

7.1 APP control

1. Learning goal:

In this course, we will integrate the functions of all previous courses into one project, and the APP controls all functions.

2. Experimental phenomenon:

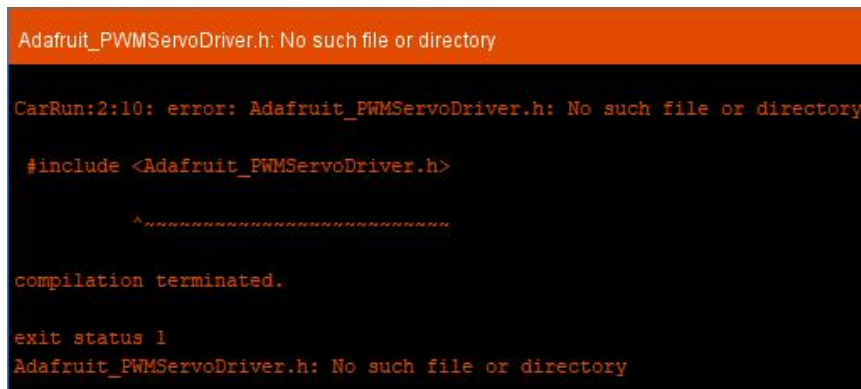
Open the power. First, the MPU6050 will be initialized, so the boot time is a little longer, please wait a while. After the MPU6050 is initialized, the LED D9 indicator will be keep on. Then, the bottom four RGB lights will gradually turn green. When brightness of the bottom 4 green RGB light reaches the maximum, it means the initialization is completed.

3. Compiling and downloading code

3.1 Open the **Surround.ino** program , select the serial port and click upload directly (the Omniduino car must first be connected to the computer via the USB data cable).

3.2 If there is an error like the following, it means that the library file is missing. Please copy the library file provided by the Omniduino omnibus to the library file directory compiled by arduinoIDE.

please refer to 【3.Development Environment Construction】 ---- 【3.4 Add additional library files】



```
Adafruit_PWMServoDriver.h: No such file or directory

CarRun:2:10: error: Adafruit_PWMServoDriver.h: No such file or directory

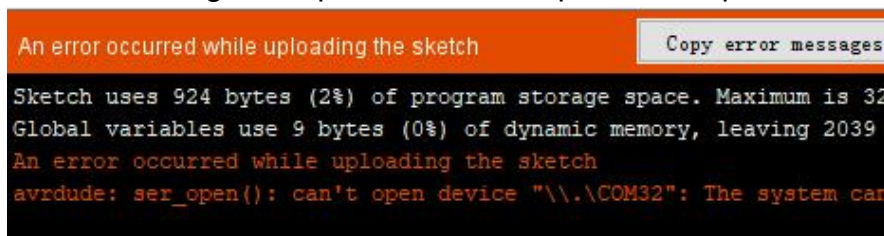
#include <Adafruit_PWMServoDriver.h>

      ^~~~~~

compilation terminated.

exit status 1
Adafruit_PWMServoDriver.h: No such file or directory
```

3.3 If the compilation passes normally, but the following error occurs during uploading, the reason may be that the wrong serial port or the serial port is occupied.



