



AD174

ESP32 WiFi Camera 4WD

Smart Robot Car Kit

V1.0.24.6.4

Preface

Our Company

KUONGSHUN Electronic Company is a supplier and manufacturer of electronic components, it is committed to board and starter kit for Arduino, Raspberry PI, Smart Robot Car, 3D printer. It is also a collection of scientific research, design, production, maintenance and sales of high-tech enterprises, in the field of automation with professional standards and mature technology, we rapid rise in the field of foreign trade.

Relying on technology and development, continuing to provide users with high-tech products, is our constant pursuit. Fully introduction of foreign advanced technology to enhance the value of our products.

Company gains users' praise for supplying first-class quality product and superb technical services, has now become the first choice of domestic and international procurement company.

Official Website: <https://www.kuongshun.com>

Our Tutorial

This course and learning kit is designed for 8+ children and teenagers to Arduino-compatible boards, shields, sensors, and components. The purpose of this tutorial is to introduce learners to how to program a trolley and how to manipulate a programmed trolley. As a common STEM educational tool, carts not only develop learners' hands-on skills, but also help them understand the basic concepts and logic of programming.

Customer Service

As a continuous and fast growing technology company we keep striving our best to offer you excellent products and quality service as to meet your expectation and you can reach out to us by simply drop a line at info@kuongshun.cn We look forward to hearing from you and any of your critical comment or suggestion would be much valuable to us.

And any of problems and questions you have with our products will be promptly replied by our experienced engineers within 12 hours (24hrs during holiday)

we pursue the policy of "progressive, Truth, Rigorous and Unity", keeping innovation, paying attention of technology as the core, committing to quality and putting customer's satisfaction on the priority, dedicated to provide you with the most cost-effective high-tech products and attentive service.

Packing list

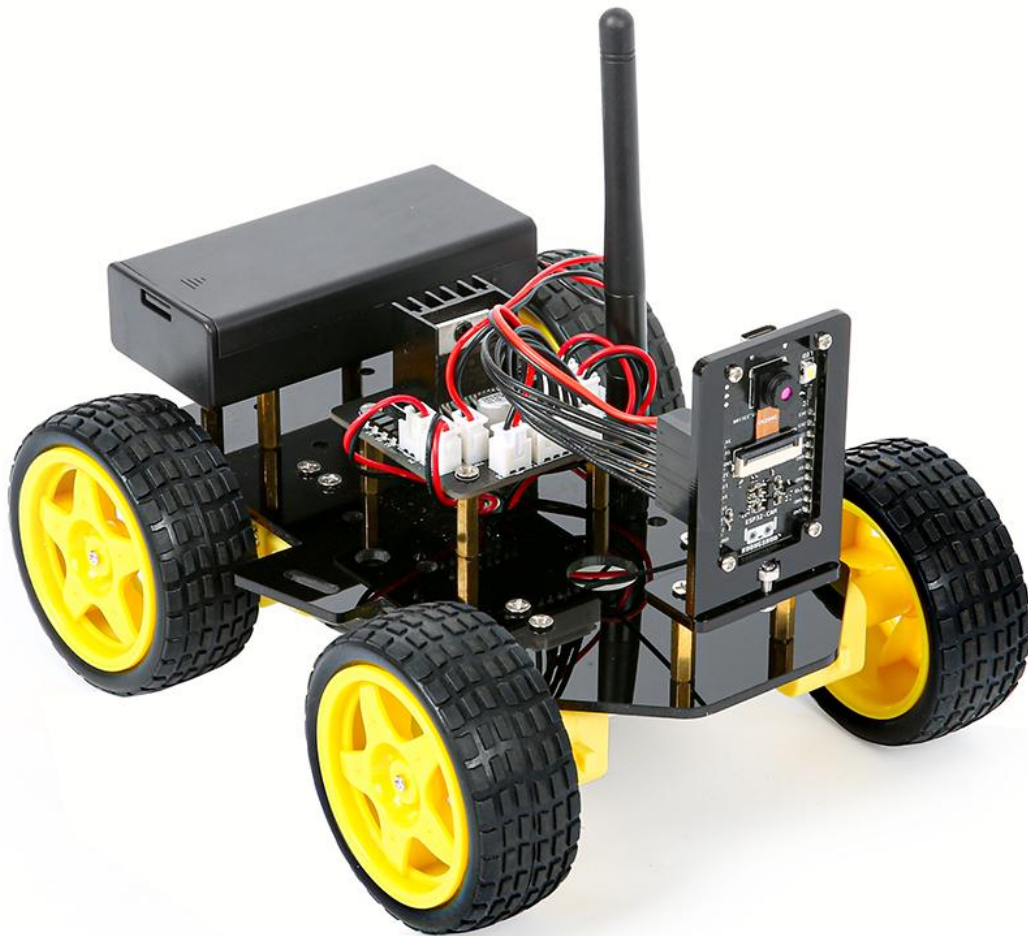


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Part 0 Preparation

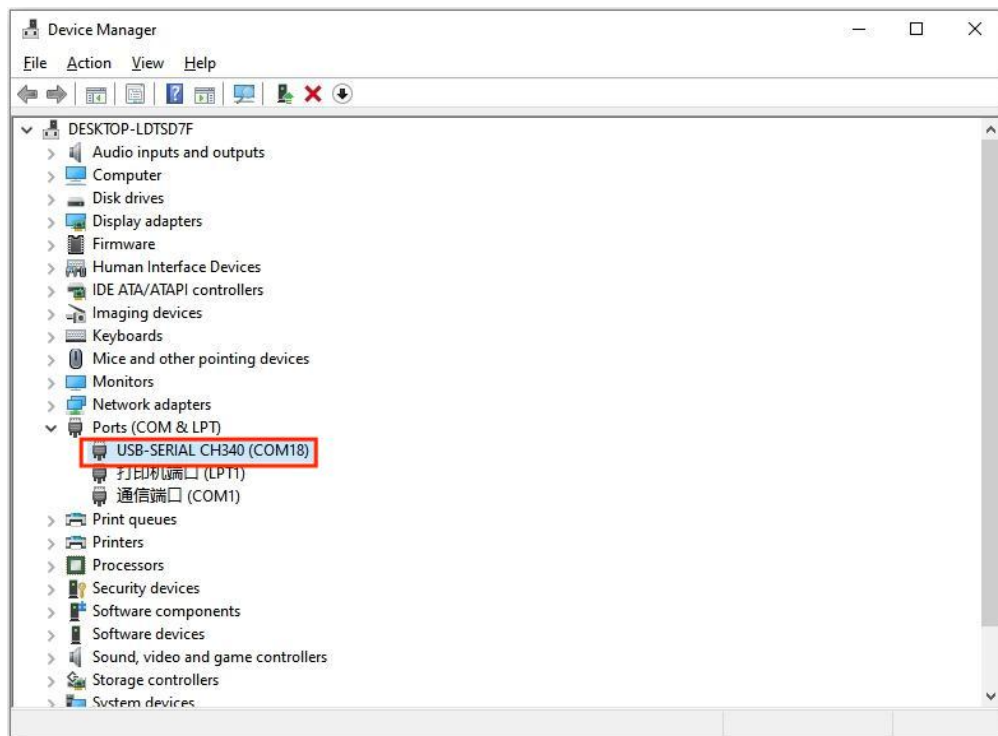
Before proceeding with this tutorial, make sure you have finished putting the model together in “1_Assembly_Guide”.



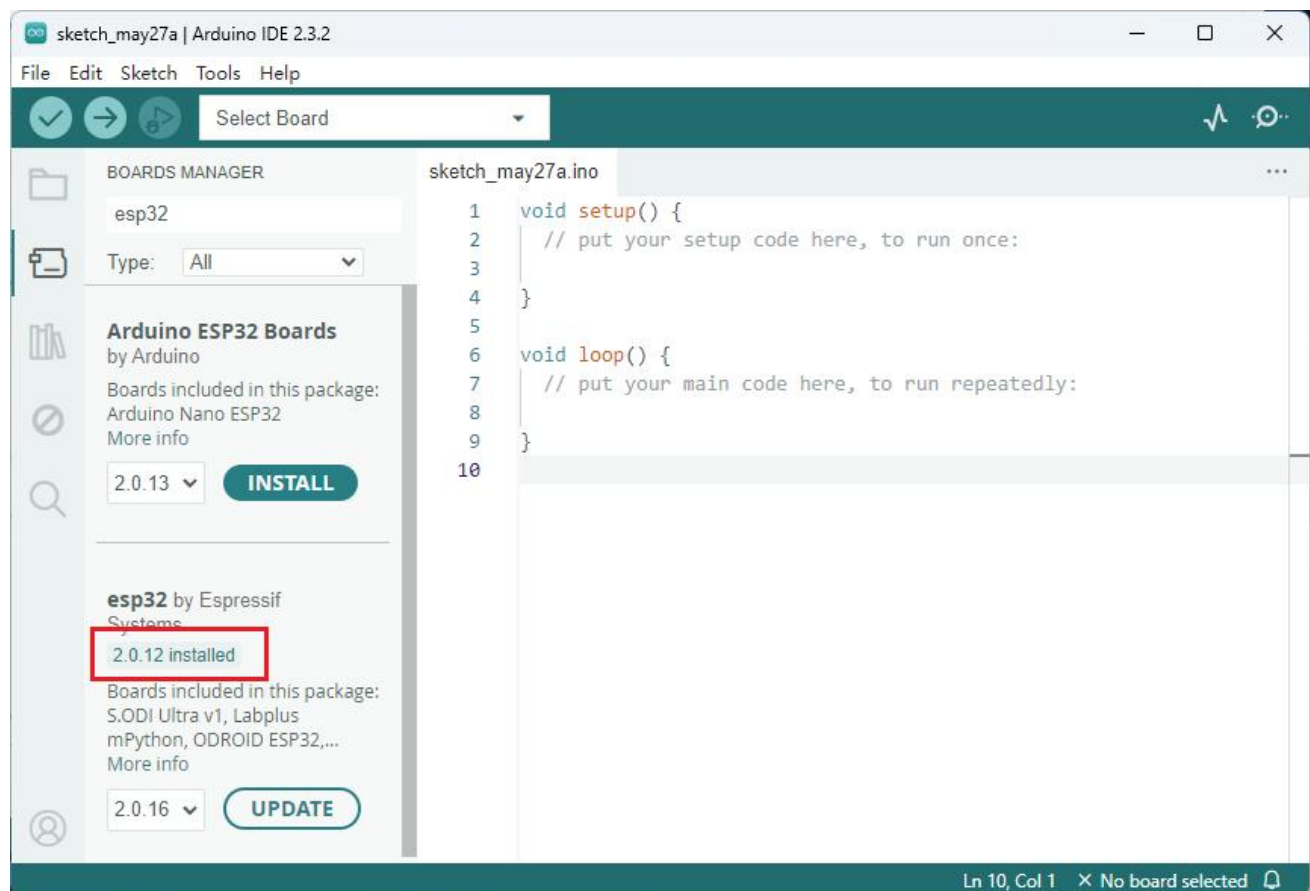
Please also complete the ARDUINO software download:

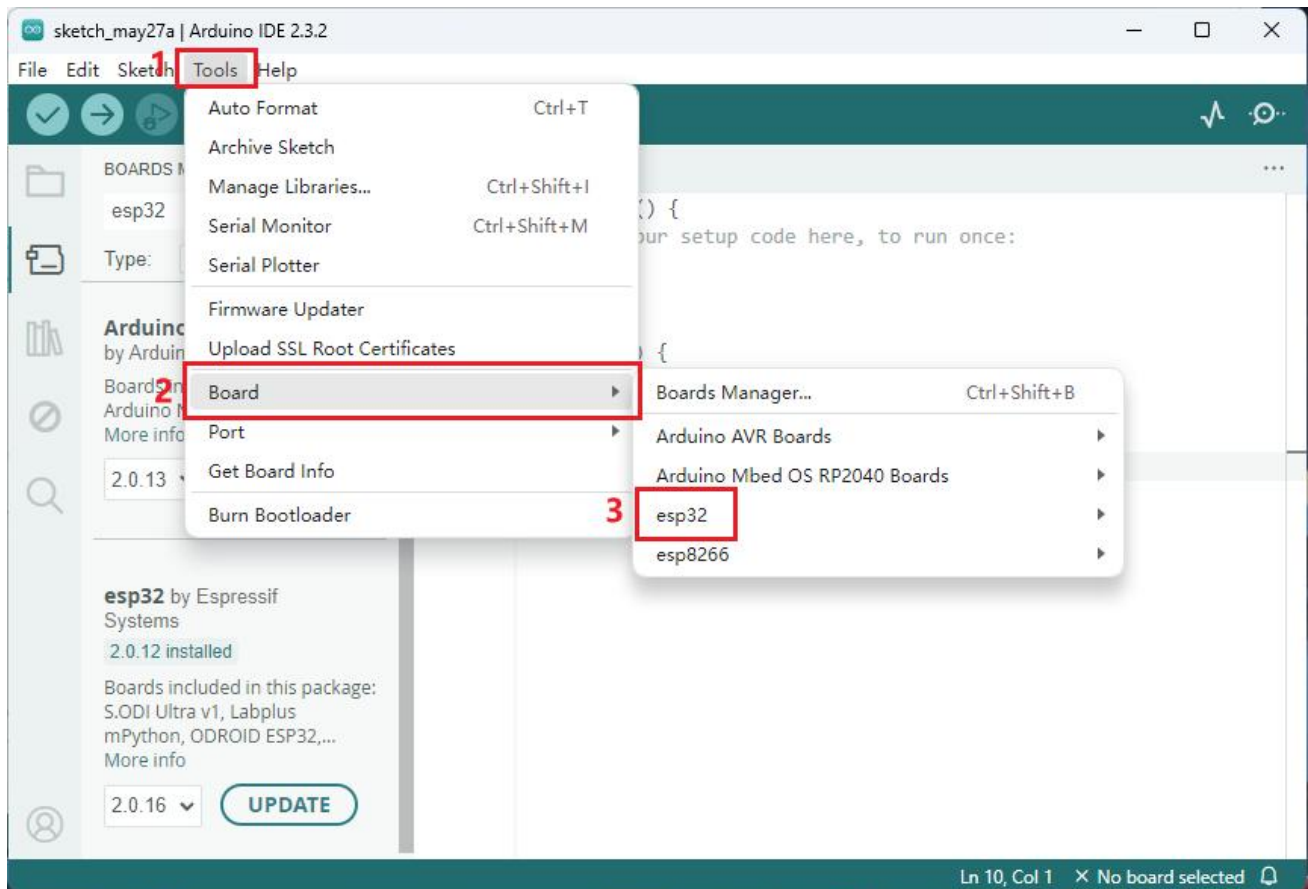


CH340 driver installation:



Install the ESP32 plugin:

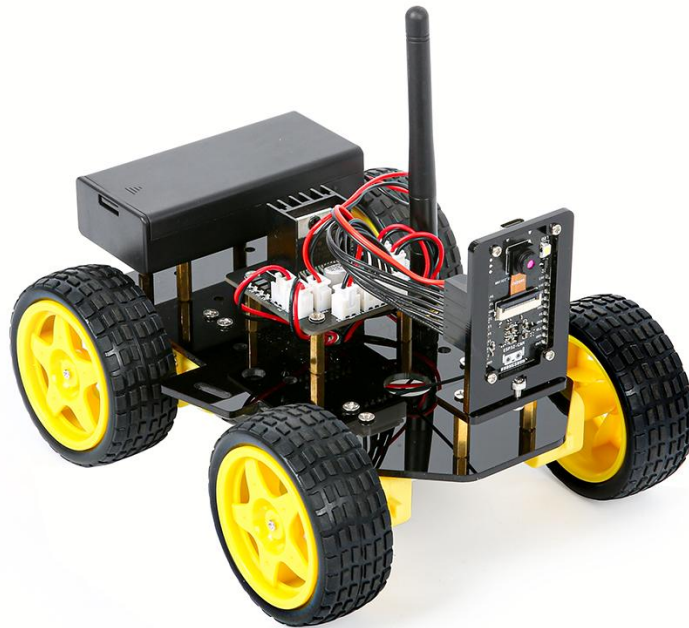




If any step has not been completed, refer to "1_Assembly_Guide or 2_Programming_Preparation".

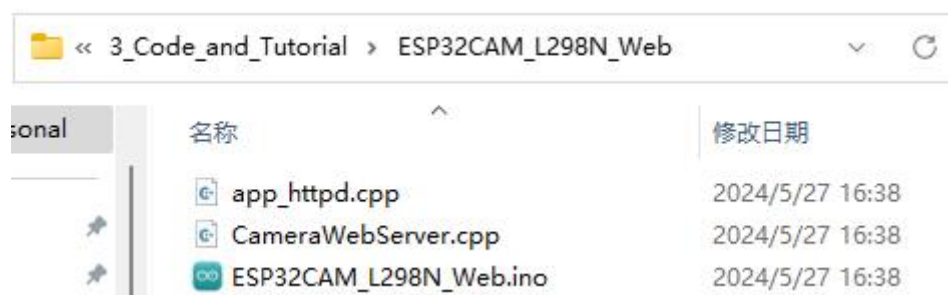
Part 1 WIFI Camera Car Code for Web

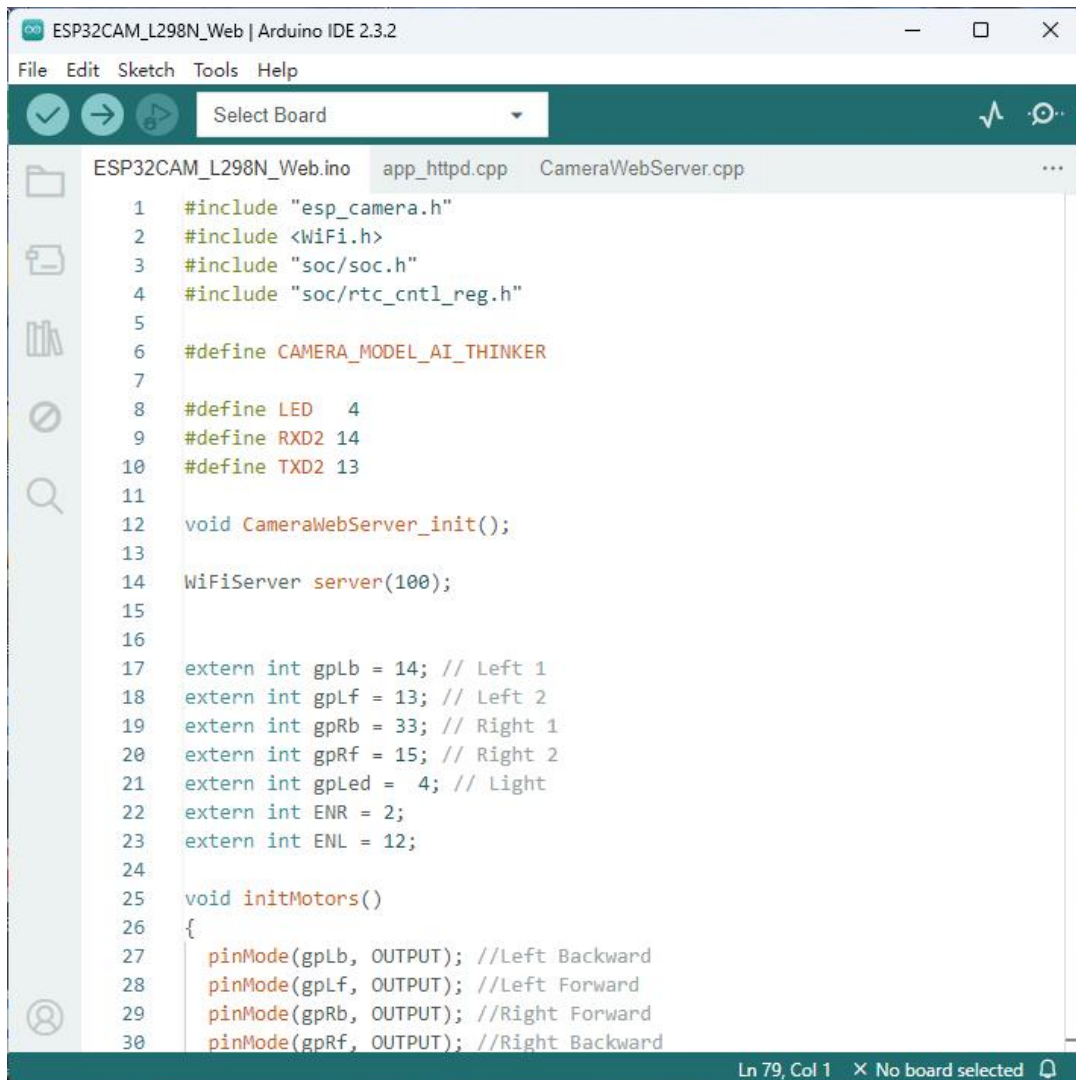
In this project, we will use ESP32-CAM module combined with L298N motor drive board to realize WiFi remote control and real-time monitoring function. The ESP32-CAM module runs a program to build a network server connected by a WiFi hotspot. As long as we connect to the WIFI hotspot, we can watch the monitoring in real time from the network server, and at the same time control the car by the button.



