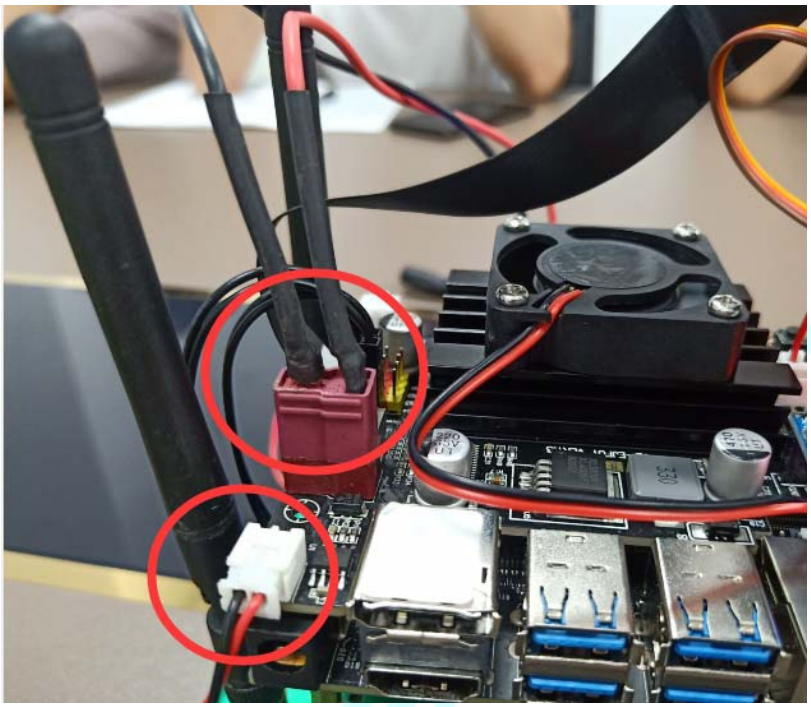
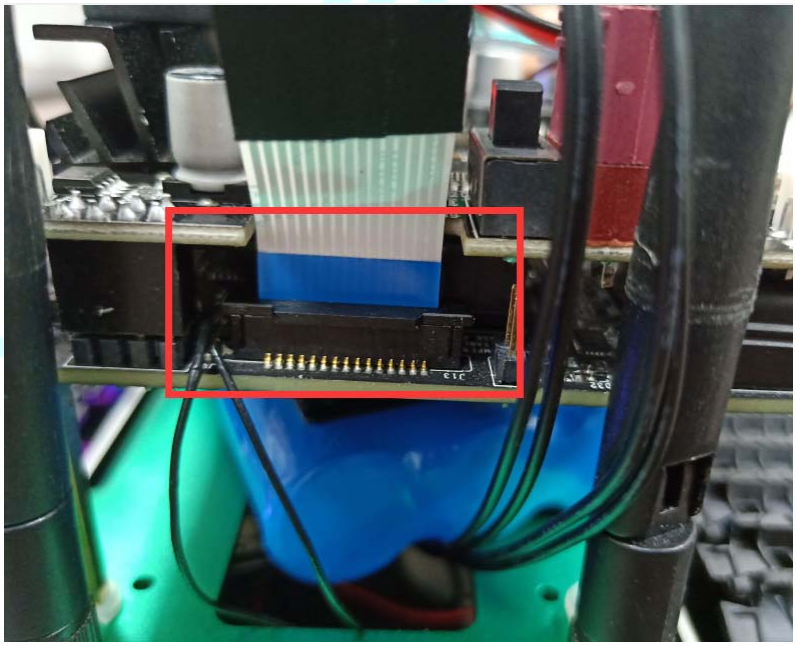
First Trial

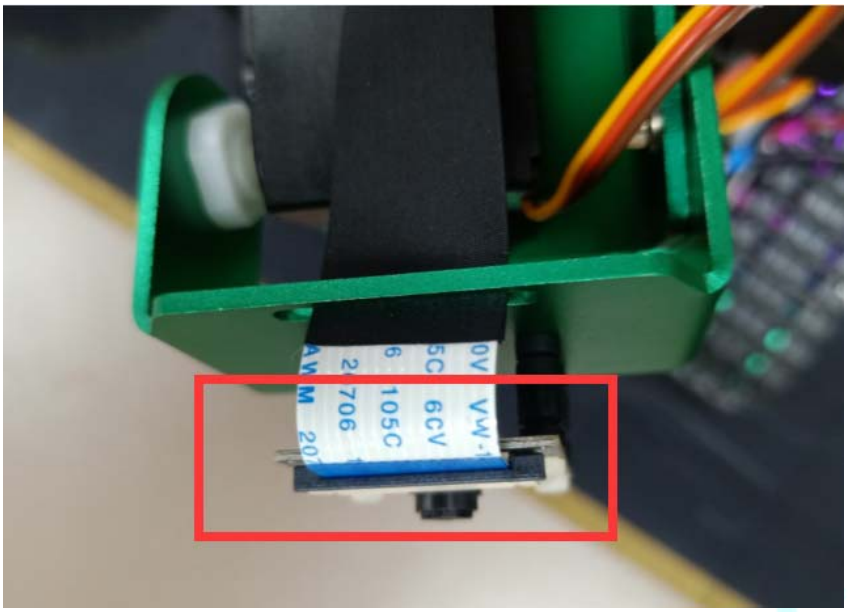
1.Assemble the JetBot robot car

Please according to the instructions or the installation video to assemble JetBot.