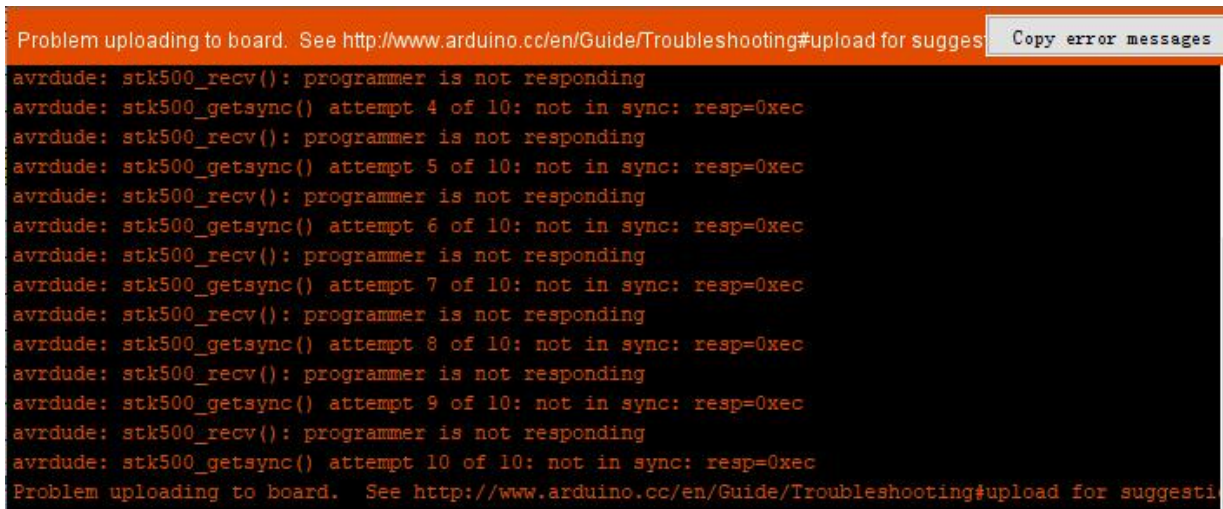
```
An error occurred while uploading the sketch

Sketch uses 924 bytes (2%) of program storage space. Maximum is 32
Global variables use 9 bytes (0%) of dynamic memory, leaving 2039
An error occurred while uploading the sketch
avrdude: ser_open(): can't open device "\\.\COM32": The system can't find the path specified.
```

Solution: Open the device manager to see if there is a serial port with CH340 tag. If not, please restart the Omniduino car, then, re-plug the USB cable or replace a USB cable; If there is a serial port number, we need to close the other serial port or assistant software, avoid serial port occupation, and then re-select the serial port to ArduinoIDE 【Tool】 --> 【Port】.

3.4 After clicking the upload button, the upload is always displayed, but it can't be uploaded

successfully for a long time.



```

Problem uploading to board. See http://www.arduino.cc/en/Guide/Troubleshooting#upload for suggestions.
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 4 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 5 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 6 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 7 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 8 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 9 of 10: not in sync: resp=0x00
avrdude: stk500_recv(): programmer is not responding
avrdude: stk500_getsync() attempt 10 of 10: not in sync: resp=0x00
Problem uploading to board. See http://www.arduino.cc/en/Guide/Troubleshooting#upload for suggestions.
  
```

Because the uploading program and the WIFI camera communication is realized through the serial port, when the serial port is occupied by the WIFI camera, and the program cannot be uploaded.

Solution:

- ①Unplug the USB cable, turn off the power of the car, wait for the D2 indicator to go out.
- ②Then, plug in the USB data cable. At this time, your mobile phone should not connect the WiFi signal of the car.
- ③You can upload the program to the car according to the normal steps.
- ④After the program is successfully uploaded, unplug the USB data cable, open the power switch of the car. The corresponding experimental phenomenon will appear.

(Tip: If you upload APP control program. After the program is successfully uploaded, unplug the USB data cable, open the power switch of the car. Mobile phone connect the car to the WIFI signal, and then open the APP to control.)

4. APP Remote control operation

4.1 Android users scan the following QR code by browser on the cover of the Instruction manual or search "YahboomRobot" in Play Store to download APP;

iOS users scan the following QR code by camera on the cover of the Instruction manual or search "YahboomRobot" in App Store to download APP.

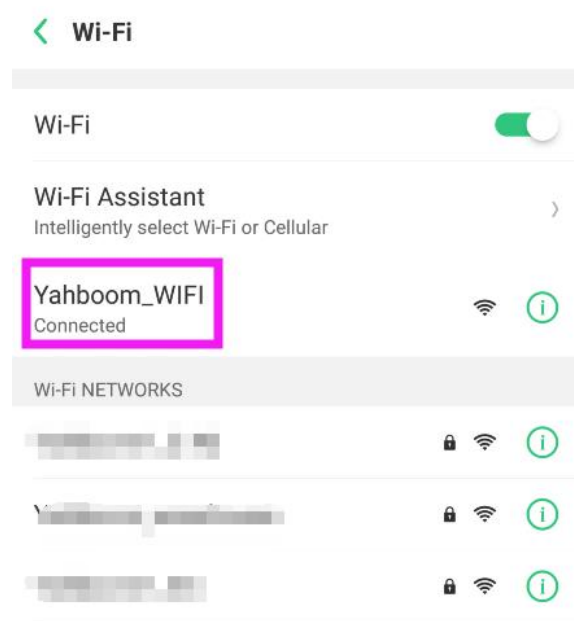
Note: During installation, if you find any prompts on your phone (for example: location permissions of your phone). You must select "Allow".