Next, how to upload this program to the car, which can build a server to control the car and watch the surveillance video:

①Go to the following path and open the program



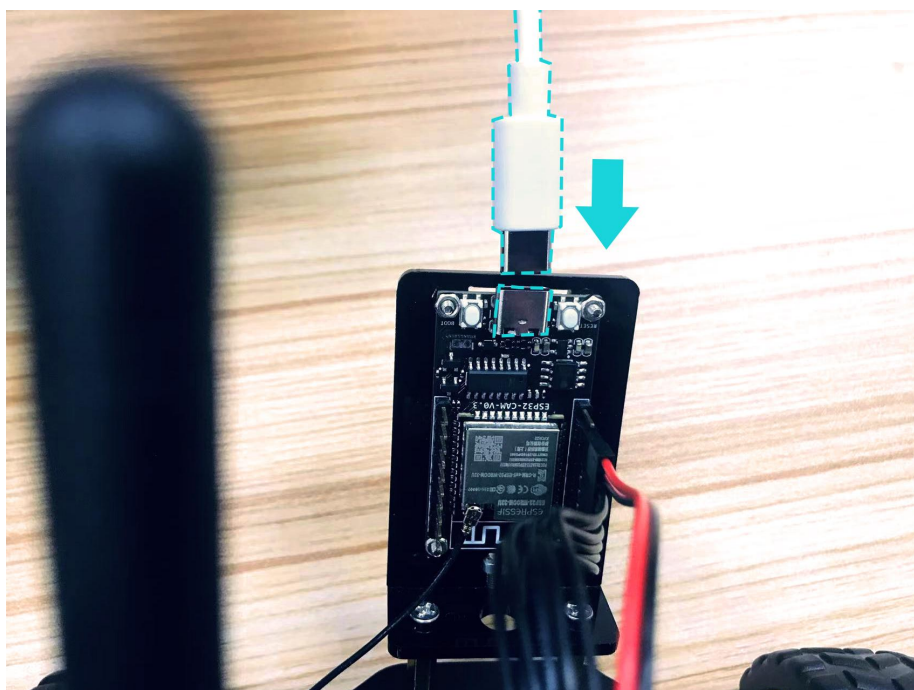


```
ESP32CAM_L298N_Web | Arduino IDE 2.3.2
File Edit Sketch Tools Help
Select Board

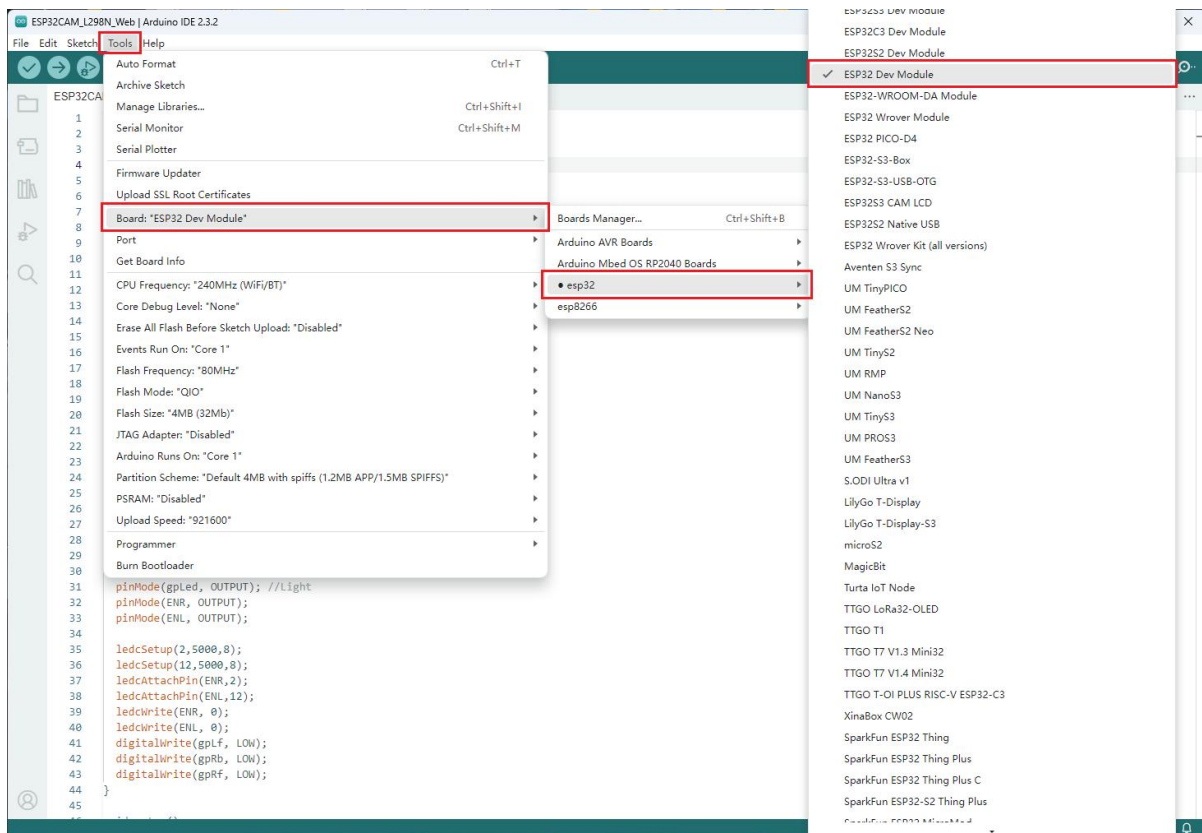
ESP32CAM_L298N_Web.ino app_httpd.cpp CameraWebServer.cpp

1 #include "esp_camera.h"
2 #include <WiFi.h>
3 #include "soc/soc.h"
4 #include "soc/rtc_cntl_reg.h"
5
6 #define CAMERA_MODEL_AI_THINKER
7
8 #define LED 4
9 #define RXD2 14
10 #define TXD2 13
11
12 void CameraWebServer_init();
13
14 WiFiServer server(100);
15
16
17 extern int gplb = 14; // Left 1
18 extern int gplf = 13; // Left 2
19 extern int gprb = 33; // Right 1
20 extern int gprf = 15; // Right 2
21 extern int gpLed = 4; // Light
22 extern int ENR = 2;
23 extern int ENL = 12;
24
25 void initMotors()
26 {
27     pinMode(gplb, OUTPUT); //Left Backward
28     pinMode(gplf, OUTPUT); //Left Forward
29     pinMode(gprb, OUTPUT); //Right Forward
30     pinMode(gprf, OUTPUT); //Right Backward
```

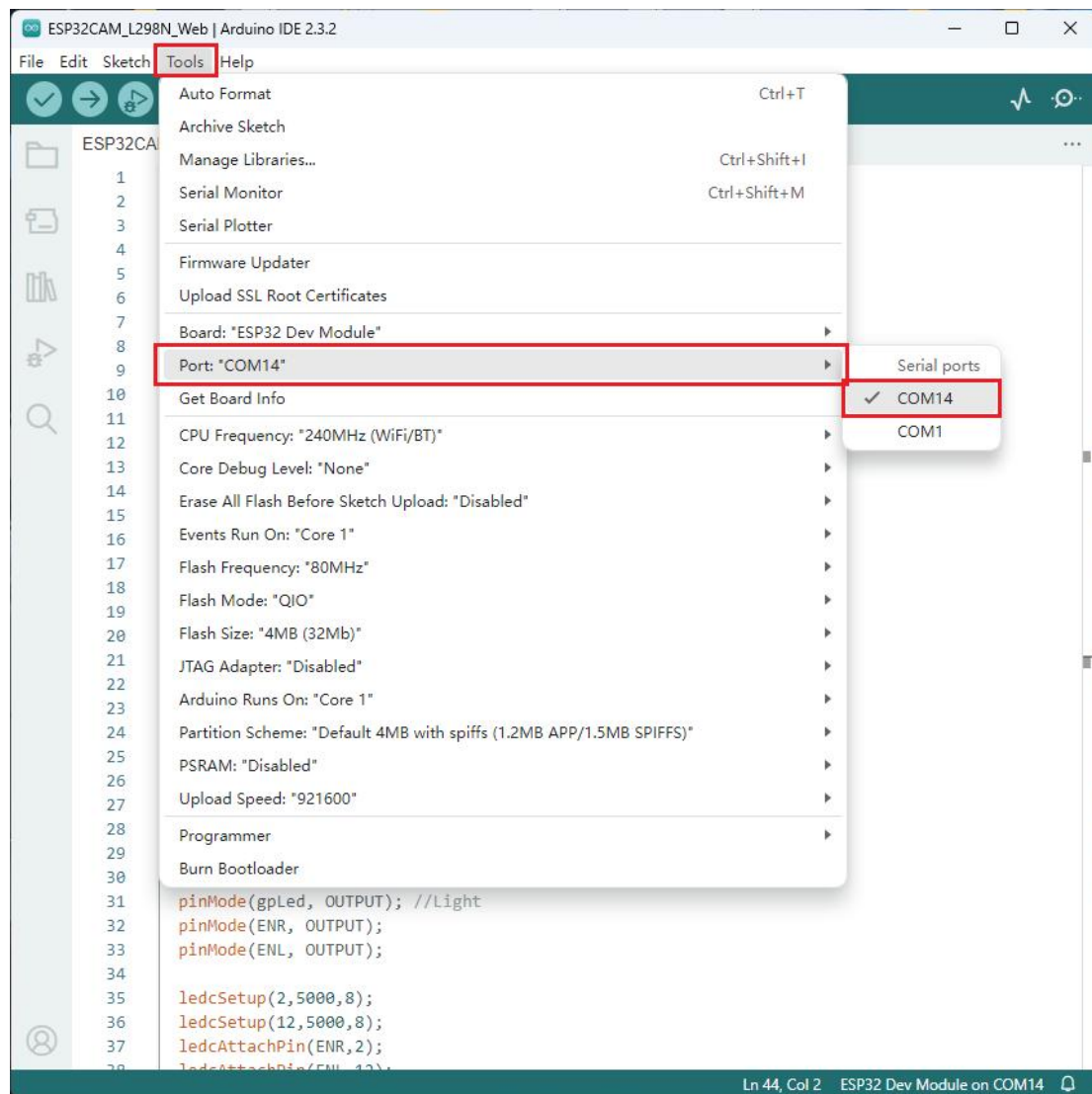
②Connect the Arduino board to your computer with a TYPE-C cable



