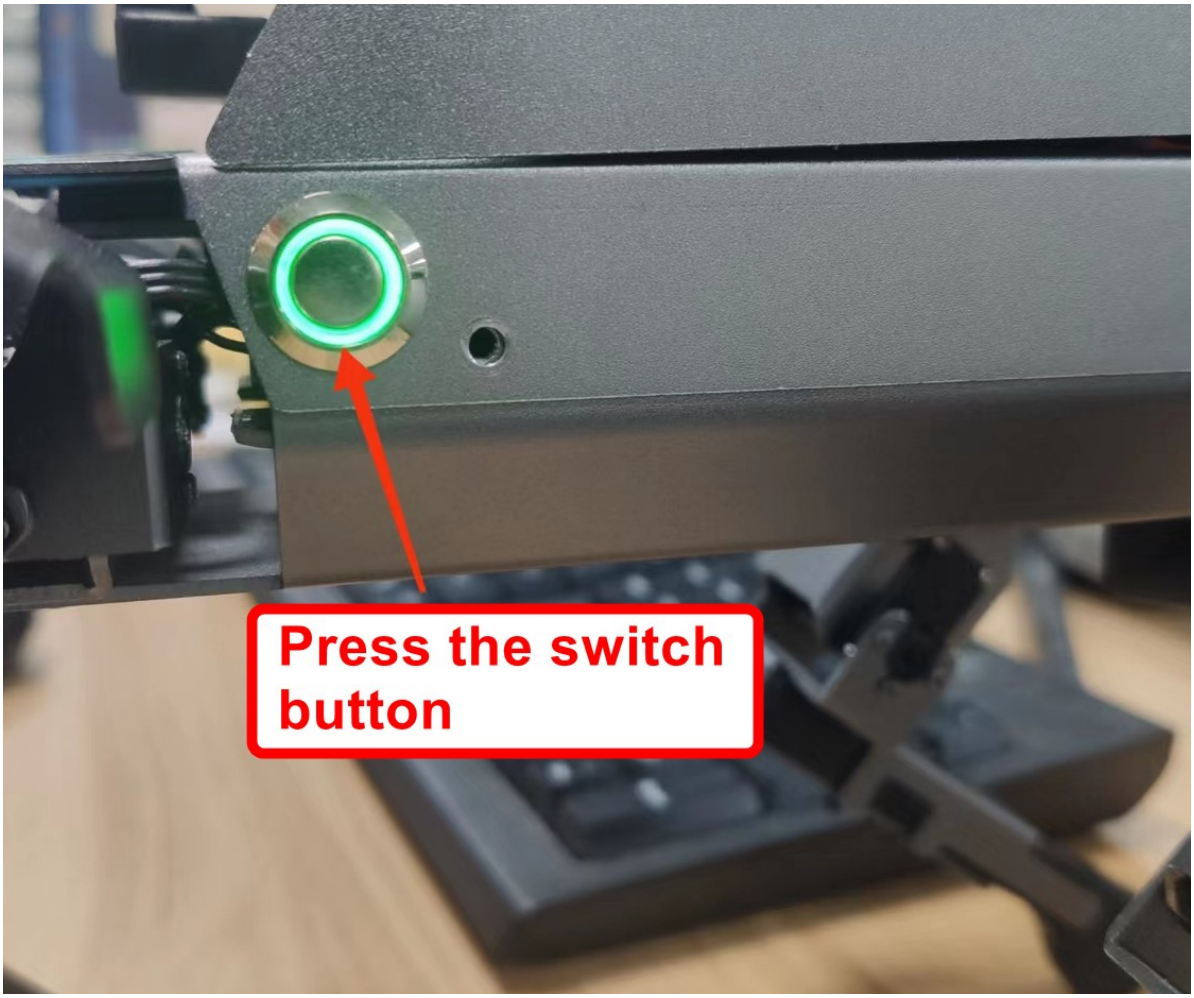
Voice control color recognition

Quick use

1. Power on DOGZILLA

First, we turn on the switching power supply of the mechanical dog and start the mechanical dog



After starting, we can view the IP address on the small screen of the robot dog.

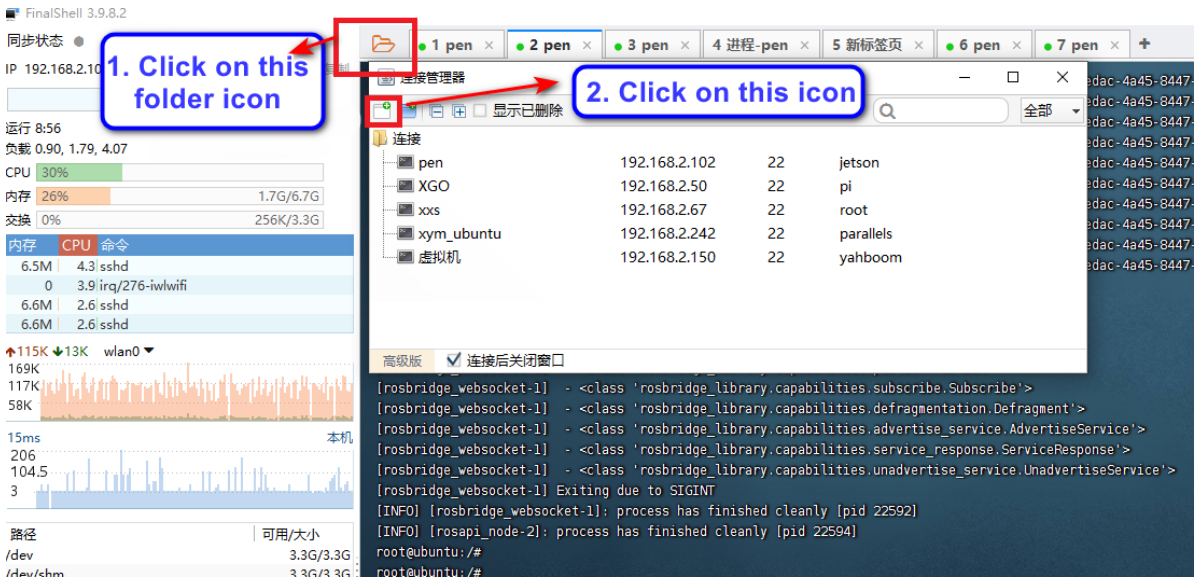
2. Start DOGZILLA chassis

PI4 version steps:

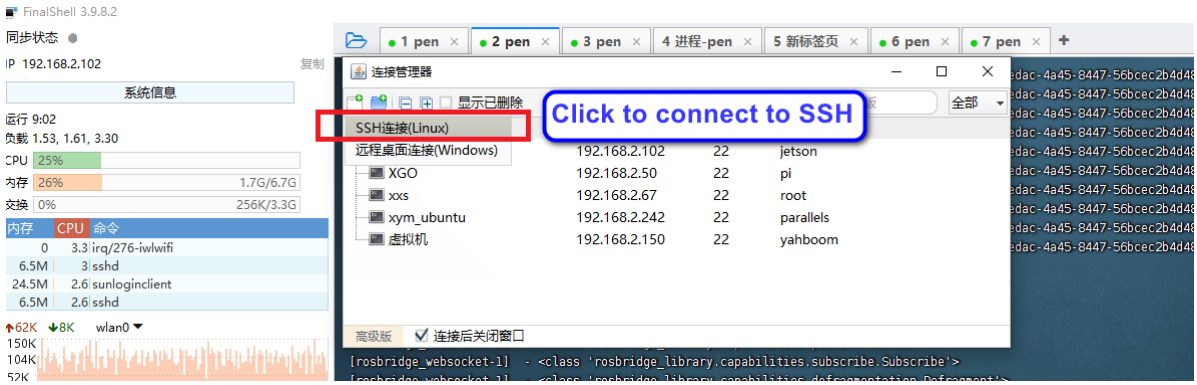
Then use the ssh terminal to connect to the robot dog.