Please check the wiring of the place as shown below before starting the experiment.



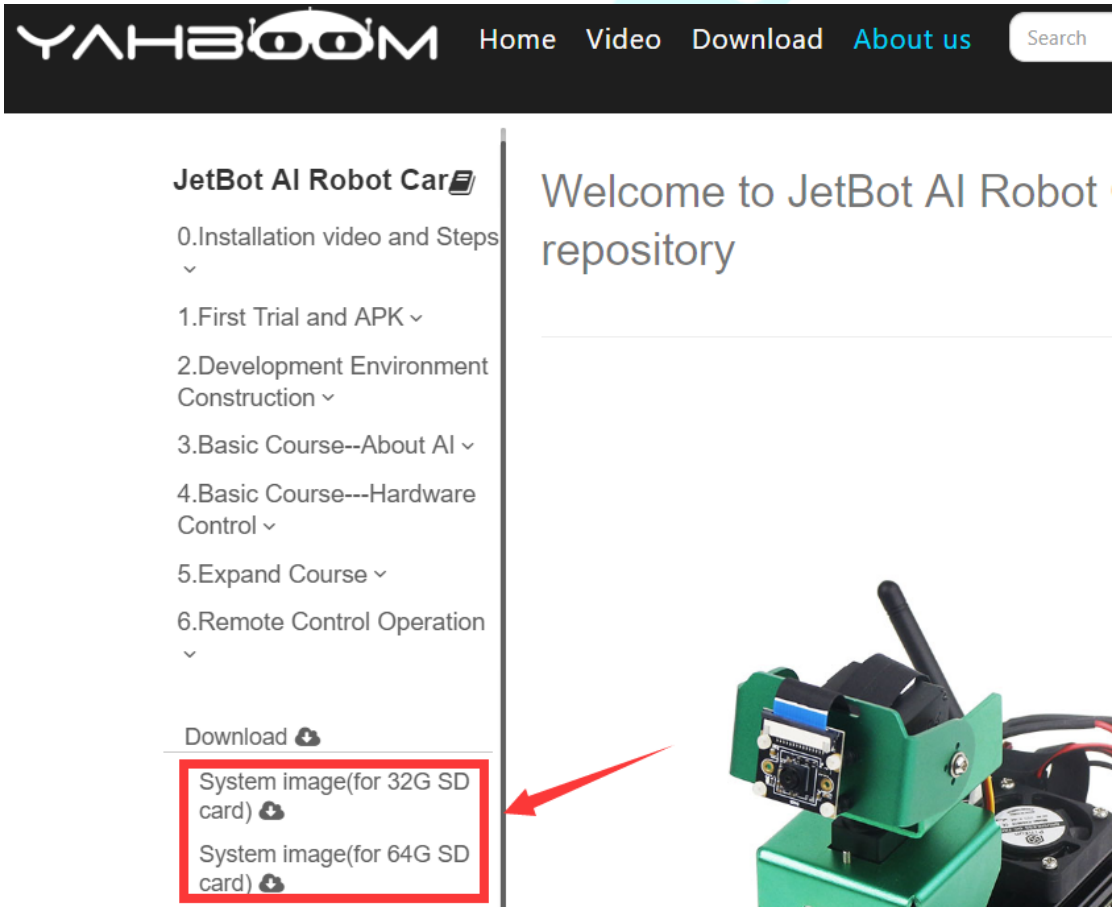




2.Download image

You must burn the image we provided. Click the link as shown below to download the image.

Link: http://www.yahboom.net/study/JETBOT



About Yahboom_jetbot_car_image:

User name: jetbot

Password: yahboom

If you have 32G SD card, please burn System image(for 32G SD card).
If you have 64G SD card, please burn System image(for 64G SD card).