③ Select your Board in Tools > Board >>>>ESP32>>>ESP32 Dev Module



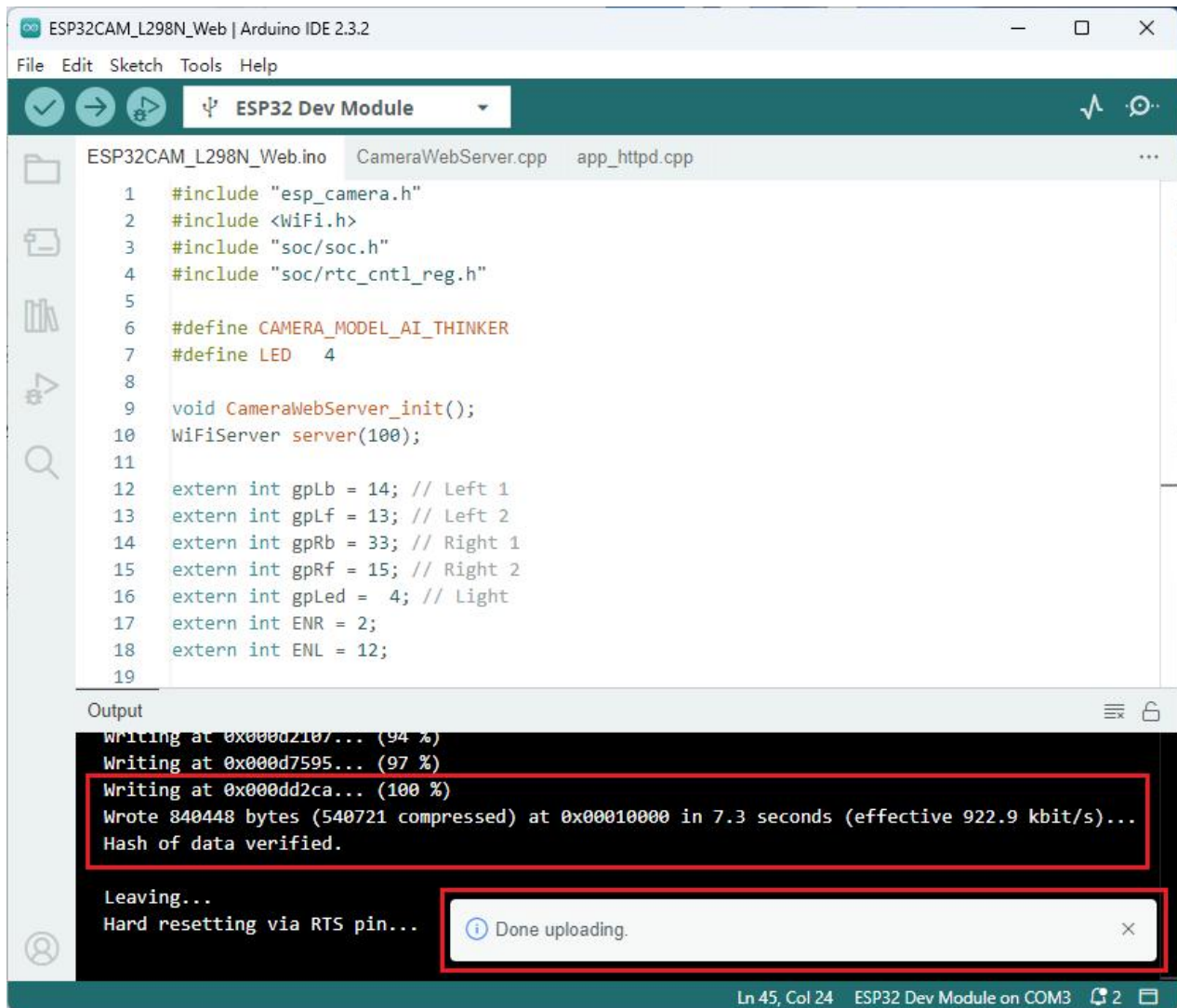
④ Select the Port: Tools >Port >>>>COMxx(The COM port number of each computer may be different, and the port number that appears is your port number)



If you do not see COM ports other than COM1 in Arduino IDE, you need to refer to the installation of CH340 driver in "2_Programming_Preparation" and install it.



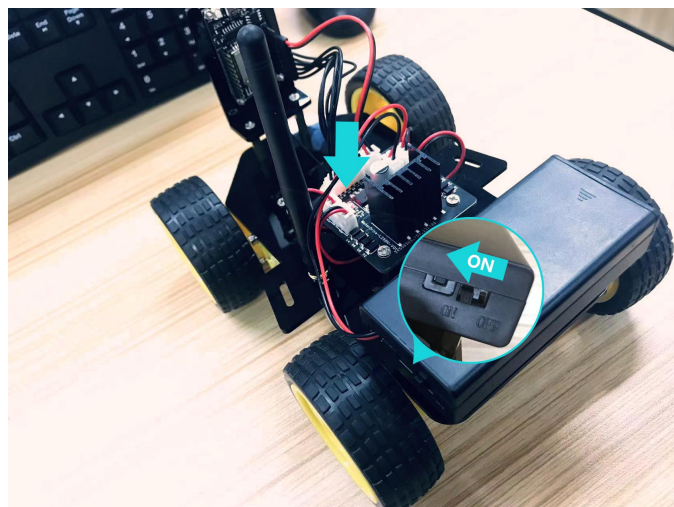
⑤Upload the program to the ESP32-CAM controller board.



```
ESP32CAM_L298N_Web | Arduino IDE 2.3.2
File Edit Sketch Tools Help
ESP32 Dev Module
ESP32CAM_L298N_Web.ino CameraWebServer.cpp app_httpd.cpp
1 #include "esp_camera.h"
2 #include <WiFi.h>
3 #include "soc/soc.h"
4 #include "soc/rtc_cntl_reg.h"
5
6 #define CAMERA_MODEL_AI_THINKER
7 #define LED 4
8
9 void CameraWebServer_init();
10 WiFiServer server(100);
11
12 extern int gpLb = 14; // Left 1
13 extern int gpLf = 13; // Left 2
14 extern int gpRb = 33; // Right 1
15 extern int gpRf = 15; // Right 2
16 extern int gpLed = 4; // Light
17 extern int ENR = 2;
18 extern int ENL = 12;
19
Output
Writing at 0x00002107... (94 %)
Writing at 0x000d7595... (97 %)
Writing at 0x000dd2ca... (100 %)
Wrote 840448 bytes (540721 compressed) at 0x00010000 in 7.3 seconds (effective 922.9 kbit/s)...
Hash of data verified.
Leaving...
Hard resetting via RTS pin...
Done uploading.
```

The picture above shows that it is uploaded successfully.

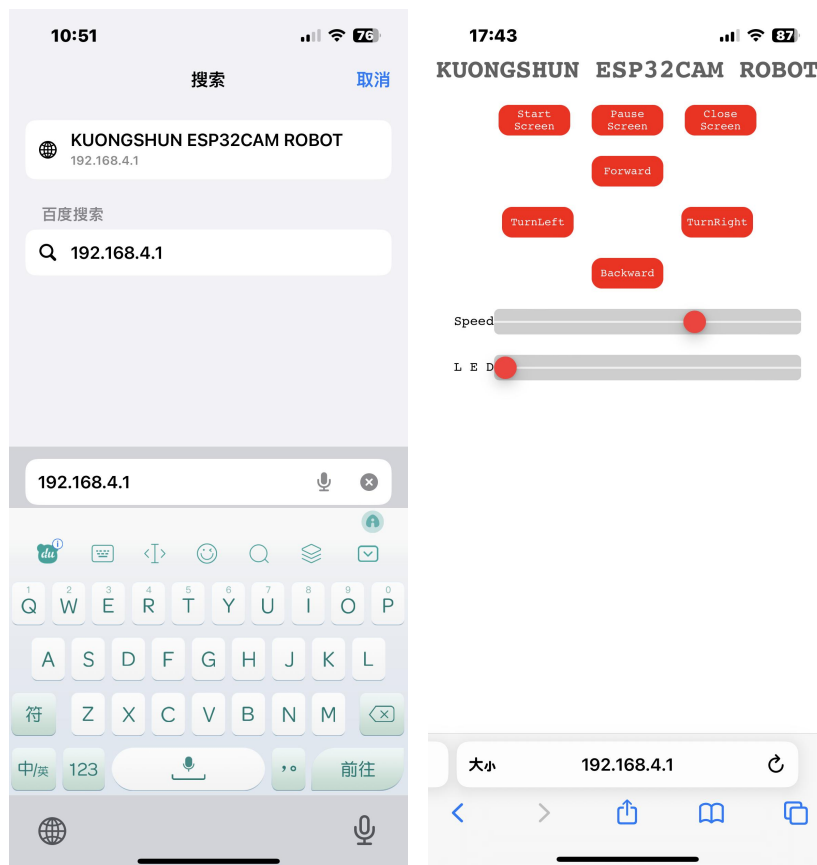
⑥After uploading the code successfully. Disconnect the data line, put the car on the ground, and load 2 18650 batteries. (If you buy the battery-free version, please prepare 2 18650 batteries.) Then turn on the switch.



