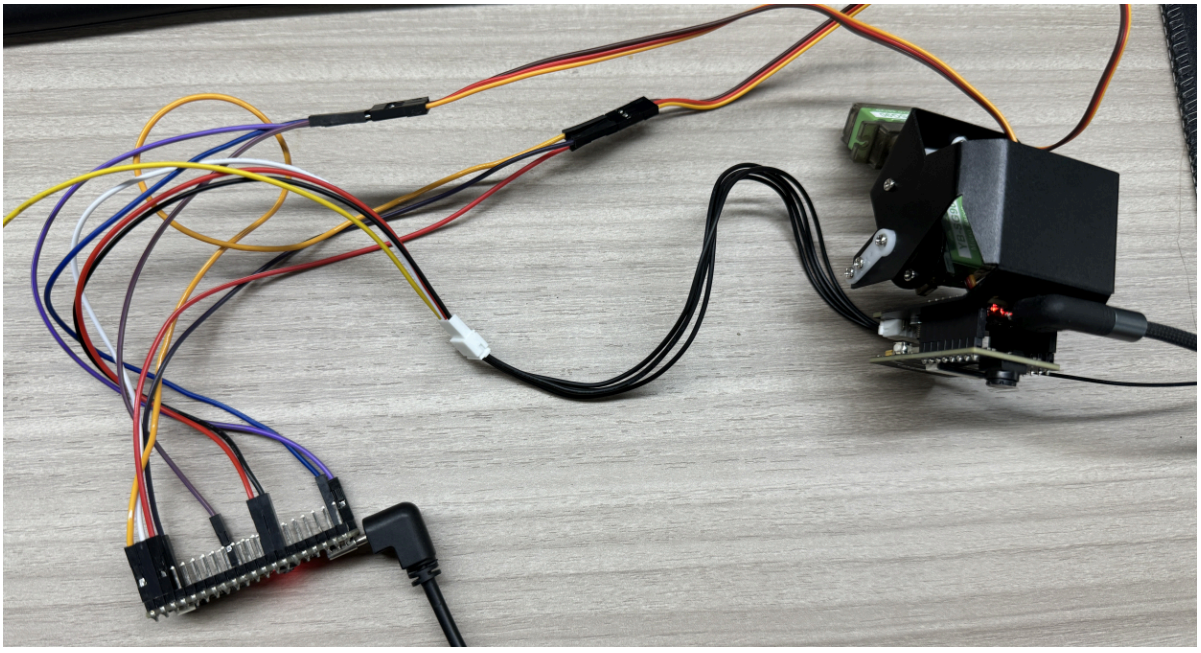
STM32F103	esp32 camera
PA2	RX
PA3	TX
GND	GND
NC	5V

STM32F103	s1 servo
PB13	Signal line
3.3V	vcc
GND	GND

STM32F103	s2 servo
PA11	signal line
3.3V	VCC
GND	GND



Actual wiring diagram:



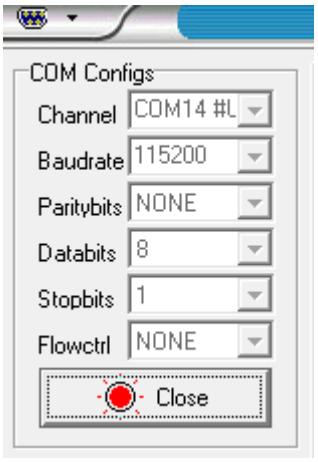
3. Experimental steps and experimental results

Quick method: You can directly connect to the wifi opened by esp32. This experiment is named ESP32_WIFI_TEST. Then the IP address camera information of the mobile app is 192.169.4.1. You can use the app to control the servo

1. Check whether the program runs normally.
2. You can modify the WiFi name and password you want to connect to, as well as the name of the hotspot in the esp32_wifi.cpp file