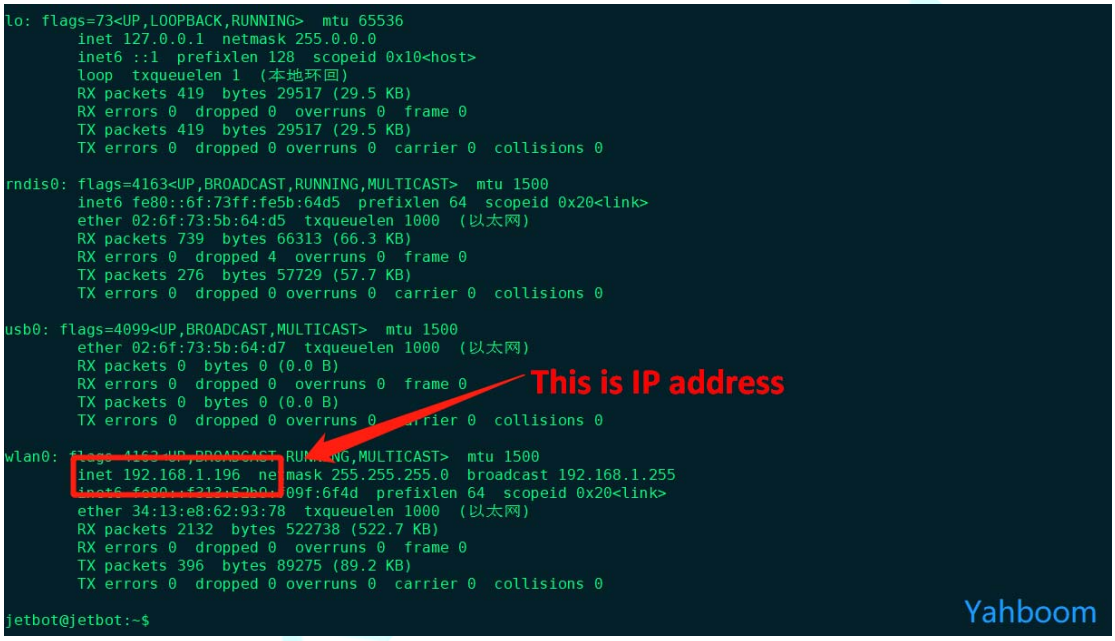
3.Modify static IP address

Before the first trial, you need to configure the device to connect to WIFI and configure the static IP address.

1). Connect to the display by the HDMI cable, open of power switch on the robot, connect the mouse and keyboard, select the WIFI you want to connect in the upper right corner of the screen. And check the connection information to determine the IP address network segment after the connection is completed.

Input command: **ifconfig**

You will see as shown below interface:



If you do not have display, you can refer to 【2.3 Software Setting】--- 【Connecting to Jetbot by headless (head-free) mode】

2). If the IP address network segment is "192.168.1.XX", the static address is modified to be 192.168.1.67.

3). Modify configuration file Config.txt in our image. **(path:/home/jetbot/yahboom-jetbot/config.txt)** to the IP address you modified above.

```
cd yahboom-jetbot
ls
vi config.txt
```

The command need to be entered is shown below:

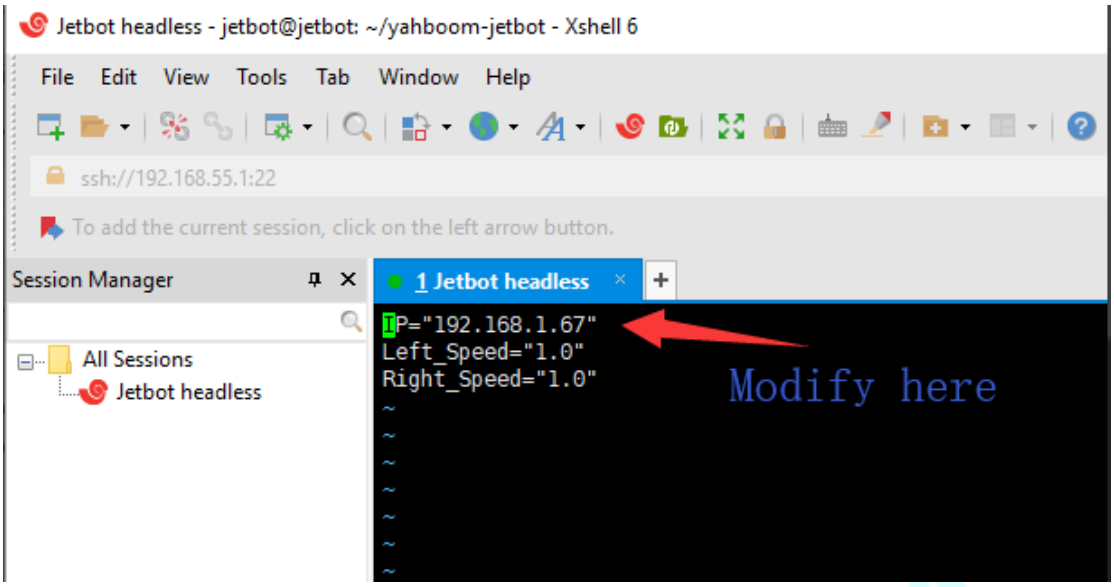
!!!Note:

Do not arbitrarily change the format of the configuration file config.txt file.