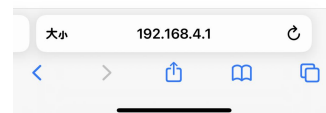
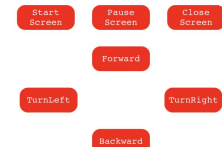
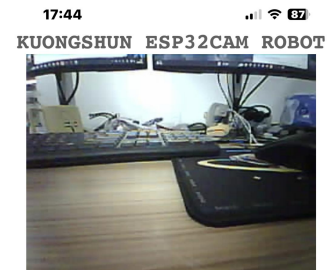
⑦ Then open the phone, turn on the WiFi switch, find the "KUONGSHUN-AD174", enter the password "12345678" to connect to the WIFI. **If reminded there is no network, please keep connected. (If the battery switch is turned on and the module lights up, but the phone cannot search for "KUONGSHUN-AD174", please check whether the wiring is correct and whether the battery is powered.)**



⑧ Open the mobile browser, enter "192.168.4.1", jump to the screen below



⑨Introduction of the interface:



Start
Screen

: Enable image receiving and display. When you press it:

Pause
Screen

: Screenshot and display

Close
Screen

: Turn off image reception

Forward

: Control the cart forward while holding

Backward

: Control the cart back while holding

TurnLeft

: Control the car to turn left when holding

TurnRight

: Control the car to turn right when holding

Speed



: Adjust the speed of the car

L E D



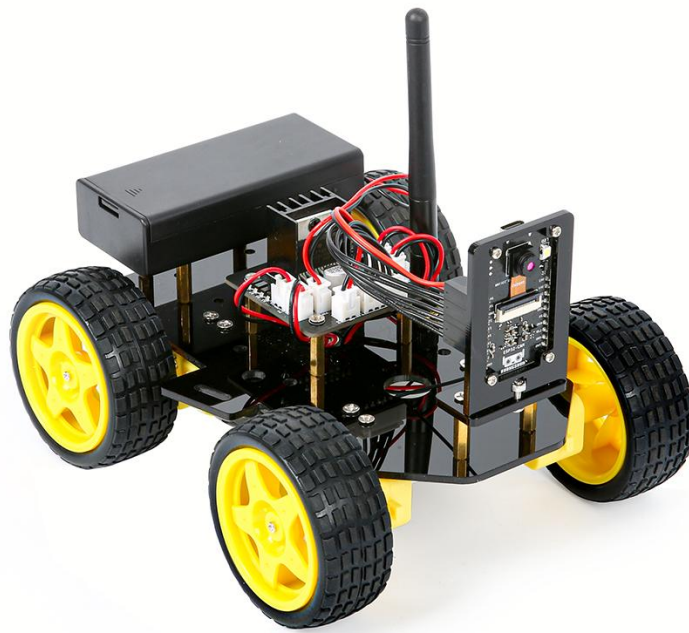
: Switch headway LED lights and adjust

brightness

Now, when you start the car again, you don't need to download the program again. You just need to start from ⑦.

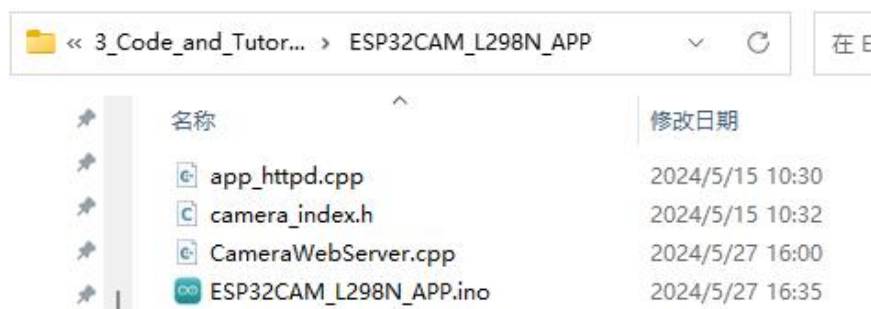
Part 2 WIFI Camera Car Code for APP

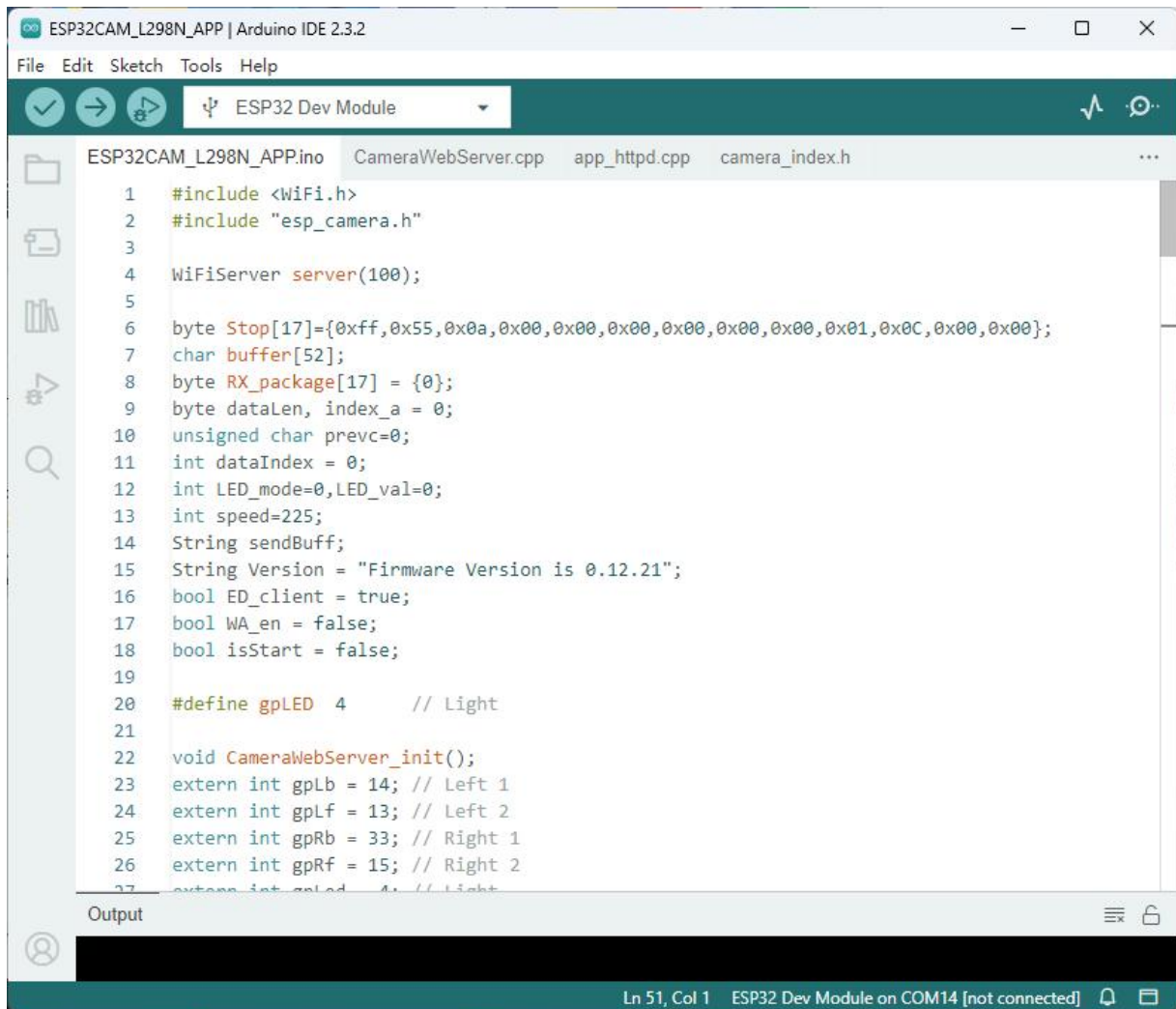
In this project, we will use ESP32-CAM module combined with L298N motor drive board to realize WiFi remote control and real-time monitoring function. The ESP32-CAM module runs a program to build a network server connected by a WiFi hotspot. As long as we connect to this WIFI hotspot, we can use the APP to watch the surveillance in real time, and at the same time, we can control the trolley to move through the buttons of the APP.



The next step is to explore how to upload this program that can also build a server and control the cart and watch videos through an app:

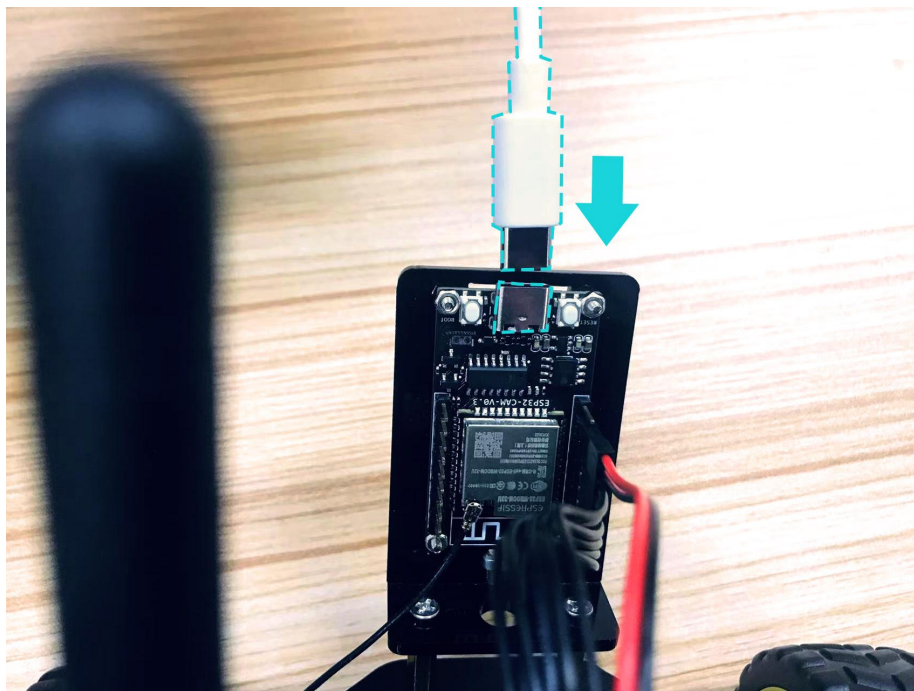
①Go to the following path and open the program