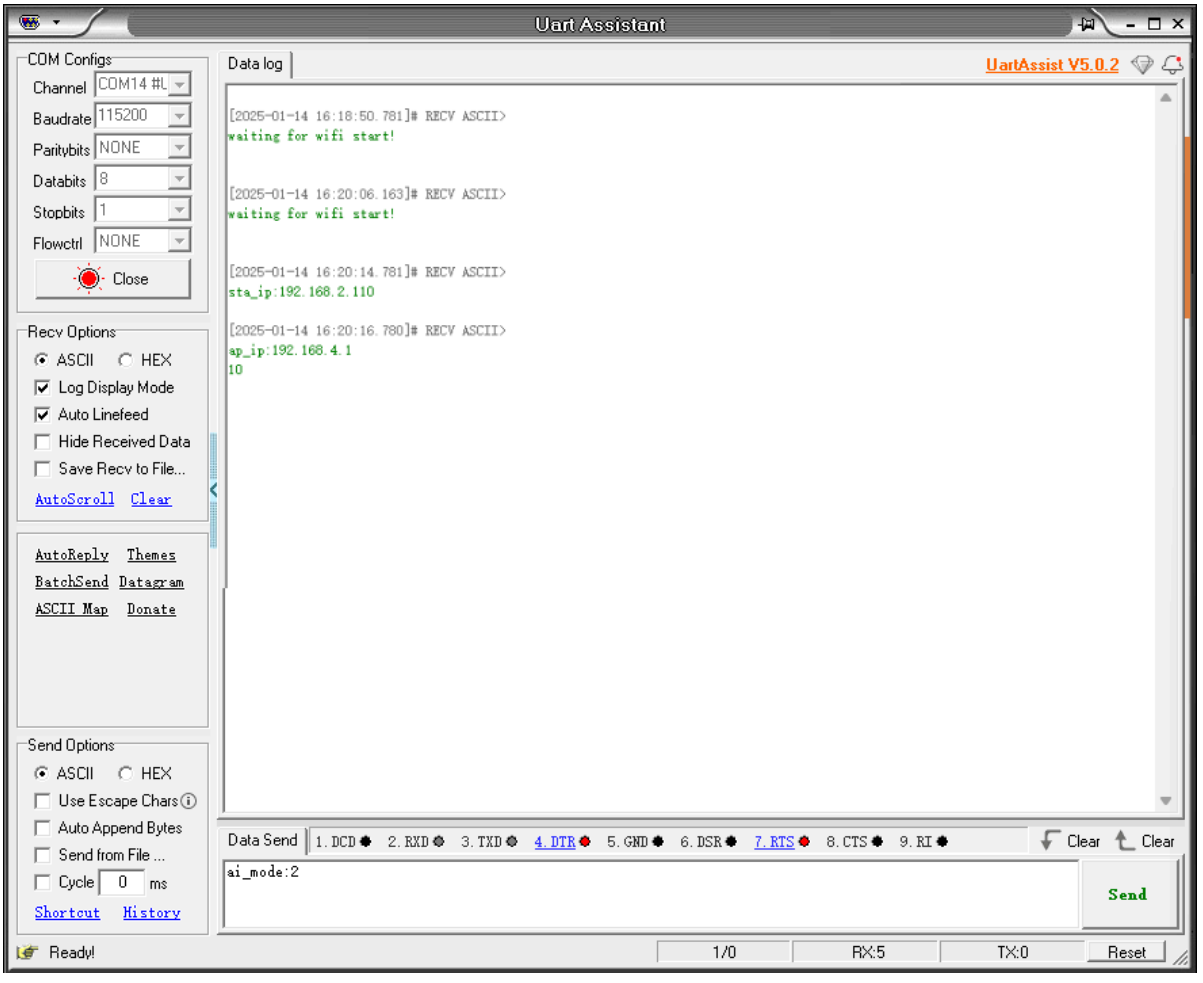
```
#define STAIP "sta_ip"
#define STA_WIFI_SSID "Yahboom2"      //wifi名称 Wi-Fi Name
#define STA_WIFI_PD   "yahboom890729" //wifi密码 Wifi password

#define APIP "ap_ip"
#define AP_WIFI_SSID "ESP32_WIFI_TEST"      //wifi名称 Wi-Fi Name
#define AP_WIFI_PD   "" //wifi密码 -无密码 也可在双引号添加 Wifi password - no password can also be added in double quotes
```