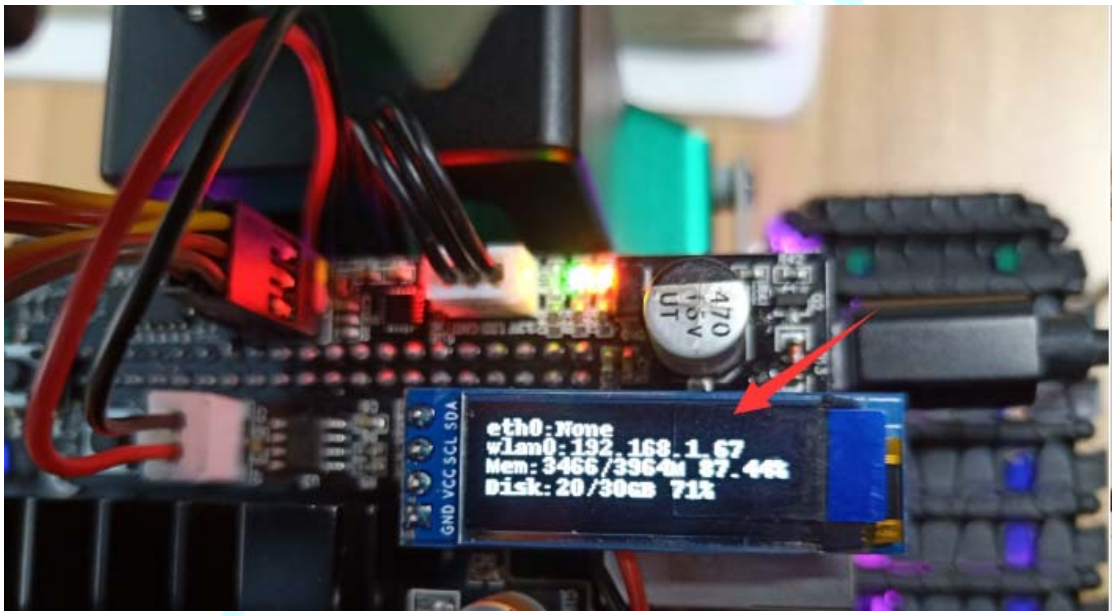
You must modify the parameters according to the original file format to ensure that the configuration in the file is correctly read.

```
Xshell 6 (Build 0115)
Copyright (c) 2002 NetSarang Computer, Inc. All rights reserved.

Type `help' to learn how to use Xshell prompt.
[C:\~]$

Connecting to 192.168.55.1:22...
Connection established.
To escape to local shell, press 'Ctrl+Alt+]'.

Welcome to Ubuntu 18.04.2 LTS (GNU/Linux 4.9.140-tegra aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

Last login: Tue Oct 22 17:23:14 2019 from 192.168.55.100
jetbot@jetbot:~$ ls
Desktop           jetbot     thinclient_drives
examples.desktop  Notebook   yahboom-jetbot
jetbot@jetbot:~$ cd yahboom-jetbot/
jetbot@jetbot:~/yahboom-jetbot$ ls
123.xml            config.txt   RGB_Lib.py                static
Battery_Vol_Lib.py  PID.py       servoserial.py            templates
best_model.pth      __pycache__  ssd_mobilenet_v2_coco.engine  yahboom-jetbot.pyc
jetbot@jetbot:~/yahboom-jetbot$
```

```
Last login: Tue Oct 22 19:54:21 2019 from 192.168.55.100
jetbot@jetbot:~$ ls
Desktop           jetbot     thinclient_drives
examples.desktop  Notebook   yahboom-jetbot
jetbot@jetbot:~$ cd yahboom-jetbot/
jetbot@jetbot:~/yahboom-jetbot$ ls
123.xml            config.txt   RGB_Lib.py                static
Battery_Vol_Lib.py  PID.py       servoserial.py            templates
best_model.pth      __pycache__  ssd_mobilenet_v2_coco.engine  yahboom-jetbot.pyc
jetbot@jetbot:~/yahboom-jetbot$ vi config.txt
```



After the modification is completed, we can see that Jetbot OLED displays the IP address currently connected to the network.



(Note: If it is another network segment such as 192.168.2.XX, you need to modify the configuration file accordingly. Do not force the network segment from 192.168.2 to be changed to the network segment of 192.168.1. This is impossible to communicate.)

4). After the modification is completed, restart the robot. Wait about 7 minutes, you will hear the buzzer whistle three times, and the Jetbot side RGB will light up the breathing light, indicating that the big program has been started.

5). After the start up is completed, you can control Jetbot by APK.
(Note: When the remote control car, it can't go straight.The reason is that there is a difference in the delivery of each motor, but it does not affect any function

of the car)