Note: The IP address used when writing this tutorial: 192.168.2.102 User name: pi Password: yahboom The actual IP address shall prevail when used.

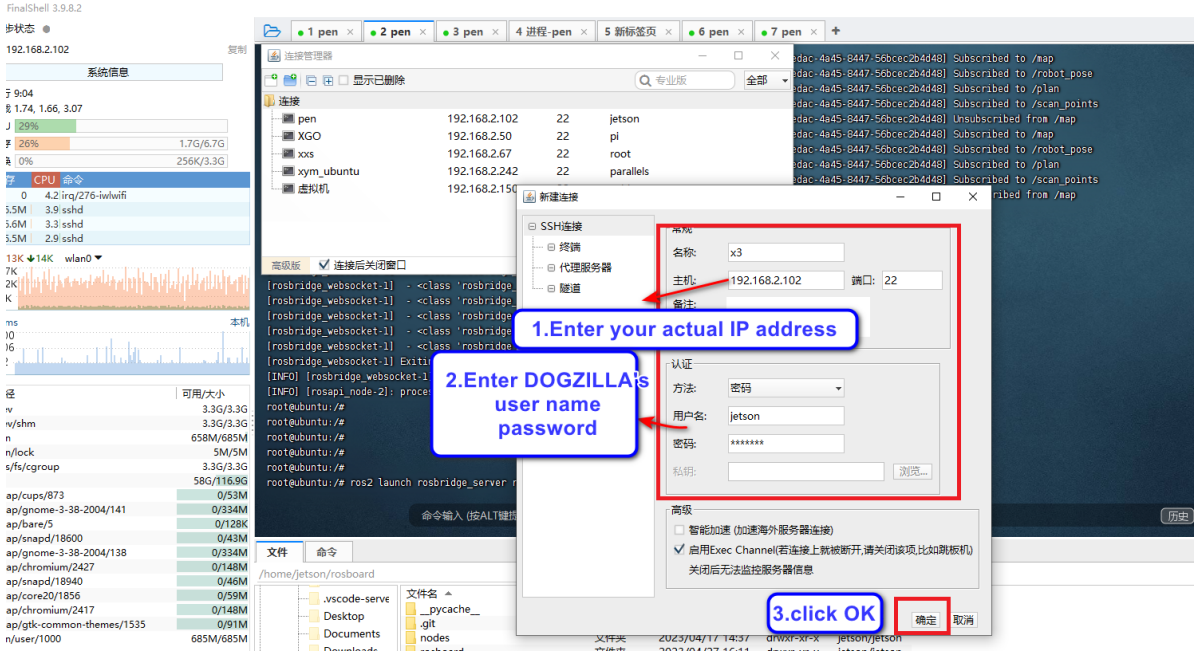
Open the shell tool. The shell tool I use here is FinalShell. Enter username, password, port, connection name and other information.



Select ssh connection to create a new ssh connection



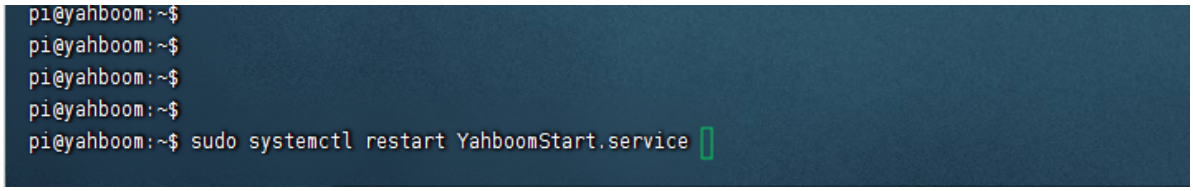
Here the username is pi, the password is yahboom, and the ip address is the IP address of the real robot dog.



Select the ssh connection you just created here.

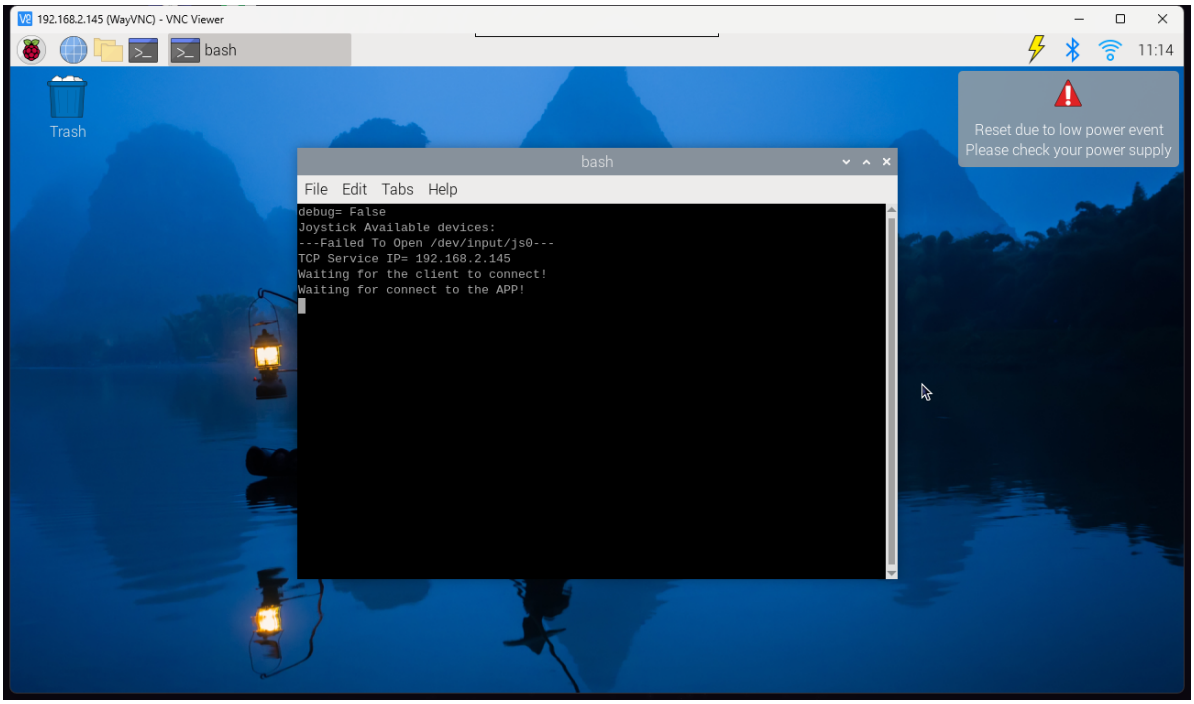
Enter the command in the terminal to start the chassis task.

```
sudo systemctl restart YahboomStart.service
```



PI5 version steps:

After the mechanical dog is started, use the vnc software to remotely connect to the mechanical dog through the IP address on the OLED (**For specific steps, please see "Remote Login Operation"**).