4.2 Download Omniduino_APP_control_code.ino. Turn on the power, wait for the car to initialize, the bottom four green lights gradually brighten.

About how to download code, please refer to **【3. Development Environment Construction】**.


Note: You must carefully read all the courses in [3. Development Environment Construction] before you can successfully compile and upload the program.

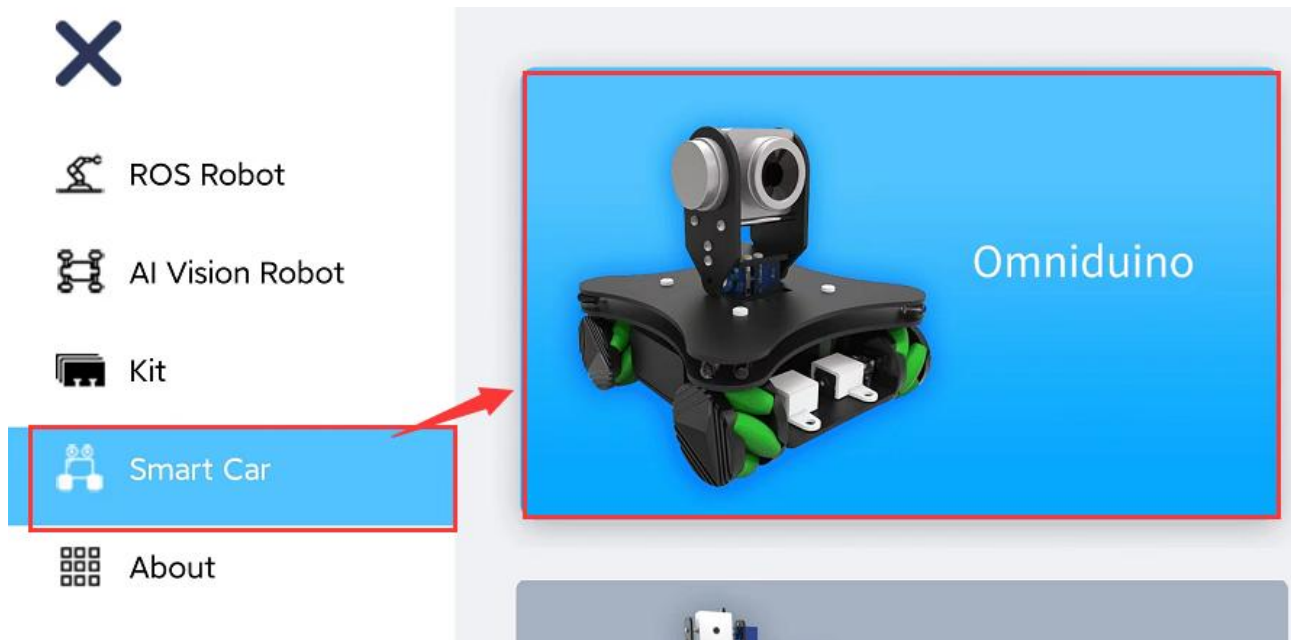
4.3 Turn on the phone to search for the WIFI signal and connect the Yahboom_WIFI, no need password, just click on the connection. Some mobile phones may promptly disconnect without network data, and you can click again to connect.