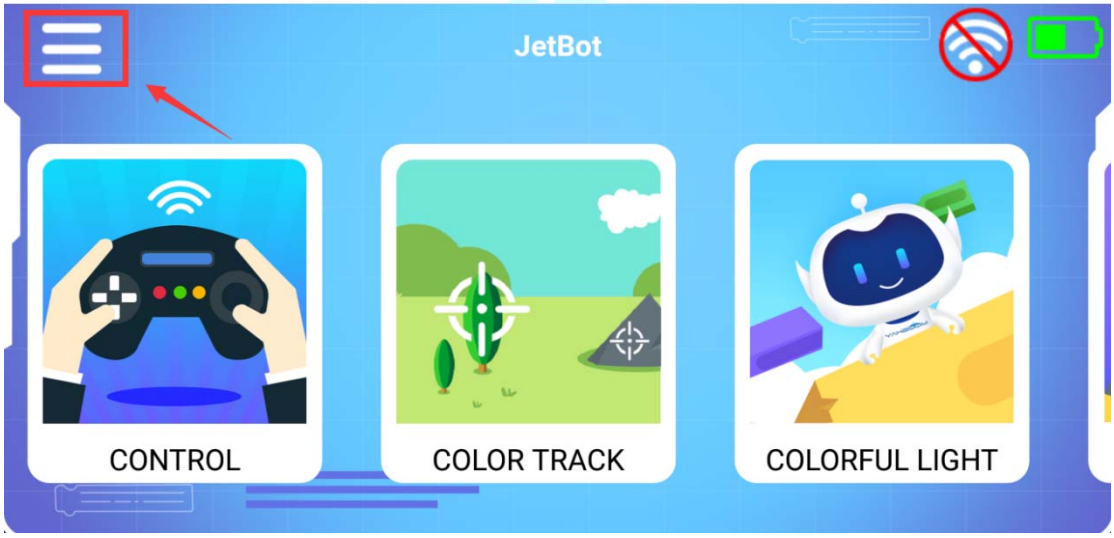
4.Download and Install APK

Android users scan the following QR code by browser or search "YahboomRobot" in Play Store to download APP;

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

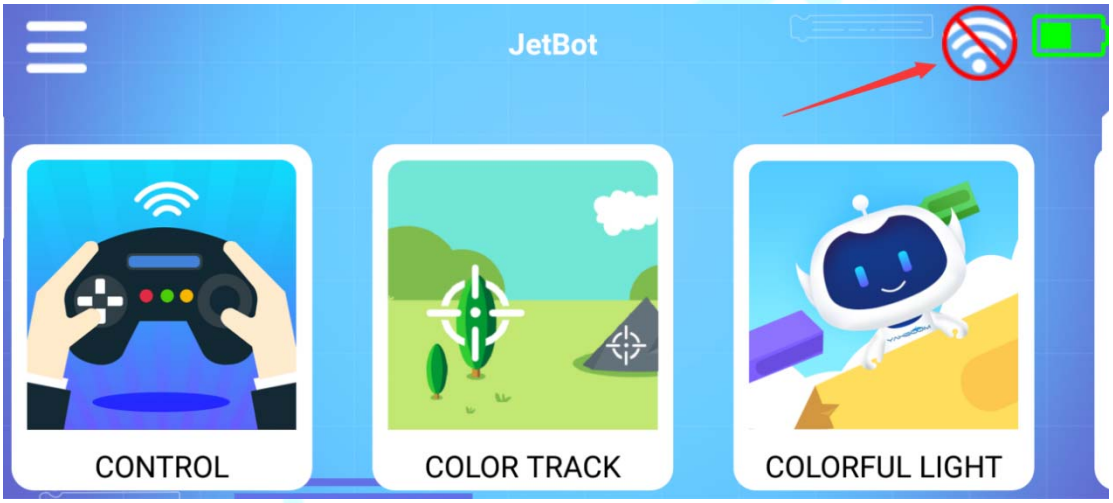
5.Using APK

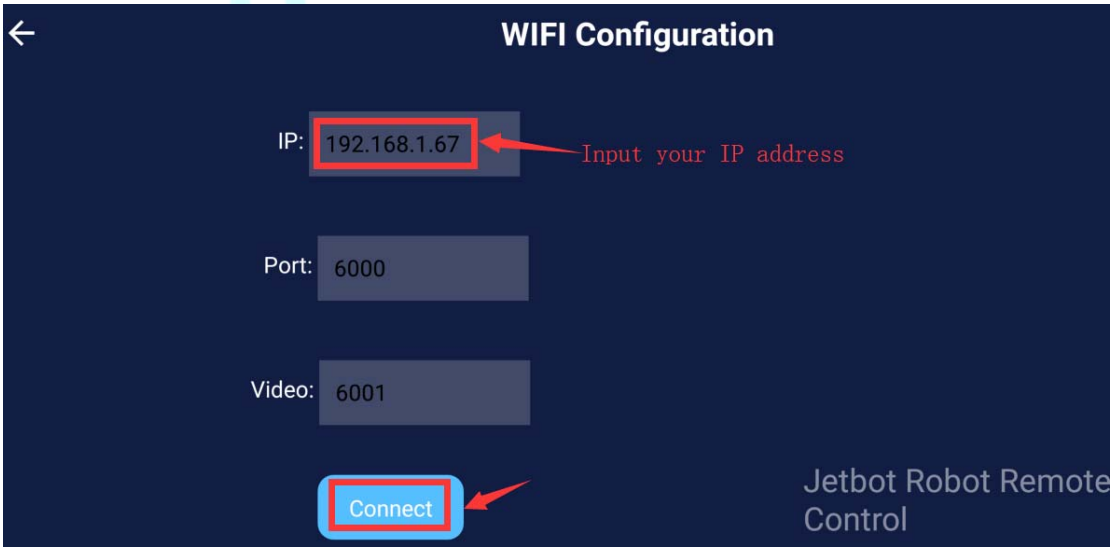
First, we need to click on the top left corner of the APK to select the device as shown below.