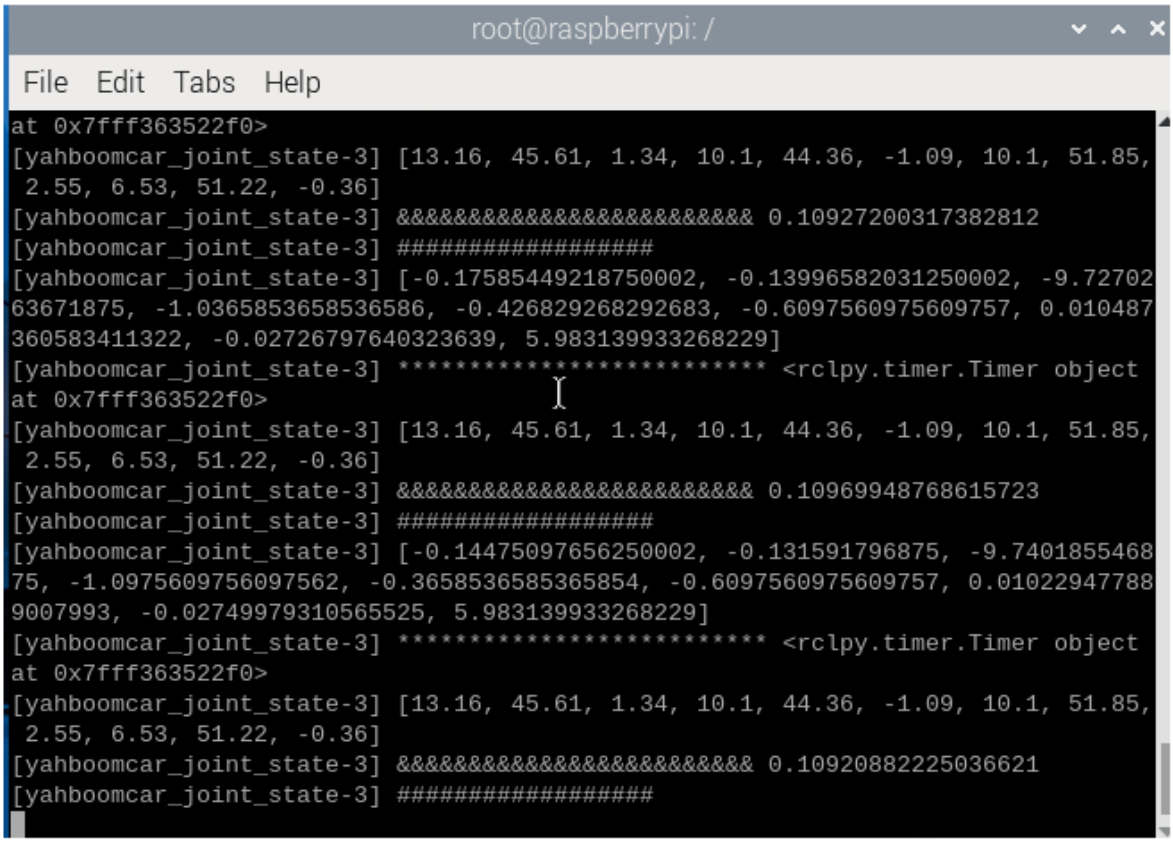
Then ctrl+c closes the large program and enter the following command to enter docker:

```
./run_humble.sh
```

```
TCP Service IP= 192.168.2.145
Waiting for the client to connect!
Waiting for connect to the APP!
^CKeyboardInterrupt
2024-04-28T10:17:27Z
-----program end-----
pi@raspberrypi:~ $ ./run_humble.sh
access control disabled, clients can connect from any host
root@raspberrypi:/#
```

Then enter the following commands in the docker terminal to start the car radar, imu, and mechanical dog joint status nodes.

```
ros2 launch bringup Navigation_bringup.launch.py
```



3. Start the image publishing node

The steps are the same for PI4 and PI5 versions:

Enter the following command in the terminal

```
#pi4
cd cartographer_ws2/
source install/setup.bash
ros2 run yahboom_image_publisher_c yahboom_image_publish_c
#pi5 (need to enter docker terminal)
cd yahbomcar_ws/
source install/setup.bash
ros2 run yahboom_publish pub_color
```

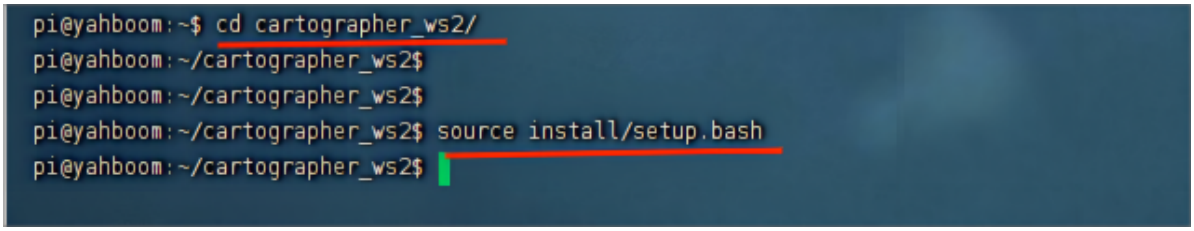
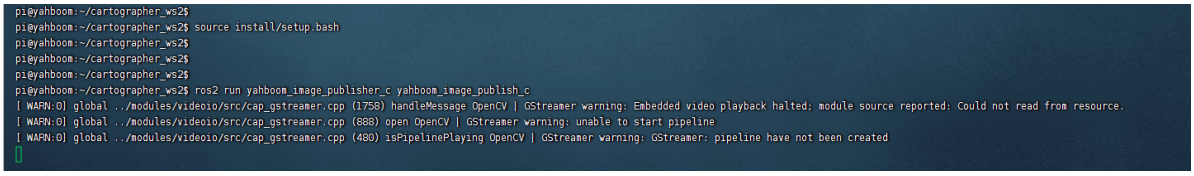


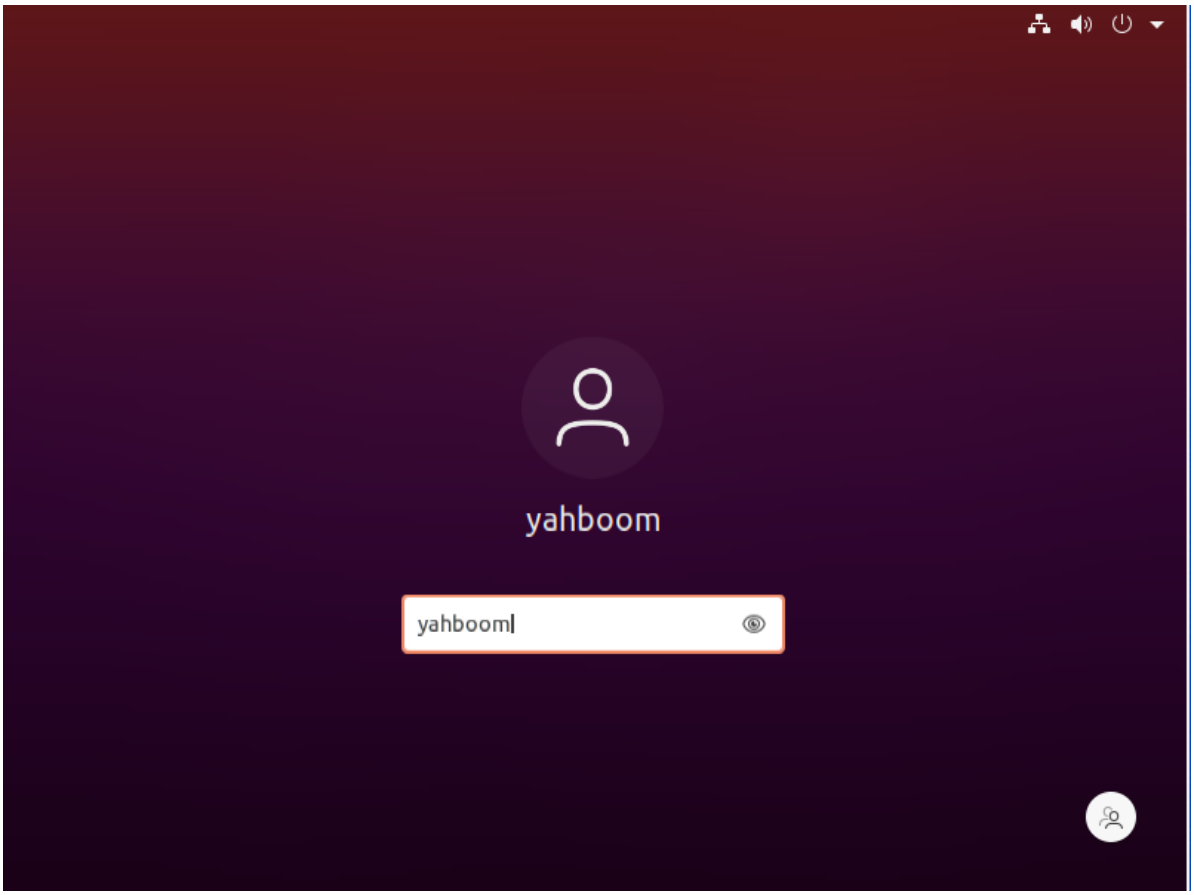
Illustration of the pi4 version running the release node:



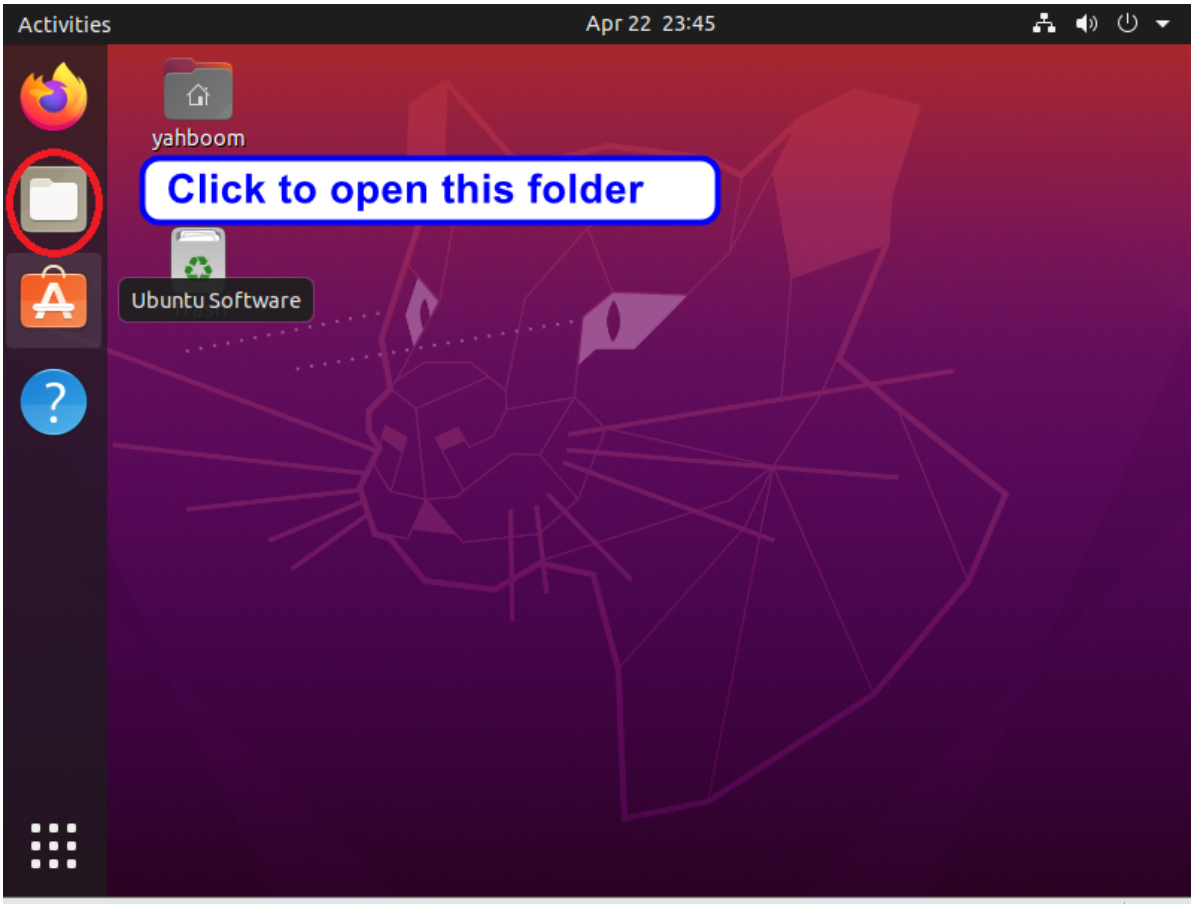
4. Set the recognition color through the web interface

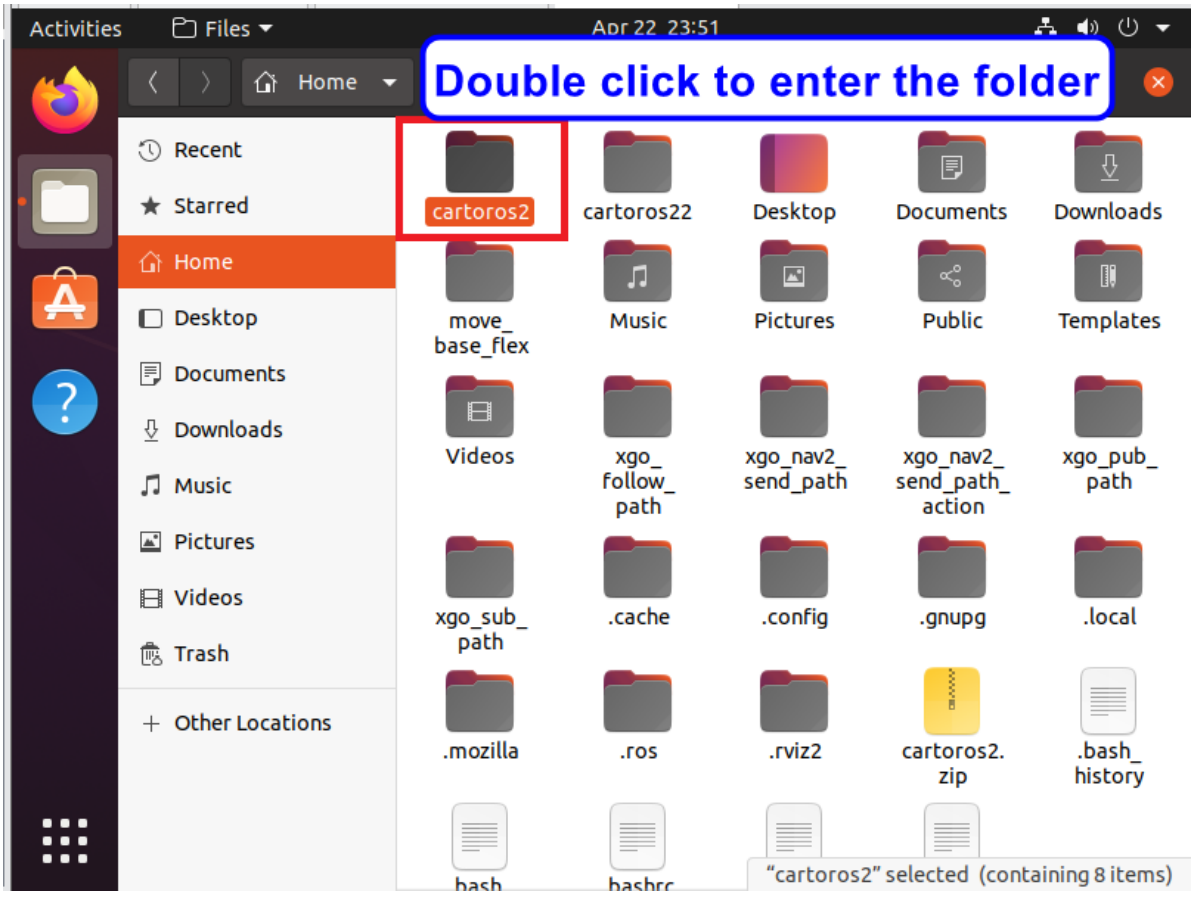
The steps are the same for PI4 and PI5 versions:

Open the virtual machine and enter the user name yahboom and the password yahboom.