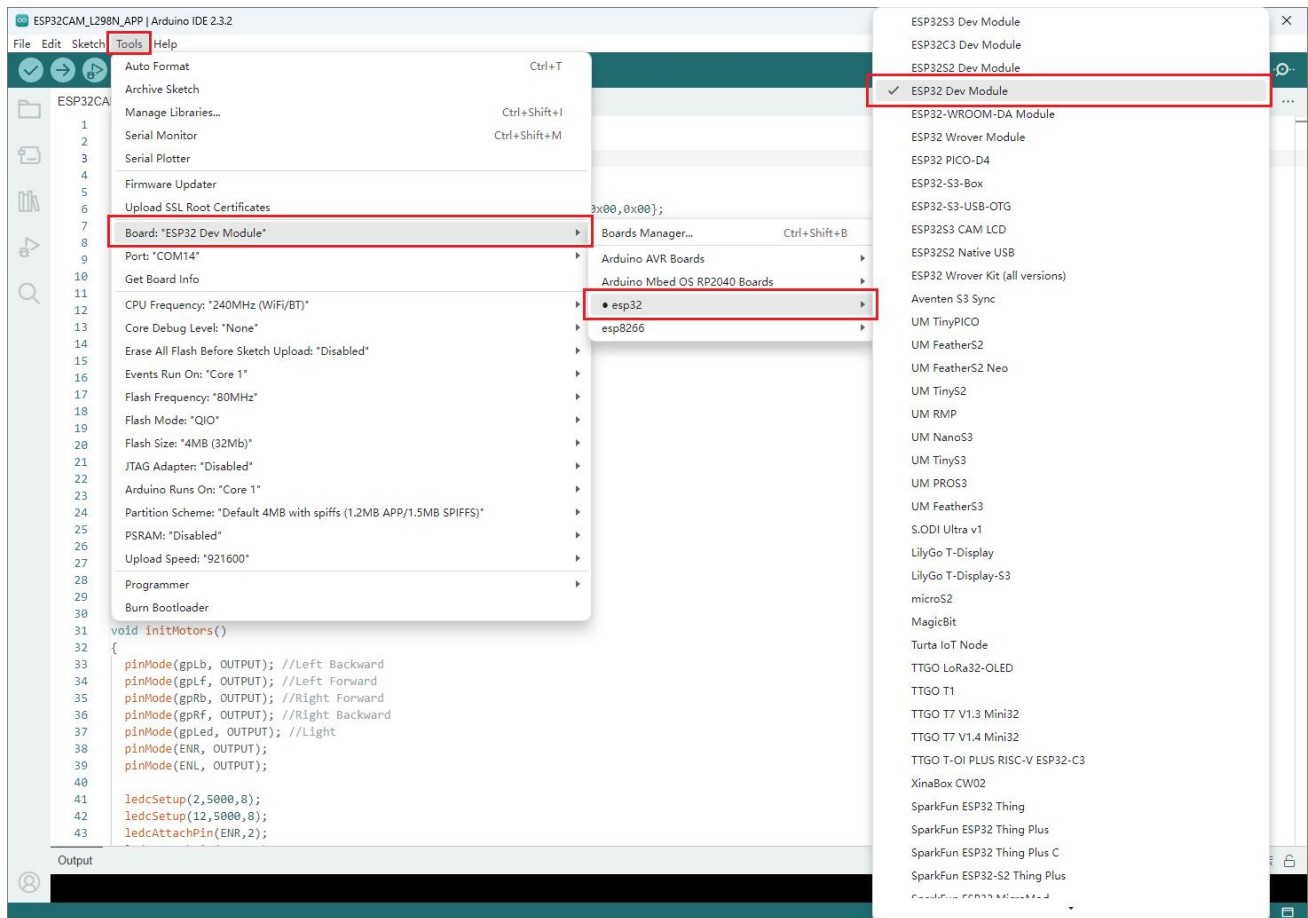


```
ESP32CAM_L298N_APP | Arduino IDE 2.3.2
File Edit Sketch Tools Help
ESP32 Dev Module
ESP32CAM_L298N_APP.ino CameraWebServer.cpp app_httpd.cpp camera_index.h
1  #include <WiFi.h>
2  #include "esp_camera.h"
3
4  WiFiServer server(100);
5
6  byte Stop[17]={0xff,0x55,0x0a,0x00,0x00,0x00,0x00,0x00,0x00,0x01,0x0C,0x00,0x00};
7  char buffer[52];
8  byte RX_package[17] = {0};
9  byte dataLen, index_a = 0;
10 unsigned char prevc=0;
11 int dataIndex = 0;
12 int LED_mode=0,LED_val=0;
13 int speed=225;
14 String sendBuff;
15 String Version = "Firmware Version is 0.12.21";
16 bool ED_client = true;
17 bool WA_en = false;
18 bool isStart = false;
19
20 #define gpLED 4 // Light
21
22 void CameraWebServer_init();
23 extern int gpLb = 14; // Left 1
24 extern int gpLf = 13; // Left 2
25 extern int gpRb = 33; // Right 1
26 extern int gpRf = 15; // Right 2
27 extern int gpLed = 4; // Light
Output
Ln 51, Col 1 ESP32 Dev Module on COM14 [not connected]
```

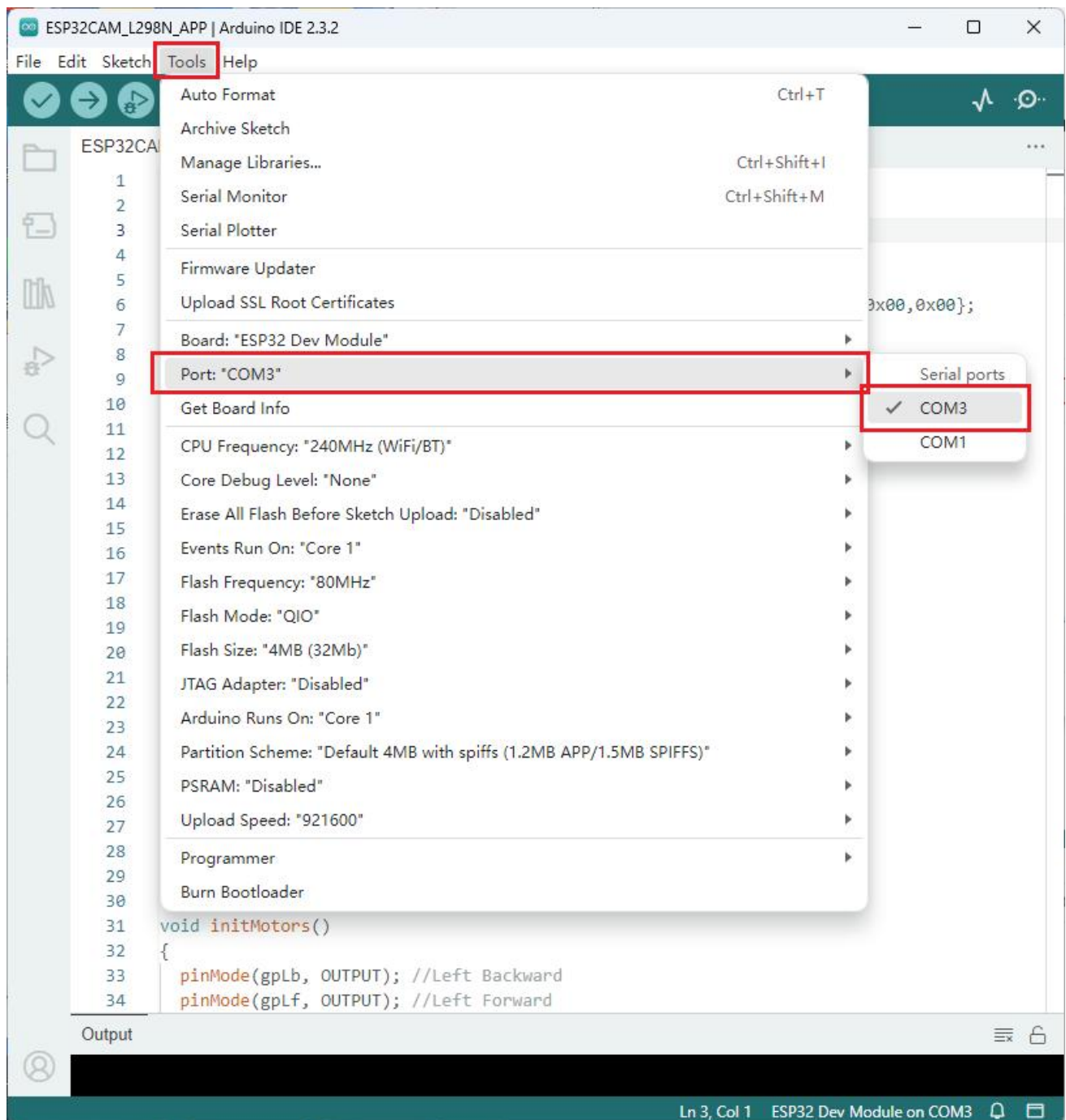
②Connect the Arduino board to your computer with a TYPE-C cable