Then, Select【JETBOT】to enter the remote control interface, as shown below:

Next, you will hear the buzzer whistle three times, and the Jetbot side RGB will light up the breathing light. Wait a moment, click the WIFI icon in the upper corner to enter the configuration interface, select the IP address configuration for the first trial, and configure the click to connect.

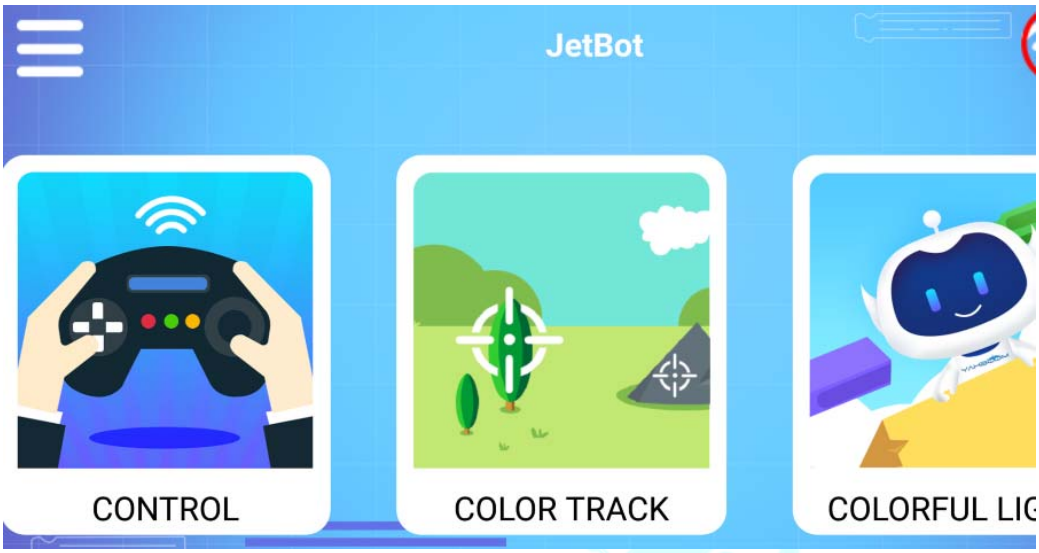




If the connection is successful, the function selection interface will be

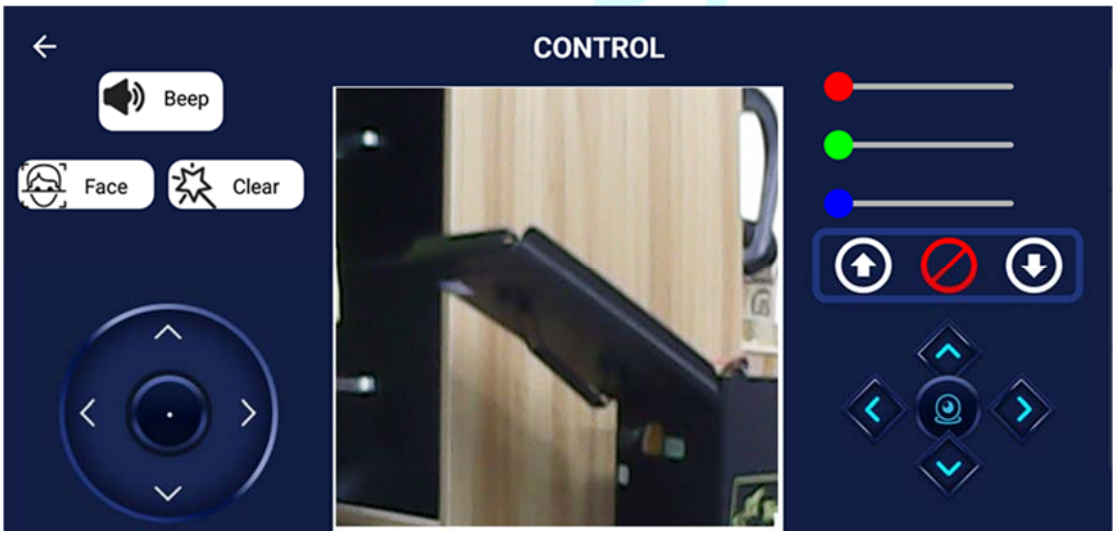
automatically jumped.
(Note: Port number and video port number default to 6000, 6001, do not modify)

Function selection interface：



6.About APK

6.1 CONTROL



!!!Note:

After entering the APK interface, you must wait for the video screen on the APK (It takes about two minutes to wait).Then, you can start remote control.

Left side:

Click the “Face” to enter the face recognition tracking interface, and click to “Clear” the face recognition function.

Right side:

You can control RGB strip, control servo pan/tilt and lifting pan/tilt.