3. Download the program of this project to the STM32 board.
4. Open the serial port assistant on the computer, open the computer to detect the serial port of STM32, as shown below



5. After pressing the reset button of STM32, wait for about 10 seconds, and the serial port assistant will print out the corresponding information

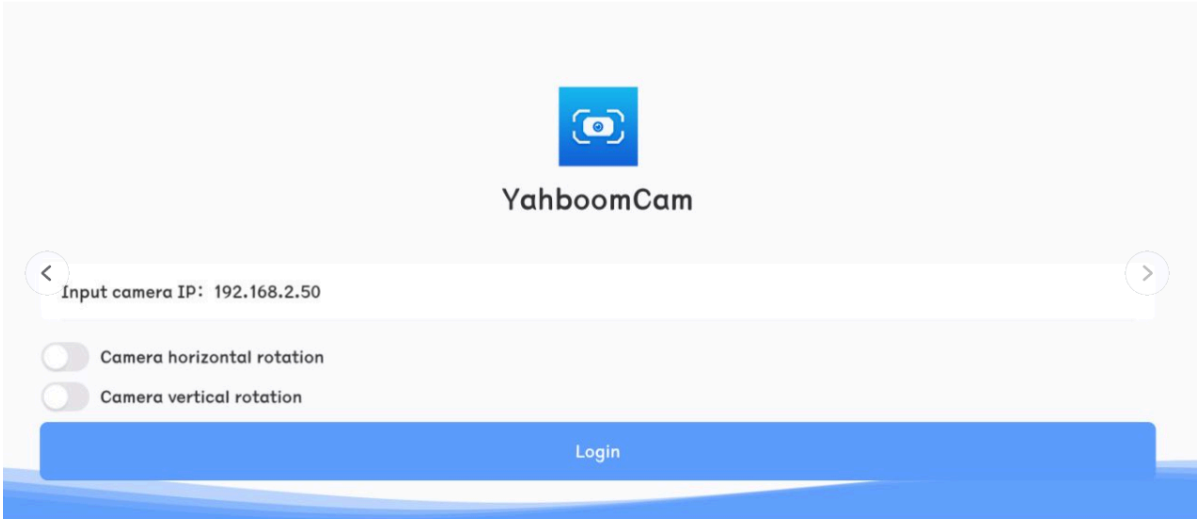
If the AP+STA mode is turned on, the IP address of AP+STA will have the correct IP address (this source code is this mode)