③ Select your Board in Tools > Board >>>>ESP32>>>ESP32 Dev Module



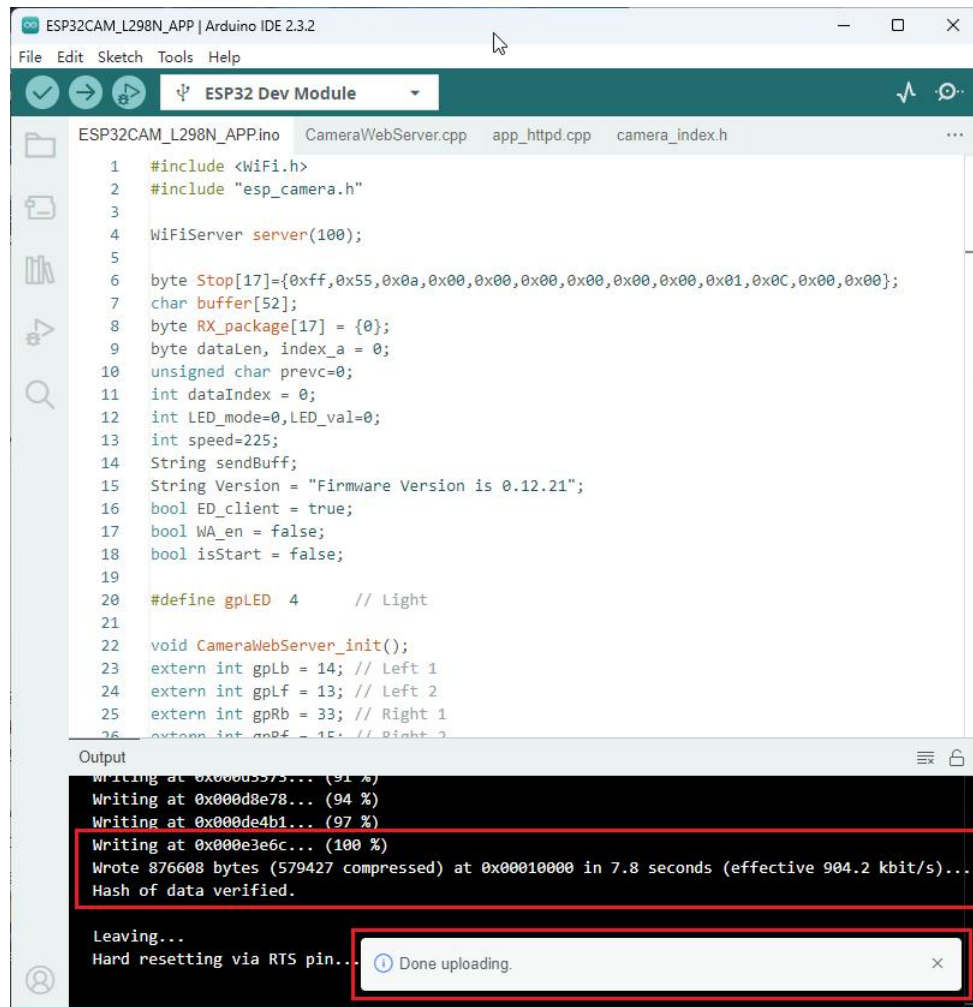
④ Select the Port: Tools >Port >>>>COMxx(The COM port number of each computer may be different, and the port number that appears is your port number)



If you do not see COM ports other than COM1 in Arduino IDE, you need to refer to the installation of CH340 driver in "2_Programming_Preparation" and install it.

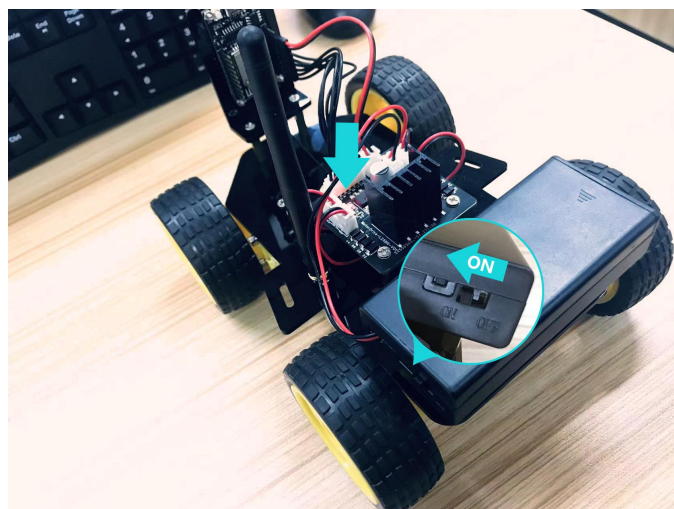


⑤ Upload the program to the ESP32-CAM controller board.



The picture above shows that it is uploaded successfully.

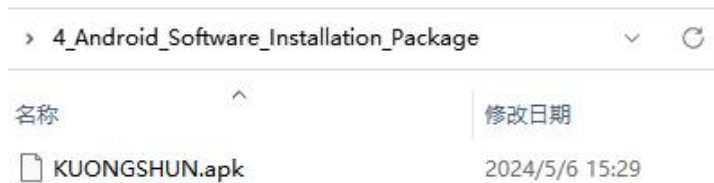
⑥ After uploading the code successfully. Disconnect the data line, put the car on the ground, and load 2 18650 batteries. (If you buy the battery-free version, please prepare 2 18650 batteries.) Then turn on the switch.



⑦ To install the application

For Android:

Open the profile folder, copy the apk file in the 4_Android_Software_Installation_Package folder to your Android phone or tablet computer , and then install it later. (You can send it to your phone or tablet via communication software and open and install it directly, or save it to your phone's memory and find and open it in file management)

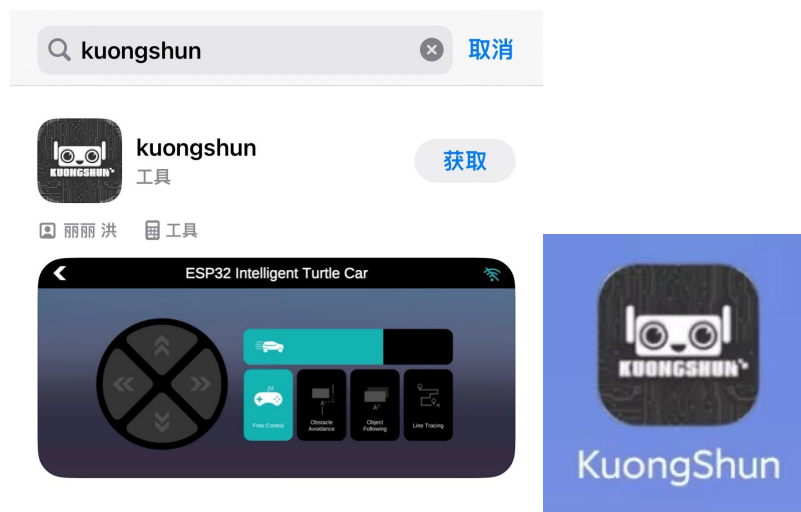


Once the installation is complete, the following icon will appear on your phone or tablet:



For the Apple system:

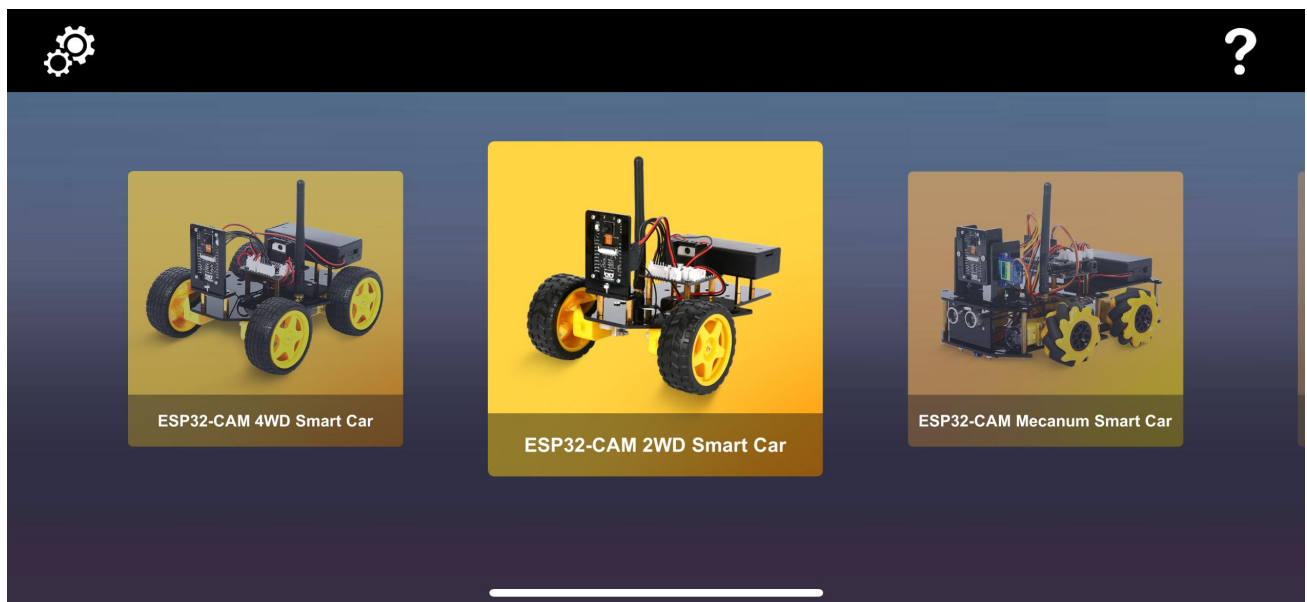
Enter kuongshun in the APP Store search bar, click to get the download and install, install as shown in the right picture.