4.4 Open the YahboomRobot APP.

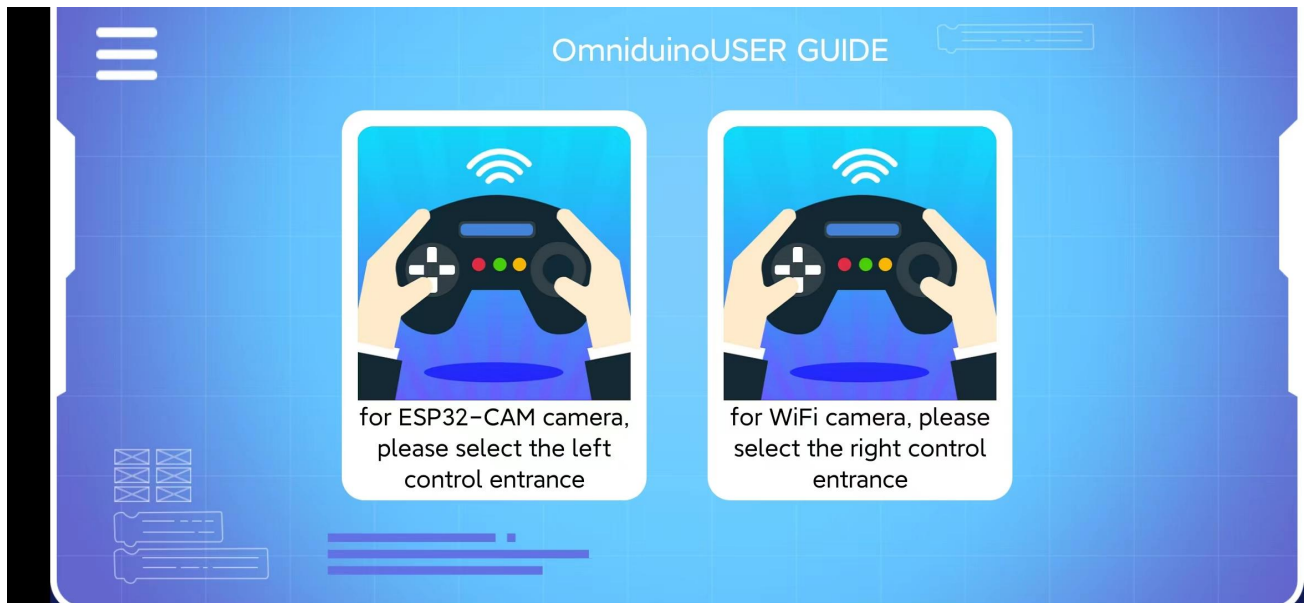
Note: When you open it for the first time, it will be prompted to get some permissions, you must select “Allow”.

4.5 Click on the menu icon in the upper left corner of the APP . In the device column, you need to select Omniduino. As shown below.



4.6 Check the camera packaging sticker, you need to select the corresponding control entrance according to the camera model.

If you choose the wrong control entrance, you will not be able to view the camera image and control the car. If the camera package has no stickers, it will default to a WIFI camera.



- a. Use the ESP32-CAM camera to select the left control entrance, it will enter the WiFi configuration interface, use the default IP, Port, Video, click "Connect" to enter the main control interface;
- b. Use the WIFI camera to select the control entrance on the right, and click to directly enter the main control interface.