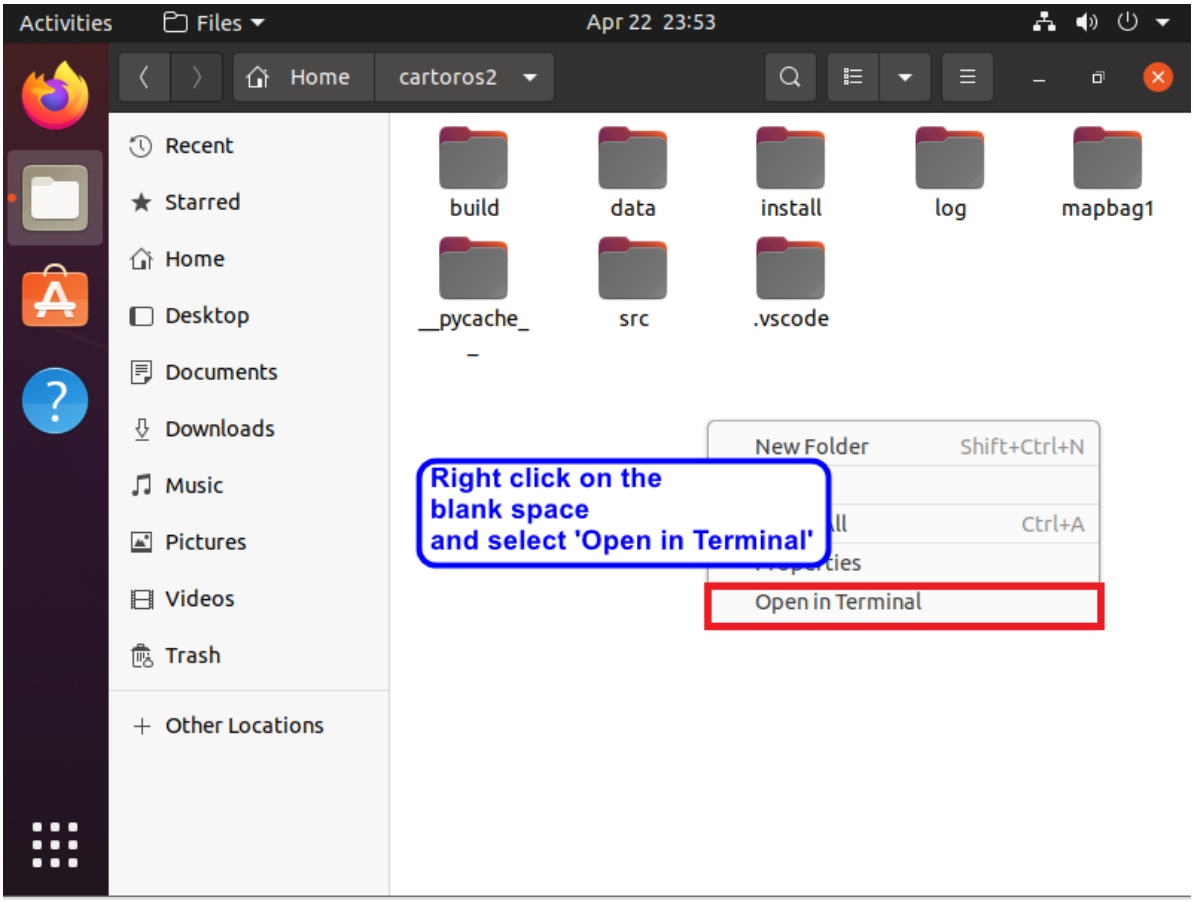


Click on the folder to open the cartoros2 folder.



