Robot keyboard control

Note: The Raspberry Pi needs to be in the same LAN as the car, and the ROS_DOMAIN_ID needs to be the same. You can check the [microROS control board parameter configuration] to set the IP and ROS_DOMAIN_ID on the board.

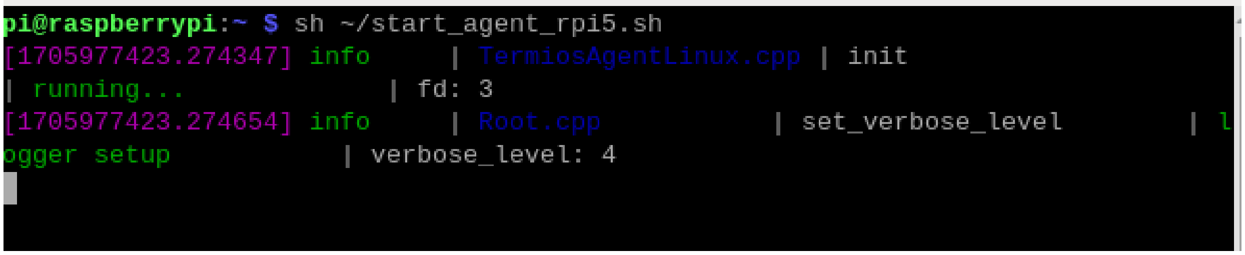
1. Program function description

After the program is started, the car movement can be controlled through the keyboard.

2. Start and connect to the agent

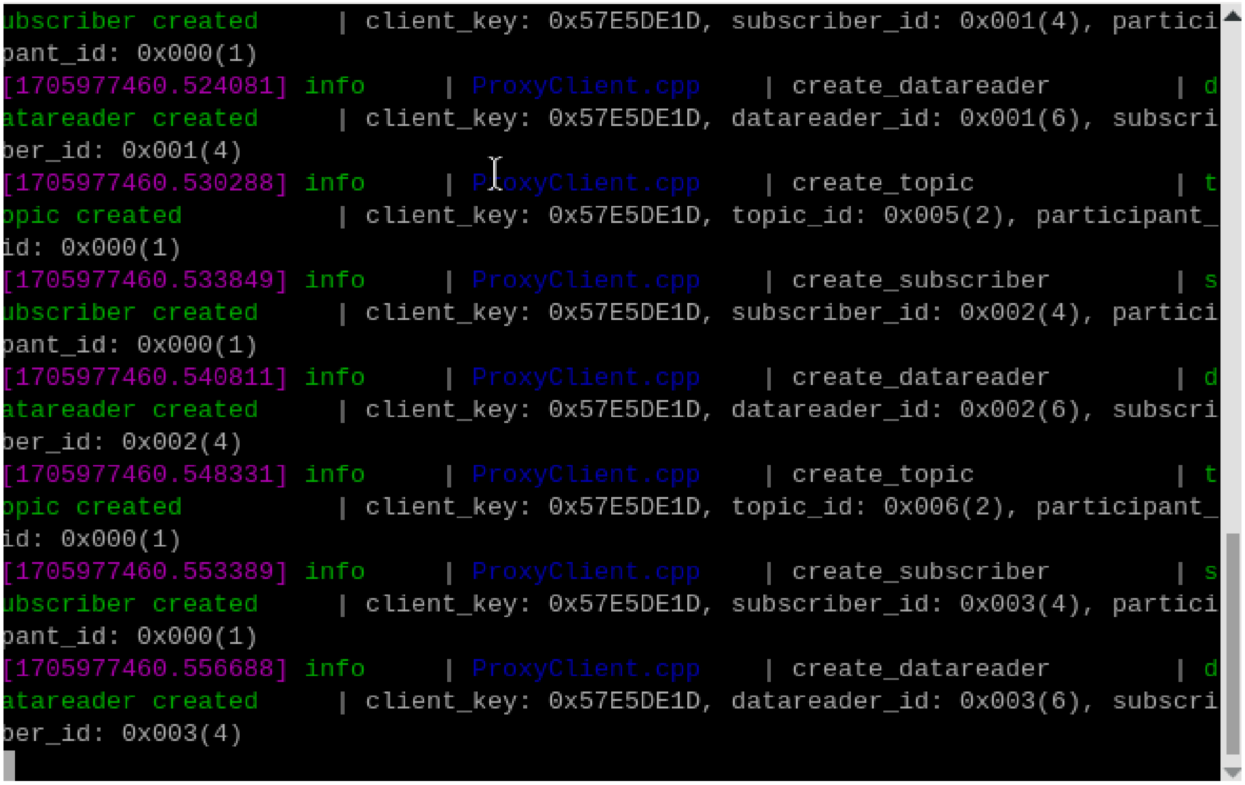
After successfully starting the Raspberry Pi, enter the following command to start the agent,

```
sh ~/start_agent_rpi5.sh
```



```
pi@raspberrypi:~ $ sh ~/start_agent_rpi5.sh
[1705977423.274347] info     | TermiosAgentLinux.cpp | init
| running...             | fd: 3
[1705977423.274654] info     | Root.cpp             | set_verbose_level       | l
ogger setup           | verbose_level: 4
```