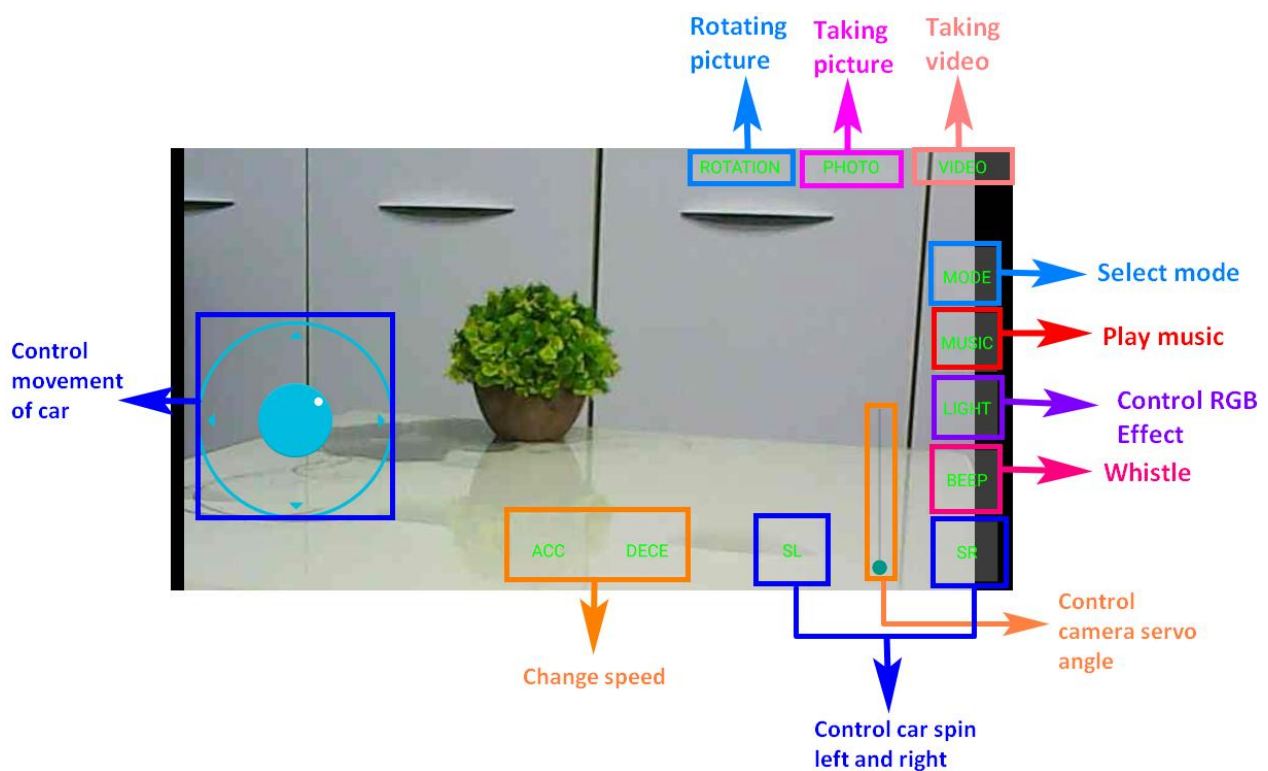


Note: The functions implemented by the two versions are exactly the same, only the camera model is different.

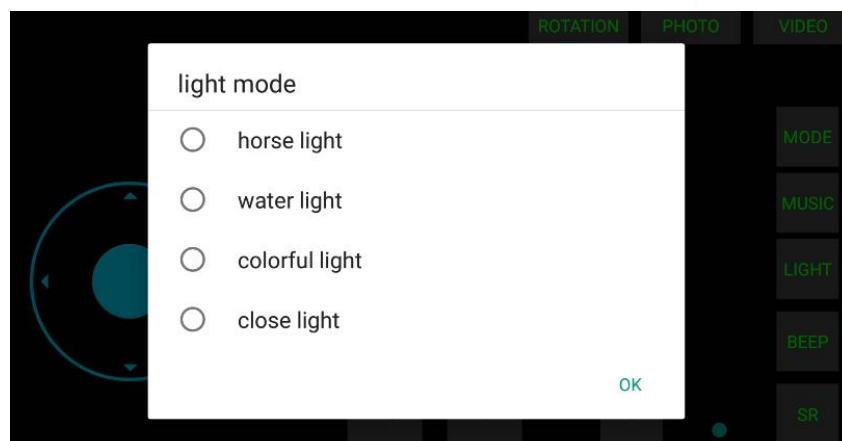
4.7 Enter the remote control interface of the omniduino car.



4.8 Control interface



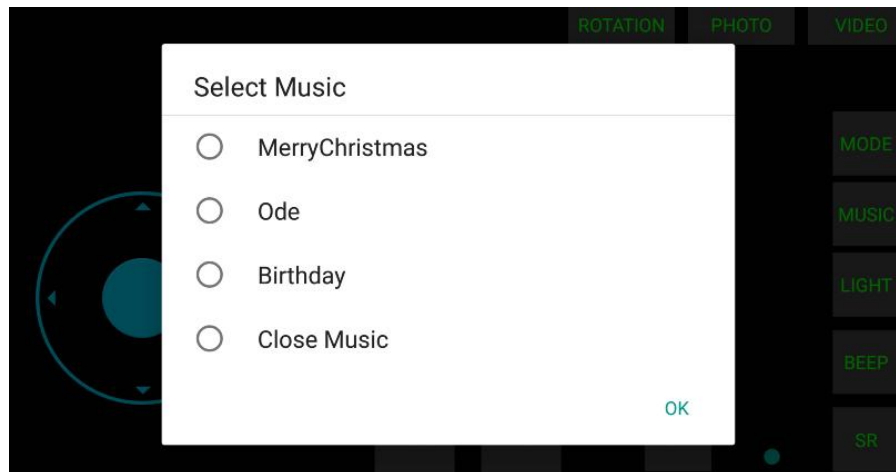
About LIGHT:



Clicking the corresponding button will implement the corresponding RGB light effect.
Clicking the close button will turn off the RGB light.