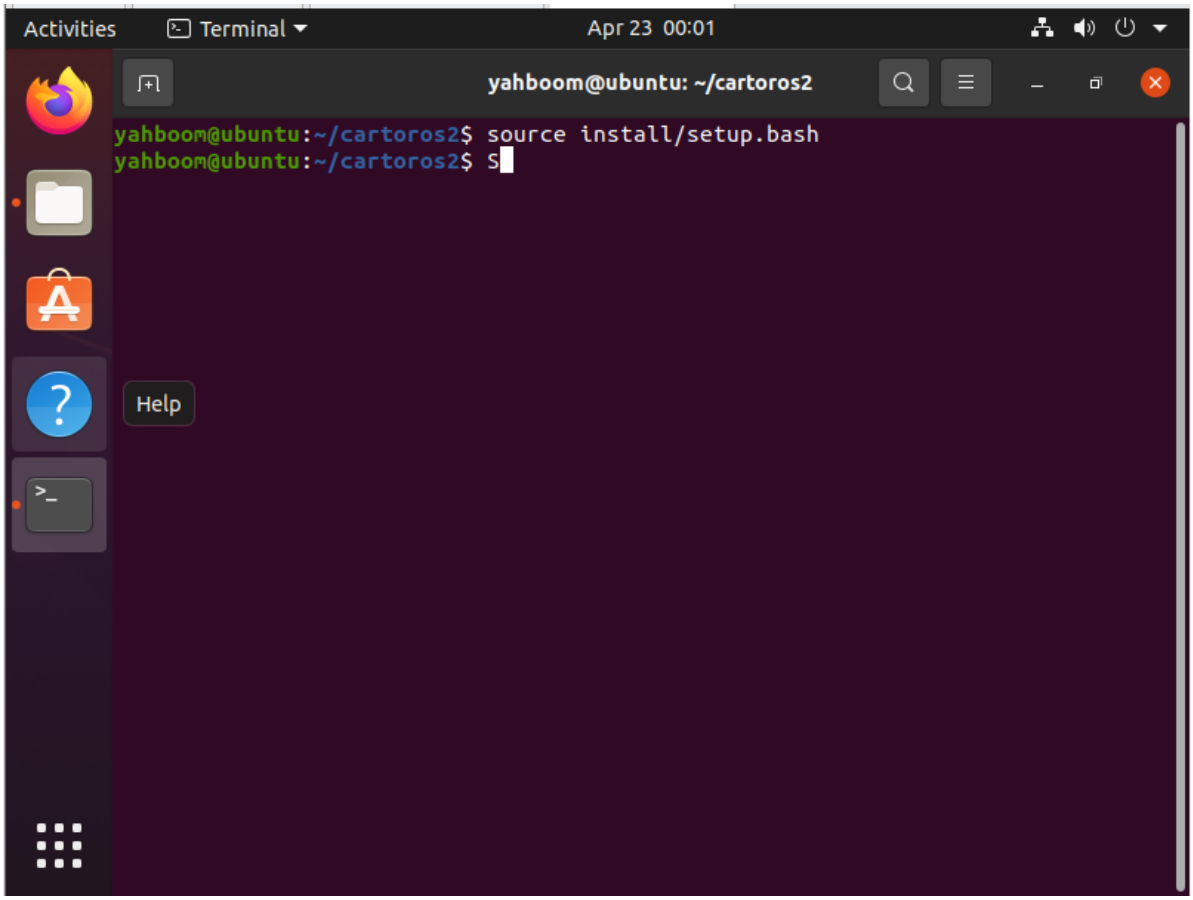


Open the terminal under the folder



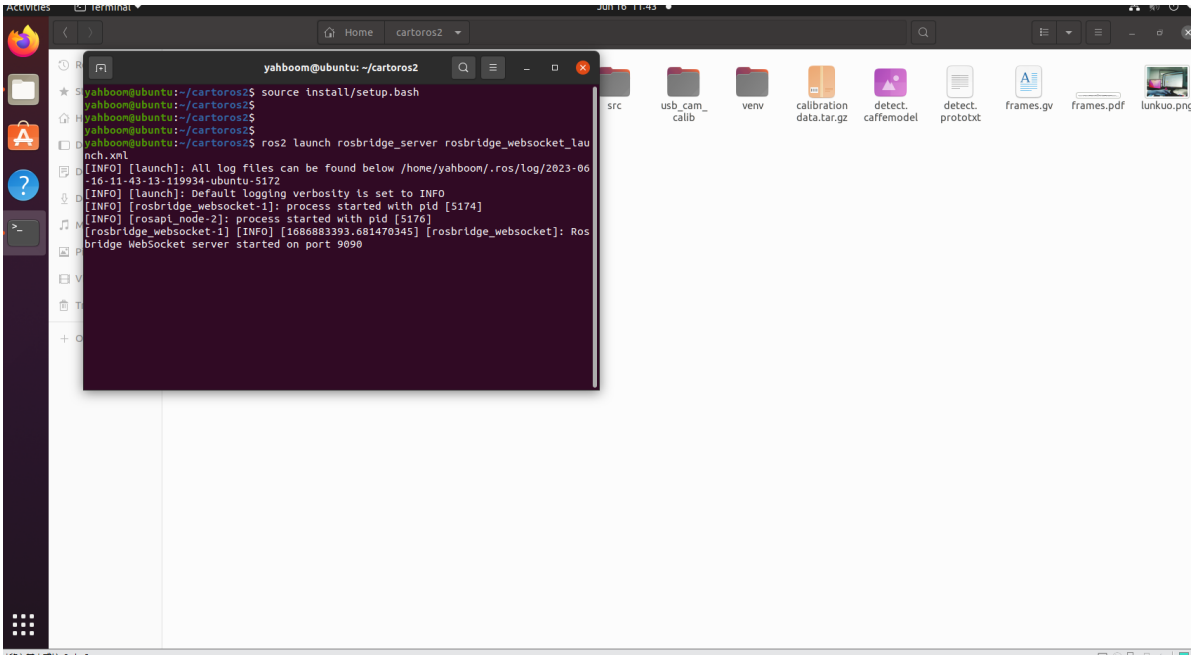
Then enter the following command

```
source install/setup.bash
```



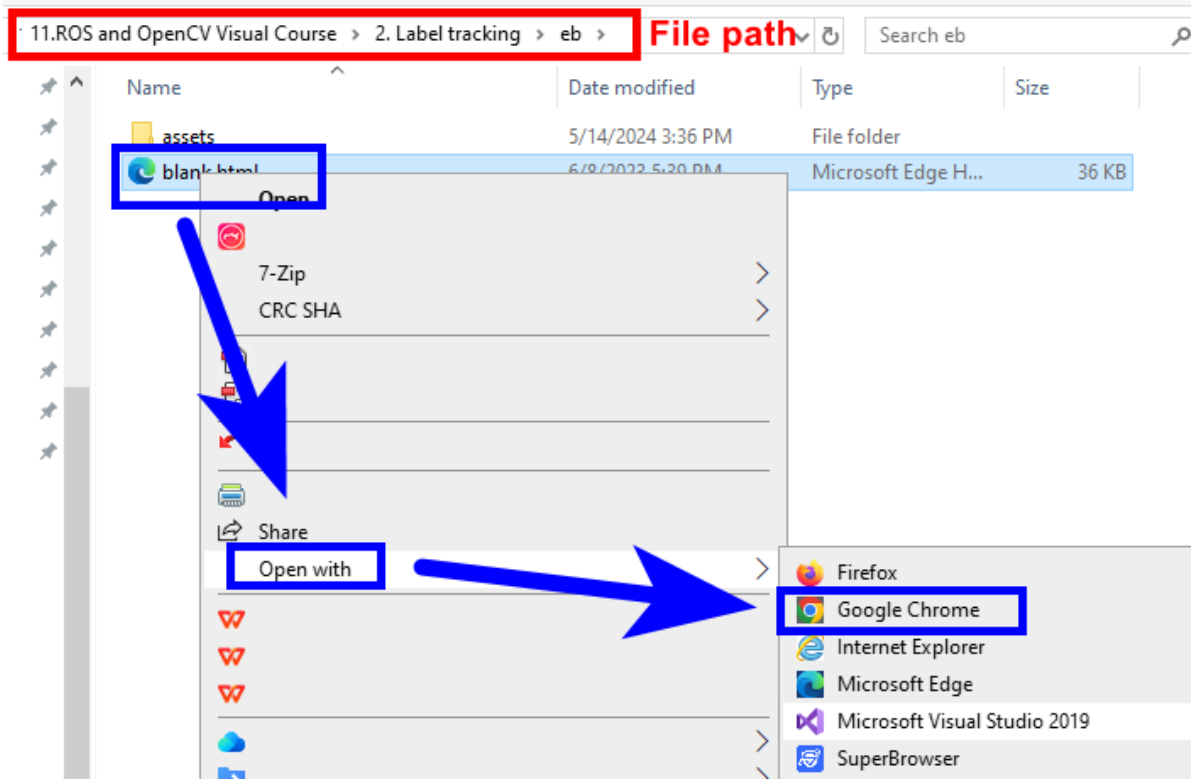
Then start rosbridge and enter the following command

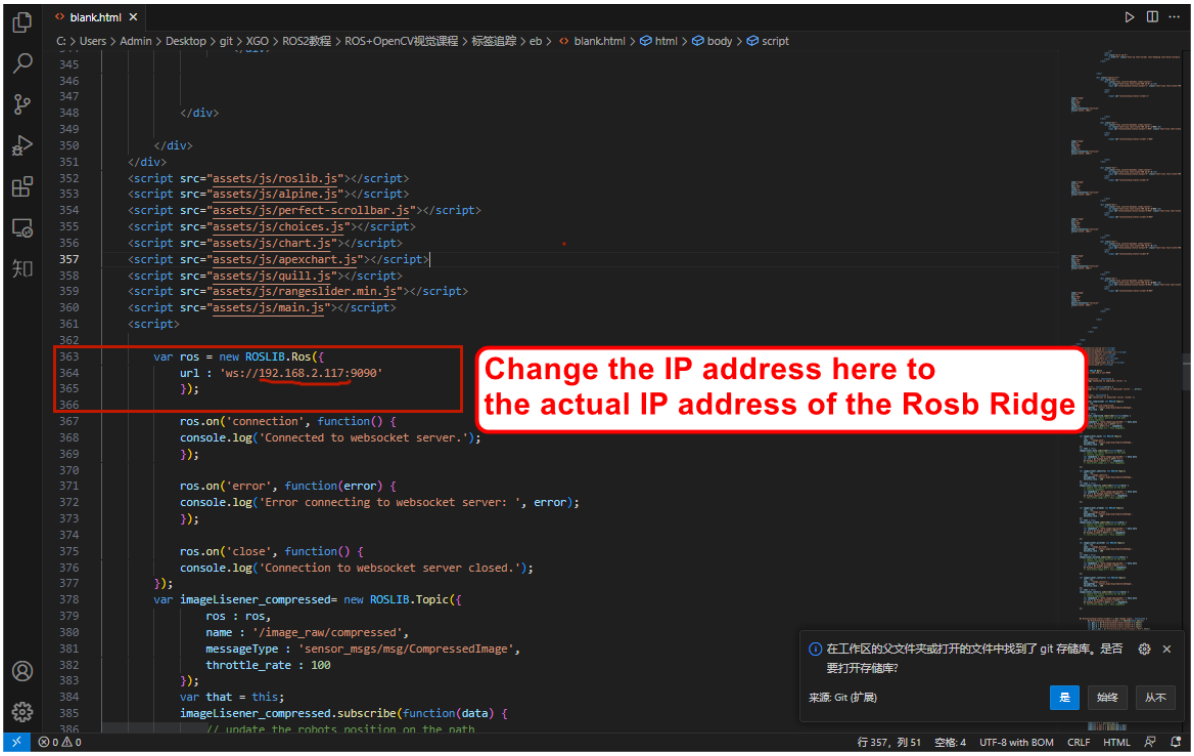
```
ros2 launch rosbridge_server rosbridge_websocket_launch.xml
```