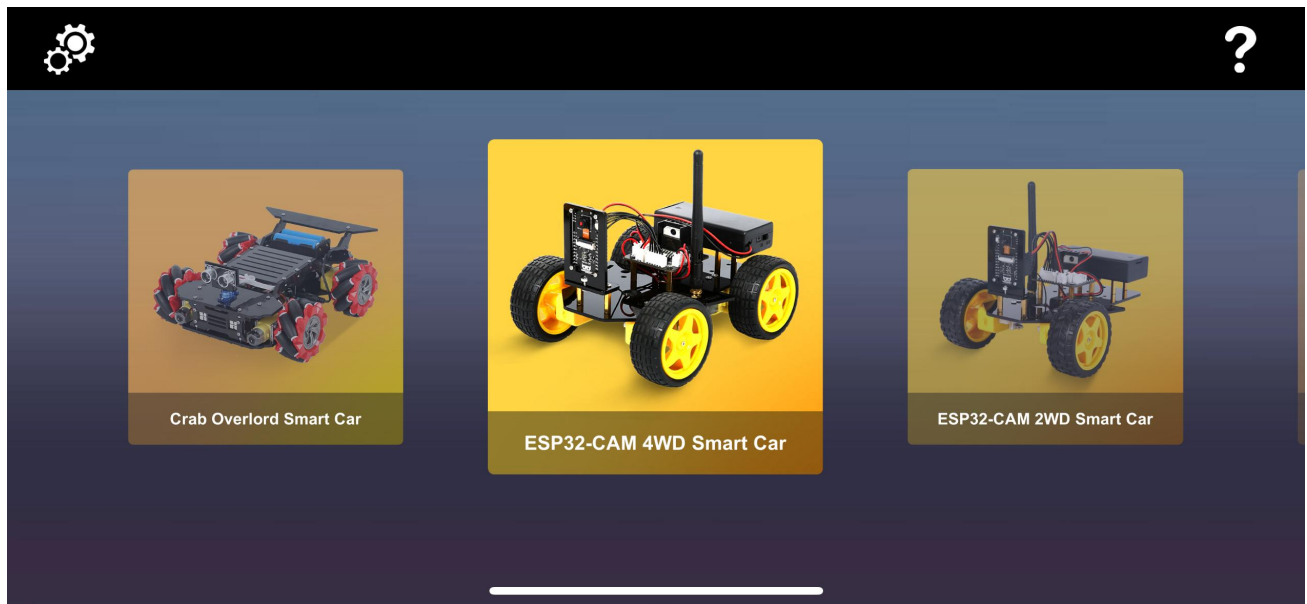
⑧ Then open the phone, turn on the WiFi switch, find the "KUONGSHUN-AD174", enter the password "12345678" to connect to the WIFI. **If reminded there is no network, please keep connected. (If the battery switch is turned on and the module lights up, but the phone cannot search for "KUONGSHUN-AD174", please check whether the wiring is correct and whether the battery is powered.)**



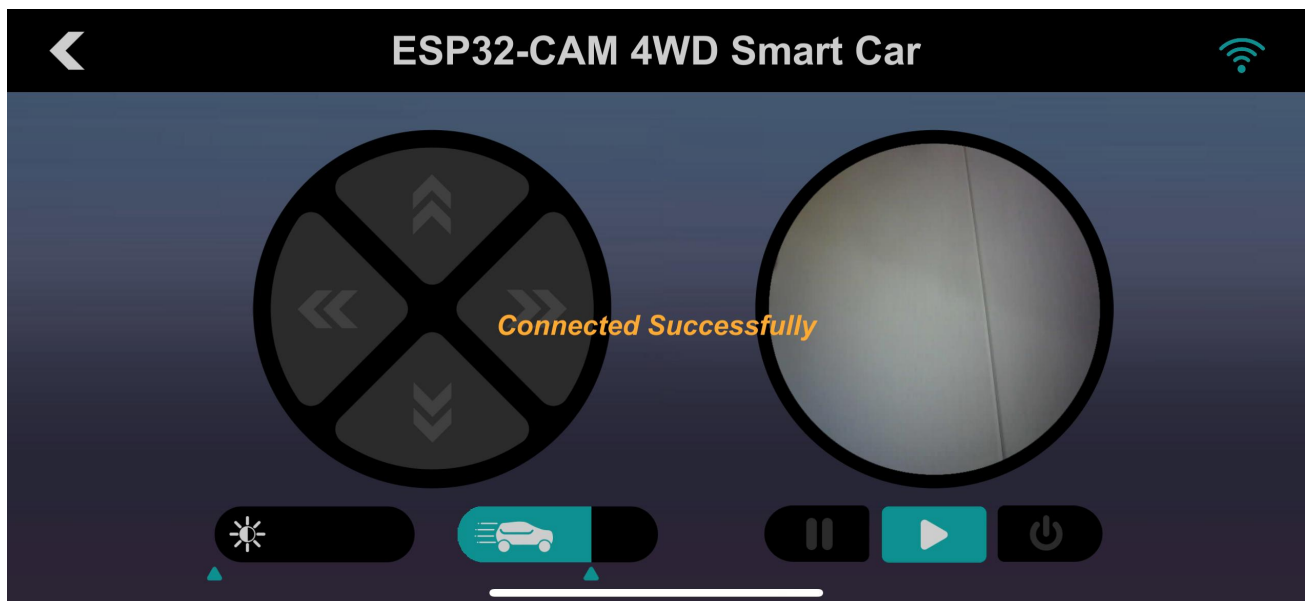
⑨ Open the APP



Select ESP32-CAM 4WD Smart Car



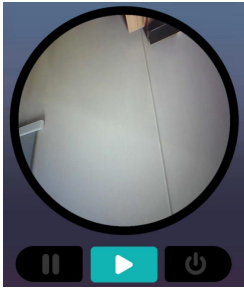
Click to connect automatically



⑩ Introduction of the interface:



: The car arrow keys, contains forward and backward left and right. Press and hold will light up and the car will go. Release will go out and the car will stop.



: The pause button freezes the screen, the play button opens the video screen, and the close button closes the video screen.



: Slide to adjust the brightness of the light.



: Slide to adjust the speed of the cart.



: Display the connection status, if you are connected to WiFi but connected to the cart you can tap here to connect.

Now, when you start the car again, you don't need to download the program again. You just need to start from ⑧.

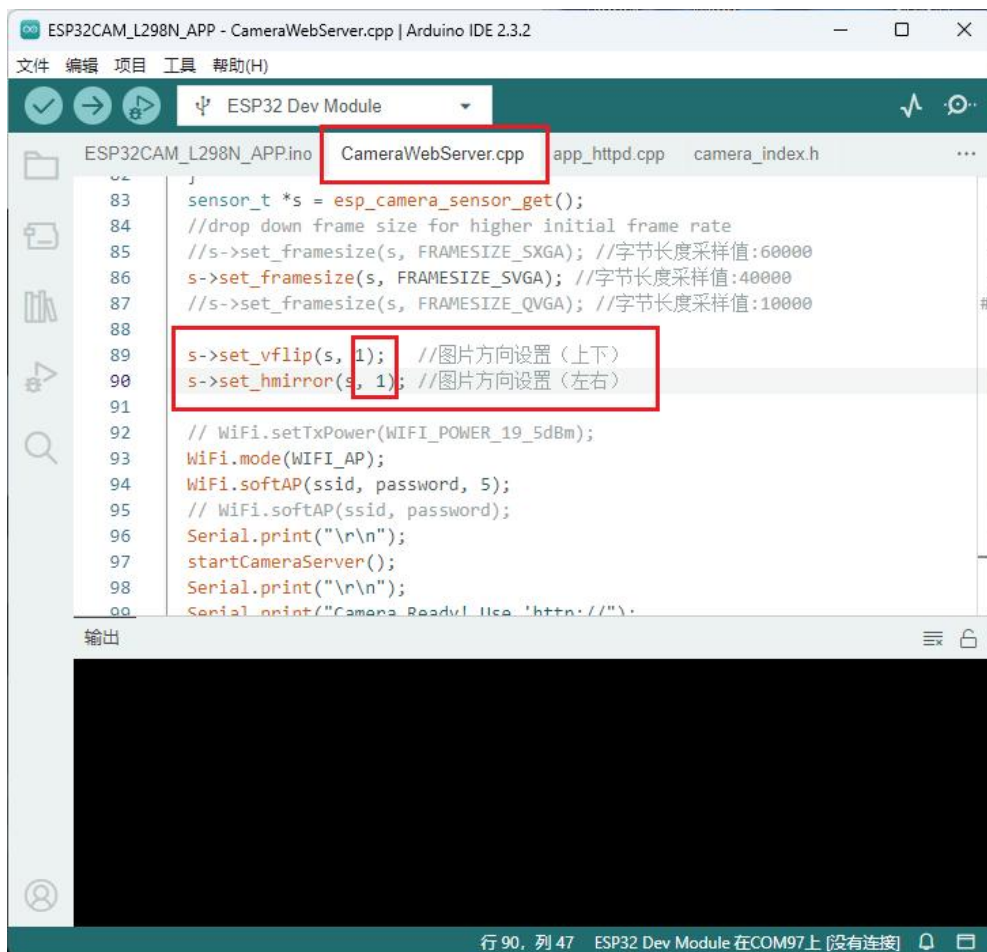
Part 3 Frequently Asked Questions

Q: WIFI signal cannot be searched

A: The power supply may be insufficient. Please check if the battery connection is normal? Does the motor driver board light up normally? Is the wiring correct?

Q: The screen image is inverted

A: Maybe the direction changed before and after the camera update, you can find the code in the file box below and change 1 to 0.(Web and App versions are modified here)



```
ESP32CAM_L298N_APP - CameraWebServer.cpp | Arduino IDE 2.3.2
文件 编辑 项目 工具 帮助(H)
ESP32 Dev Module
ESP32CAM_L298N_APP.ino CameraWebServer.cpp app_httpd.cpp camera_index.h
83 sensor_t *s = esp_camera_sensor_get();
84 //drop down frame size for higher initial frame rate
85 //s->set_framesize(s, FRAMESIZE_SXGA); //字节长度采样值:60000
86 s->set_framesize(s, FRAMESIZE_SVGA); //字节长度采样值:40000
87 //s->set_framesize(s, FRAMESIZE_QVGA); //字节长度采样值:10000
88
89 s->set_vflip(s, 1); //图片方向设置(上下)
90 s->set_hmirror(s, 1); //图片方向设置(左右)
91
92 // WiFi.setTxPower(WIFI_POWER_19_5dBm);
93 WiFi.mode(WIFI_AP);
94 WiFi.softAP(ssid, password, 5);
95 // WiFi.softAP(ssid, password);
96 Serial.print("\r\n");
97 startCameraServer();
98 Serial.print("\r\n");
99 Serial.print("Camera Ready! Use 'http://'");
输出
行 90, 列 47 ESP32 Dev Module 在COM97上 [没有连接]
```