About MUSIC:

Music: The buzzer plays the song, each time you click it, slides to the bottom to have the option to turn off the music, or it will stop automatically after playing a song.



About MODE:

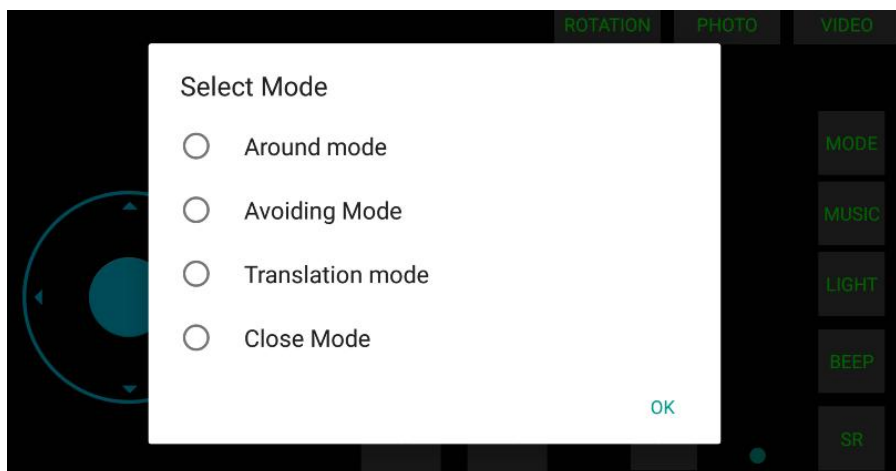


Diagram of Around mode as shown below:

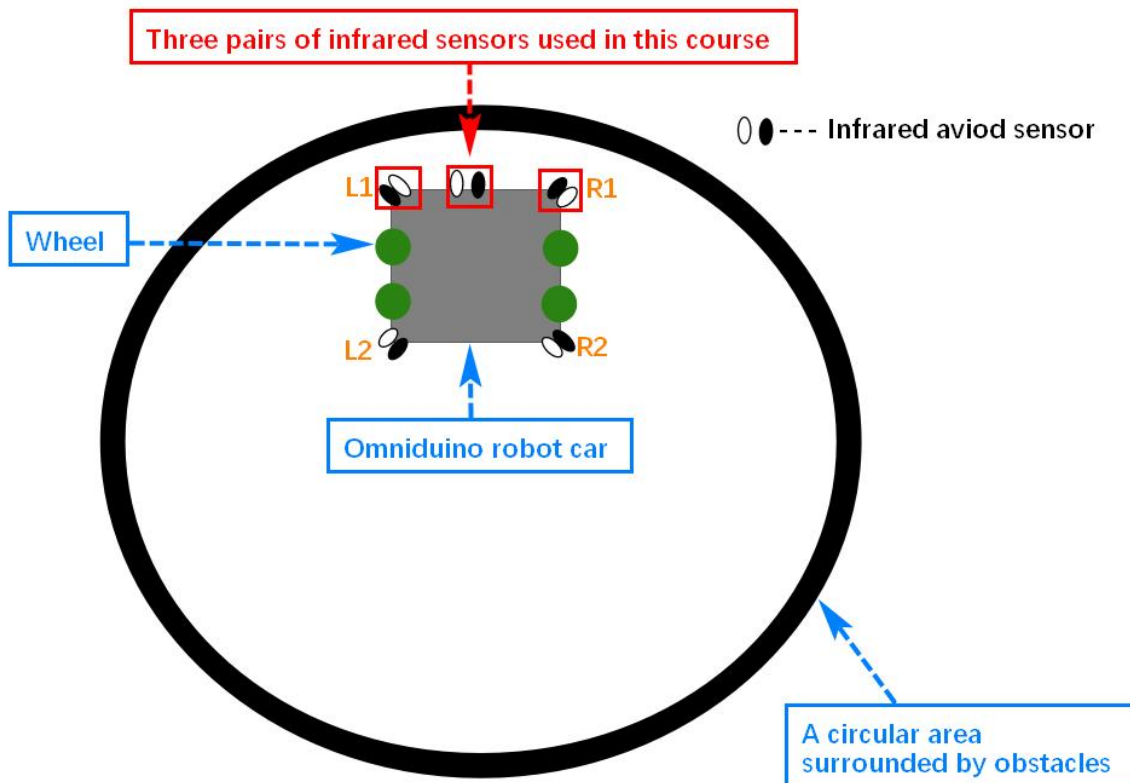
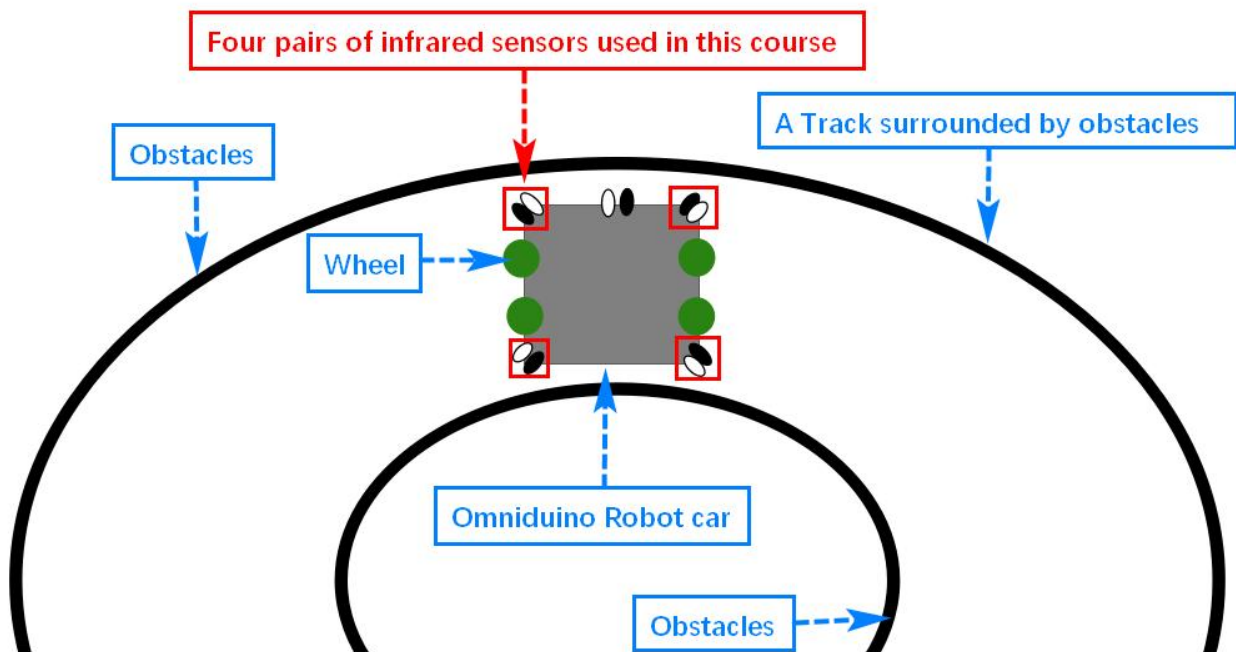


Diagram of Translation mode as shown below:



The entire interface will display the image captured by the camera.

ROTATION: Rotate the image displayed by the camera by 90 degrees and rotate it 90

degrees with each click.

PHOTO: After the photo is taken successfully, it will prompt the path where the image is saved.

VIDEO: Click to start recording, the button will change to stop recording, and click again to stop recording.

5. Tip:

V1.1 version of the program adds the auto-stabilization function of the car.

After each remote control of the car, the car will record the current gyroscope angle once stopped. If there is an external force to change the direction of the car (non-APP remote control), the car will automatically rotate back.

The position after turning may not be exactly the same as the original, but the direction of the car's head will be about the same as the original. Because the data provided by the sensor has a certain error value, ± 3 degree error is allowed in the program, otherwise the motor of the car will keep ringing.