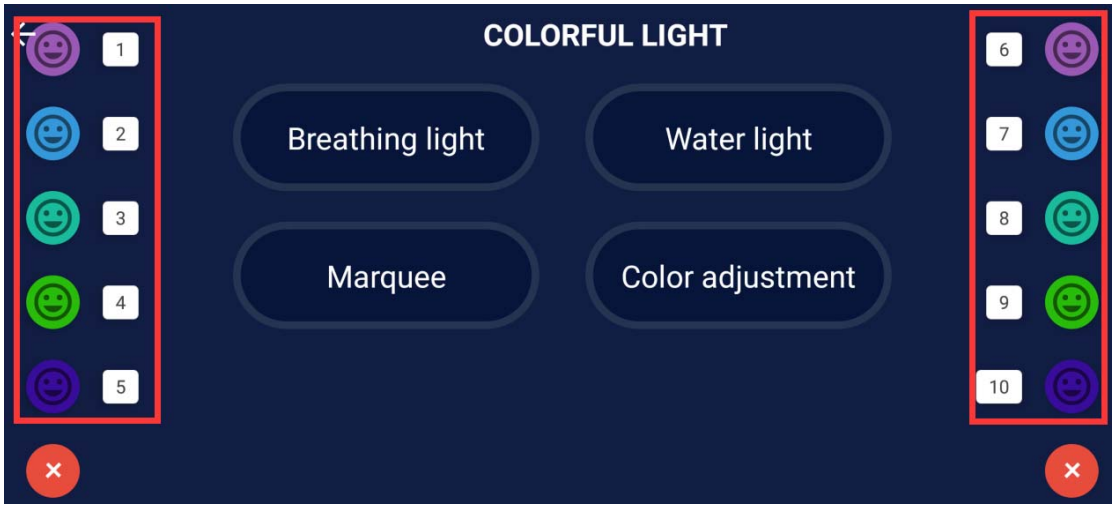
6.2 COLOR TRACK

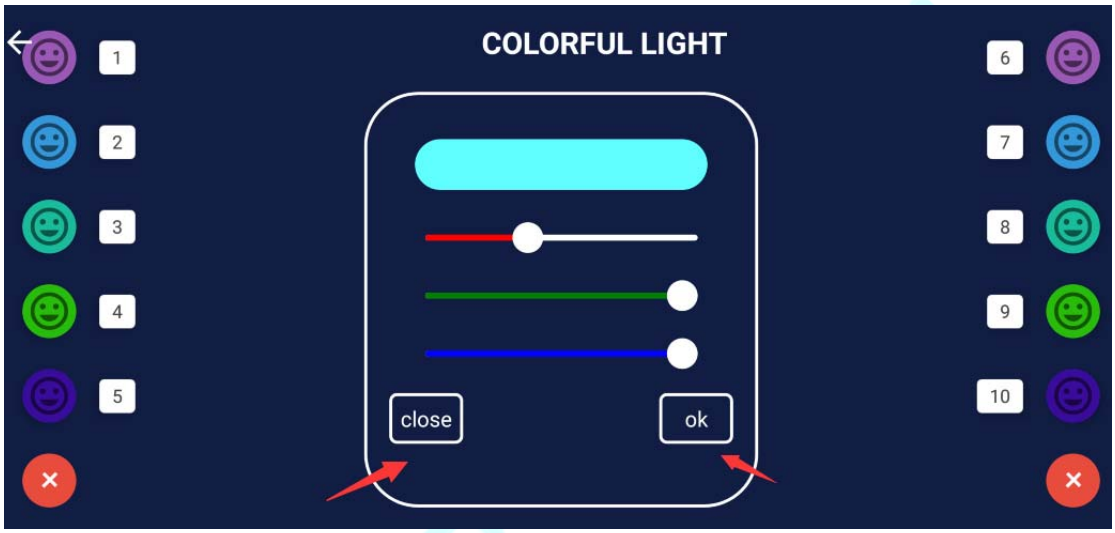
We can click on the different colors to automatically enter the corresponding color tracking, and select the last button with **"×"** to exit the color tracking mode.

!!!Note:

Color tracking may be affected by the brightness of the surrounding environment, in the dark environment may cause deviations in the recognized color, it is not hardware or software problems. In order to obtain better functional effects, please experiment in a brightly lit environment.

6.3 COLORFUL LIGHT





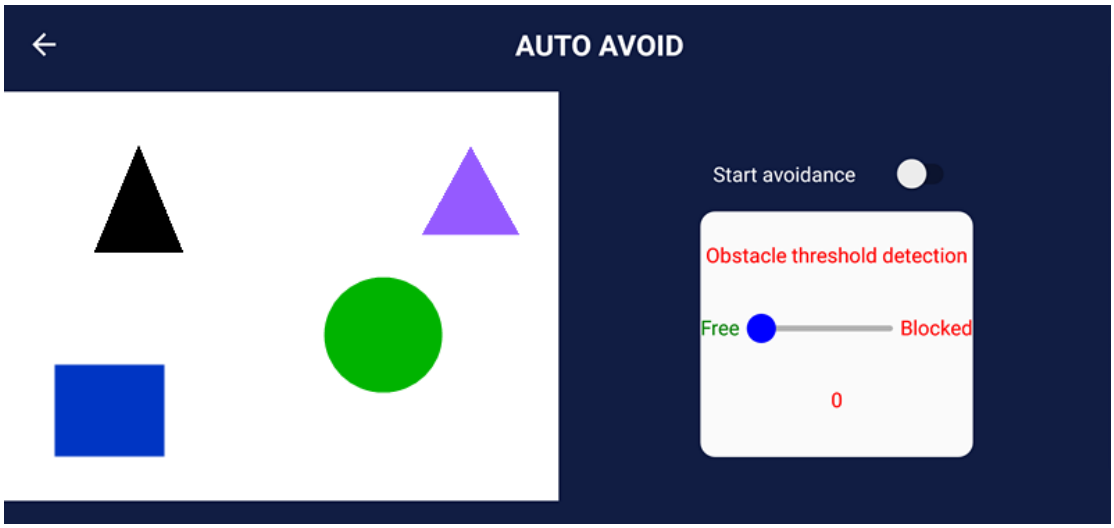
Different modes can be selected in the middle of the interface.