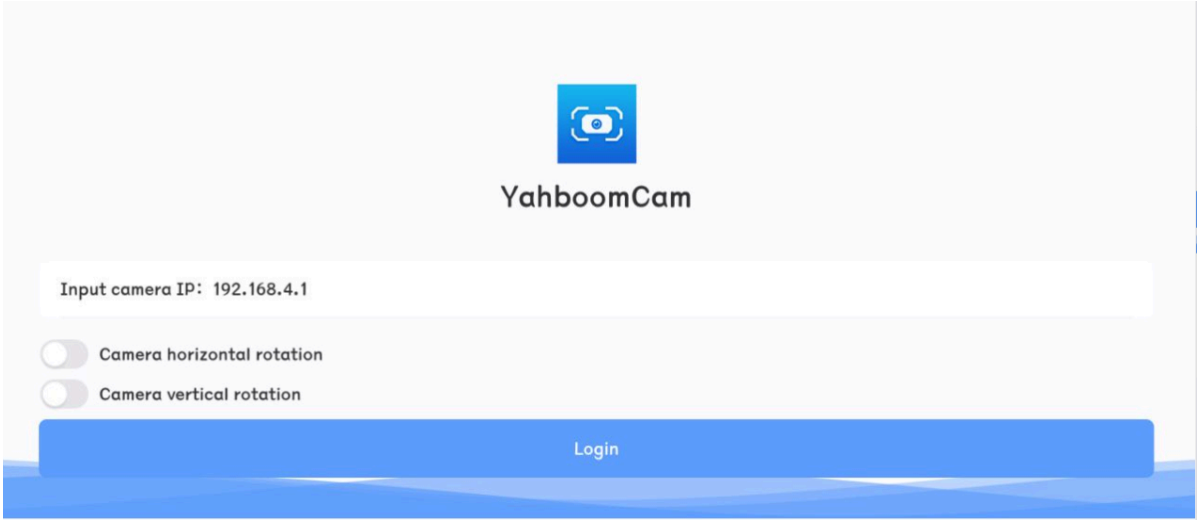
If only one mode is turned on, then sta_ip:null or ap_ip:null
If sta_ip:null appears, you need to check whether the connected wifi name and password are correct. If they are correct, check whether only one AP mode is turned on, and not the STA mode

6. Use the app to control the movement of the car. After installing the "ESP32Cam" app, open it.

- On the login page, set it according to the IP obtained by the serial port assistant. If the IP obtained by the serial port assistant is "192.168.2.110", then the configuration is as follows

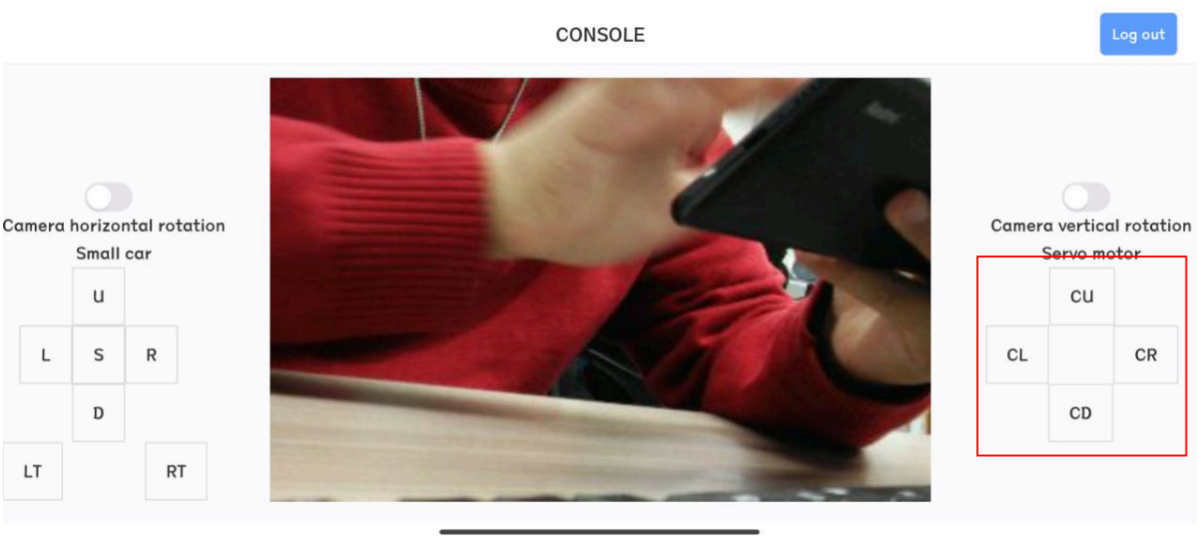


- Then click login directly
- (Optional) If you want to connect to the hotspot of the wifi camera, the IP address must be set to 192.168.4.1, as shown in the figure



- When the IP address is configured correctly and successfully connected, you can control the servo gimbal through the page of the app console

Horizontal screen



Note: Every time you restart the app, you need to click the exit button in the upper right corner, then exit and reconfigure the IP address information before logging in