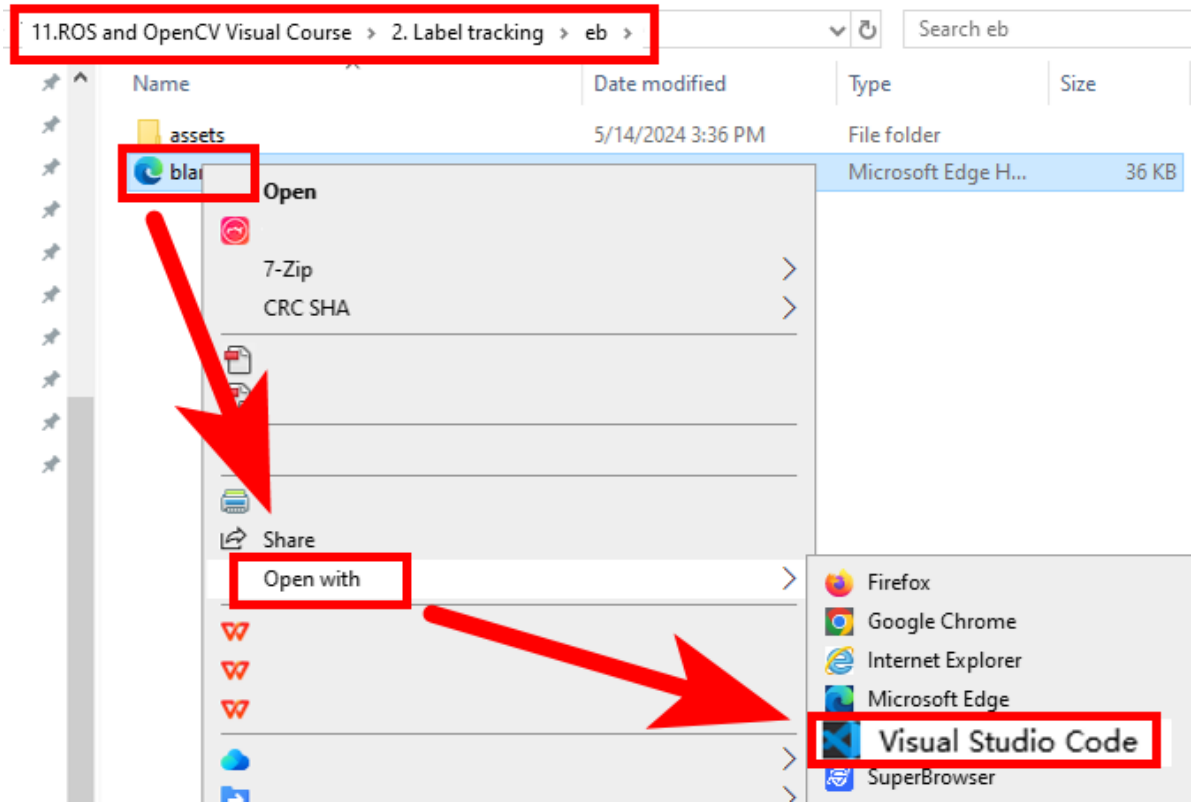


Find the blank.html file in the eb folder in the updated directory of this tutorial and open it with Google Chrome.

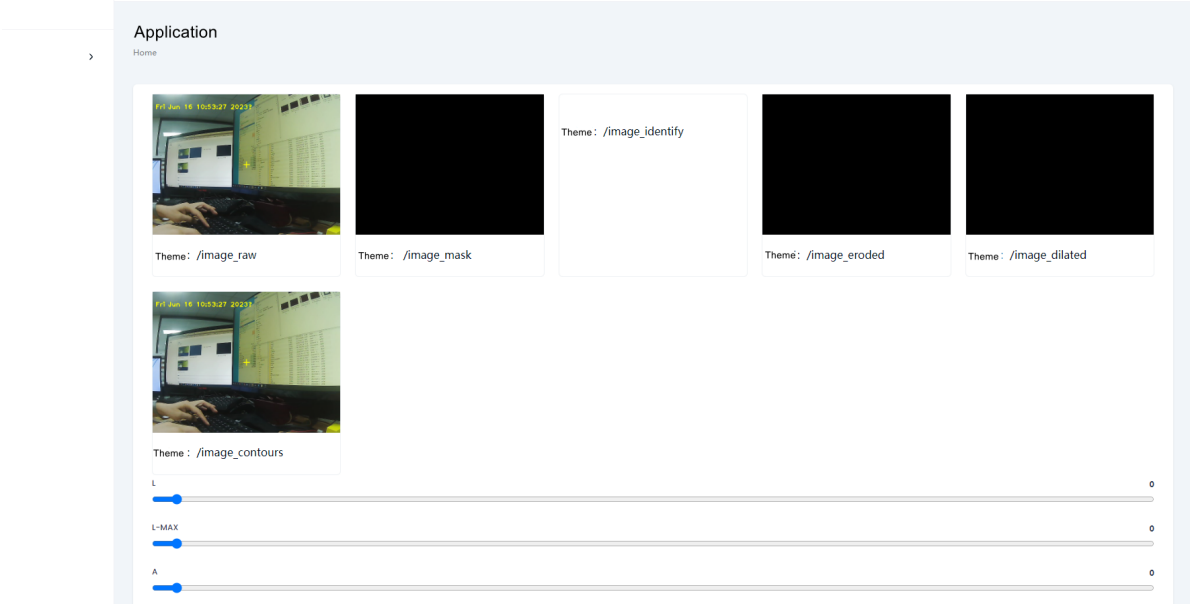
Note: The IP address of rosbridge needs to be set here. Obtain the IP address of the virtual machine, then open the blank.html file, modify the IP address of line 363 and save it, as shown in the figure below.







As shown in the picture below, you can see the pictures transmitted by the camera.



Then we set the LAB value of the color through the slider.

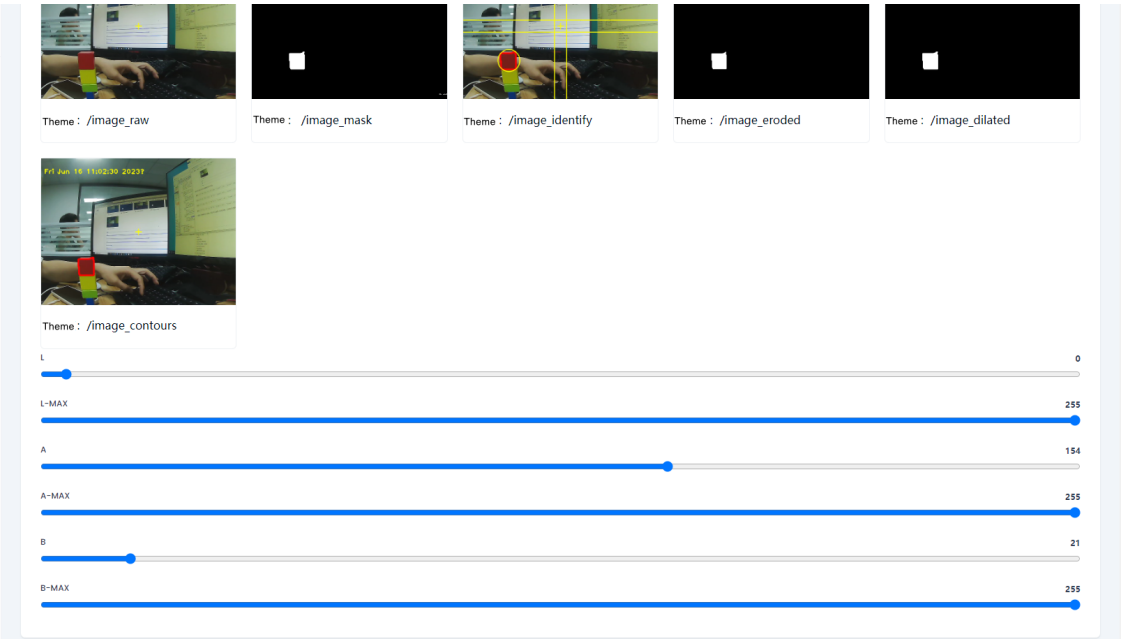
```
Yellow: {"l":96, "a": 55, "b":188, "l_max": 252 , "a_max": 141, "b_max": 255}
```

```
Red: {"l":0, "a": 155, "b":21, "l_max": 255 , "a_max": 255, "b_max": 255}
```