!!!Note:

There will be a short delay, which is normal.

We can click the left and right **"+"** button to pop up the numbers of all RGB lights. Then we can choose to anger the different RGB lights, click **"OK"** after the modification, click **"close"** to close interface.

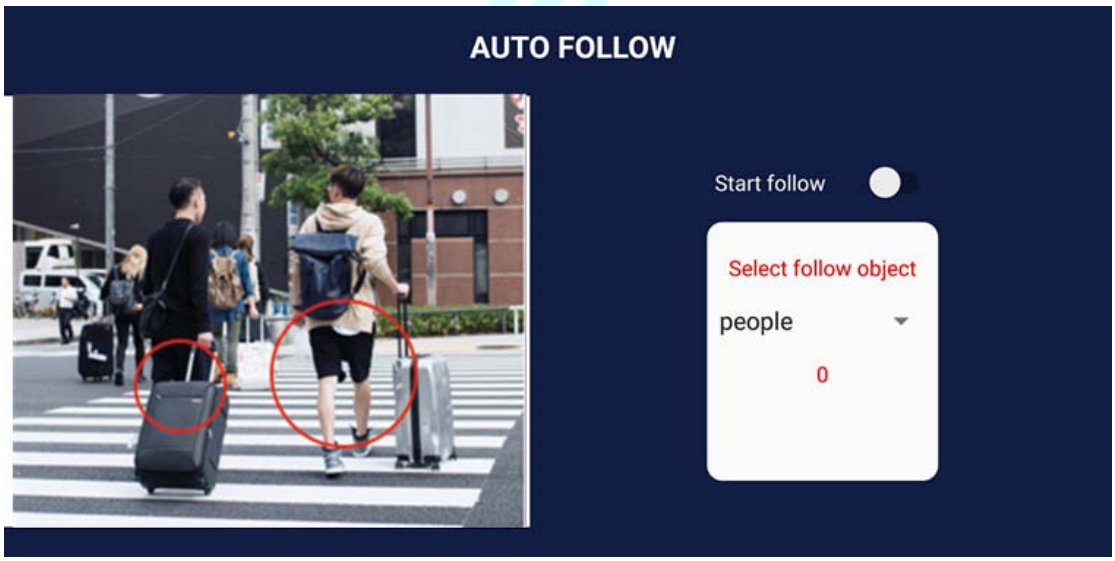
6.4 AUTO AVOID



!!!Note:
Before starting this function, the system needs to load the obstacle avoidance model for a long time, please be patient.

When you click to start avoidance, the video screen will pause to refresh. Then, system will load the model, the loading is completed and enter the obstacle avoidance mode.
The threshold size for obstacle detection is displayed in the lower right corner.

6.5 AUTO FOLLOW



!!!Note:
Before starting this function, the system needs to load the obstacle avoidance model for a long time, please be patient.

First, we need to select the following object.
Second, click to 【start follow】, the robot will automatically follow the target object, the screen will also display the recognized object.

!Note: The object can not move too fast, if target object beyond the video screen, the robot will stop following.

If the camera detects multiple objects, the system will select the closest object to follow. And the object to be followed will be circled by the green wireframe, and other objects will be circled by the blue wireframe.

7. Common problems and solutions:

1). Because the AI model is involved during booting, the time may be within 2-3 minutes. Please wait patiently for the boot start signal. If you have not successfully started after waiting for a long time, please try to restart Jetbot.

2). When you open the Jetbot and enter the function interface with the camera real-time screen for the first time, the camera will be initialized and the camera driver will be started. After waiting for a short time, the image will be displayed. Before this, the image display frame is displayed as white without image, this status is normal.

3). When you first enter the automatic avoid function interface,Jetbot needs to wait for a short period of time to run the avoid model to the memory for the first time. Please wait patiently until the model is loaded.

4). When you first open the automatic follow function interface, Jetbot needs to wait for a short time to run the object model to the memory for the first time. Please wait patiently until the model is loaded.

5). color tracking may be affected by the brightness of the surrounding environment, in the dark environment may cause deviations in the recognized color, it is not hardware or software problems. In order to obtain better functional effects, please in a more light environment Use below.

6). Do not arbitrarily change the format of the configuration file config.txt file. You must modify the parameters according to the original file format to ensure that the configuration in the file is correctly read.