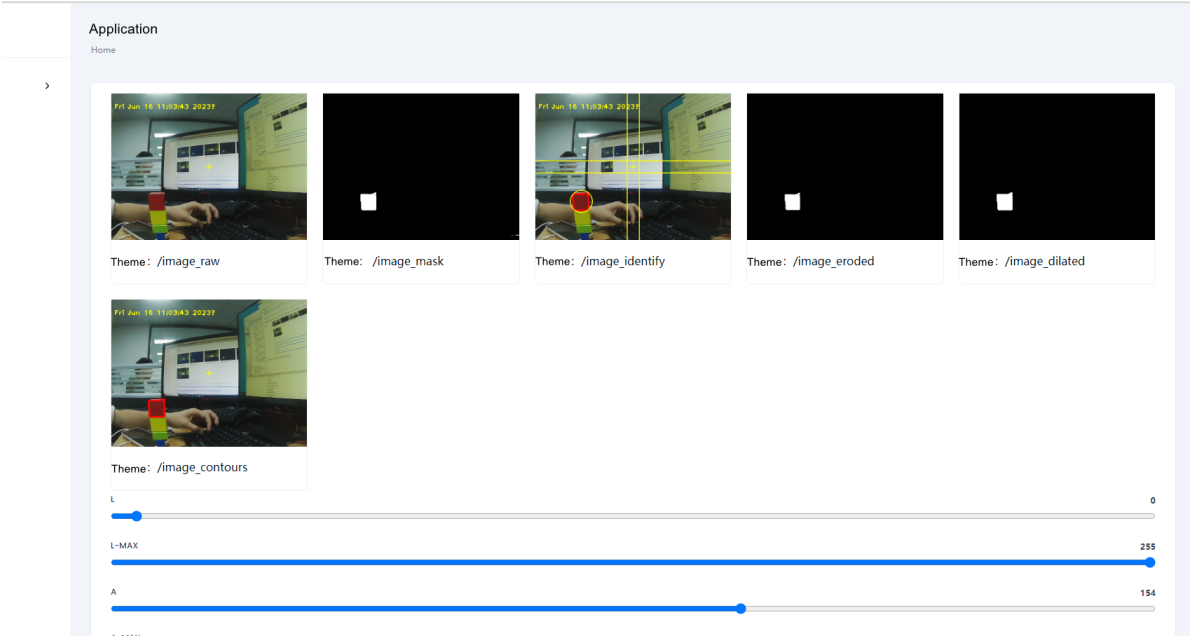
```
Green: {"l":26, "a": 7, "b":170, "l_max": 143 , "a_max": 110, "b_max": 255}
```

```
Blue: {"l":0, "a": 0, "b":0, "l_max": 255 , "a_max": 255, "b_max": 102}
```

Above are the LAB values of several colors. We can choose one to set. For example, we set red, as shown in the figure below, and move the slider.



In the picture we can see that the red square has been identified.



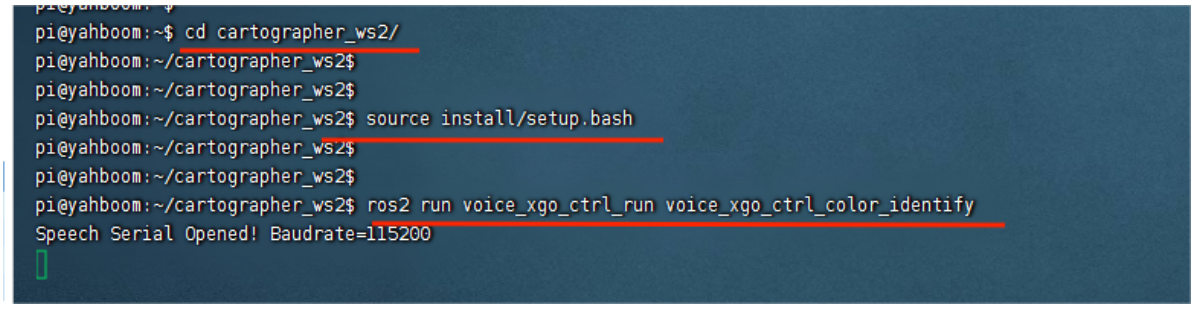
In the shell terminal, we open a new terminal and enter the command in the terminal

Note: The terminal here is the terminal connected to the mechanical dog, not the terminal of the virtual machine.

```
#pi4
cd cartographer_ws2/
source install/setup.bash
ros2 run voice_xgo_ctrl_run voice_xgo_ctrl_color_identify

#pi5 (need to enter docker terminal)
cd yahbomcar_ws/
source install/setup.bash
ros2 run voice_xgo_ctrl_run voice_xgo_ctrl_color_identify
```

PI4 version running command icon:

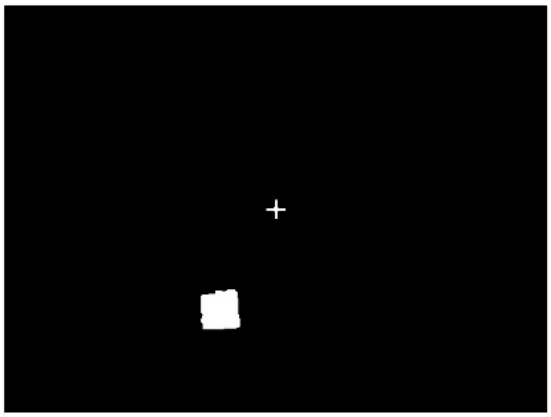


Then he said to the mechanical dog: "Hello, Yahboom"

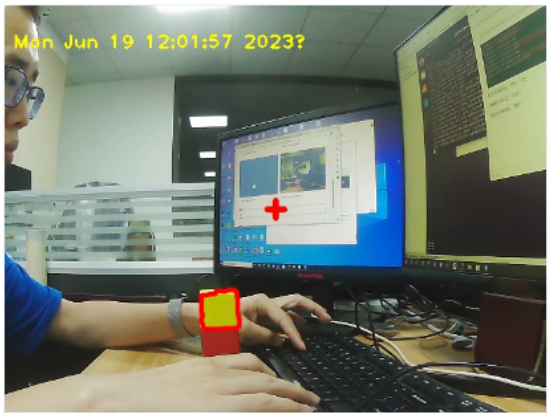
The robot dog will respond: "Yes."

Then say to the mechanical dog: "Yellow"

Yellow is recognized as shown in the picture below



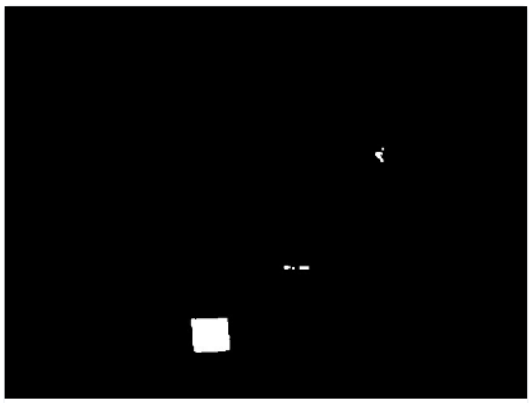
Theme: /image_dilated



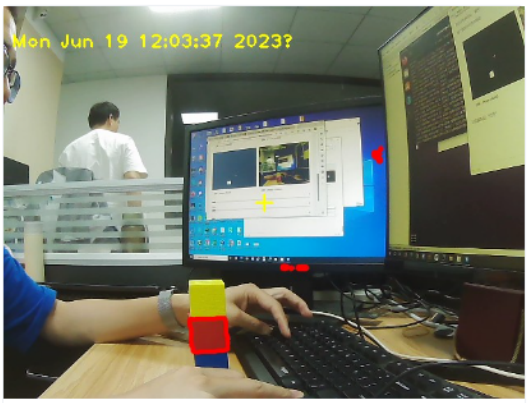
Theme: /image_contours

Say "red" to the mechanical dog

As shown in the figure below, red is recognized



Theme: /image_dilated



Theme: /image_contours