Then, turn on the car switch and wait for the car to connect to the agent. The connection is successful, as shown in the figure below.



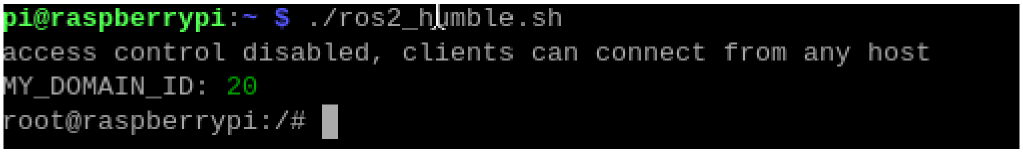
```
ubscriber created      | client_key: 0x57E5DE1D, subscriber_id: 0x001(4), partici
pant_id: 0x000(1)
[1705977460.524081] info     | ProxyClient.cpp     | create_datareader       | d
atareader created      | client_key: 0x57E5DE1D, datareader_id: 0x001(6), subscri
ber_id: 0x001(4)
[1705977460.530288] info     | ProxyClient.cpp     | create_topic            | t
opic created           | client_key: 0x57E5DE1D, topic_id: 0x005(2), participant_
id: 0x000(1)
[1705977460.533849] info     | ProxyClient.cpp     | create_subscriber       | s
ubscriber created      | client_key: 0x57E5DE1D, subscriber_id: 0x002(4), partici
pant_id: 0x000(1)
[1705977460.540811] info     | ProxyClient.cpp     | create_datareader       | d
atareader created      | client_key: 0x57E5DE1D, datareader_id: 0x002(6), subscri
ber_id: 0x002(4)
[1705977460.548331] info     | ProxyClient.cpp     | create_topic            | t
opic created           | client_key: 0x57E5DE1D, topic_id: 0x006(2), participant_
id: 0x000(1)
[1705977460.553389] info     | ProxyClient.cpp     | create_subscriber       | s
ubscriber created      | client_key: 0x57E5DE1D, subscriber_id: 0x003(4), partici
pant_id: 0x000(1)
[1705977460.556688] info     | ProxyClient.cpp     | create_datareader       | d
atareader created      | client_key: 0x57E5DE1D, datareader_id: 0x003(6), subscri
ber_id: 0x003(4)
```

3. Enter the car docker

Open another terminal and enter the following command to enter docker.

```
sh ros2_humble.sh
```

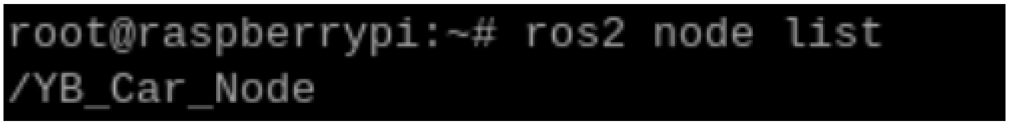
When the following interface appears, you have successfully entered docker. Now you can control the car through commands.



```
pi@raspberrypi:~ $ ./ros2_humble.sh
access control disabled, clients can connect from any host
MY_DOMAIN_ID: 20
root@raspberrypi:/#
```

Enter the following command in the terminal to query the agent node.

```
ros2 node list
```

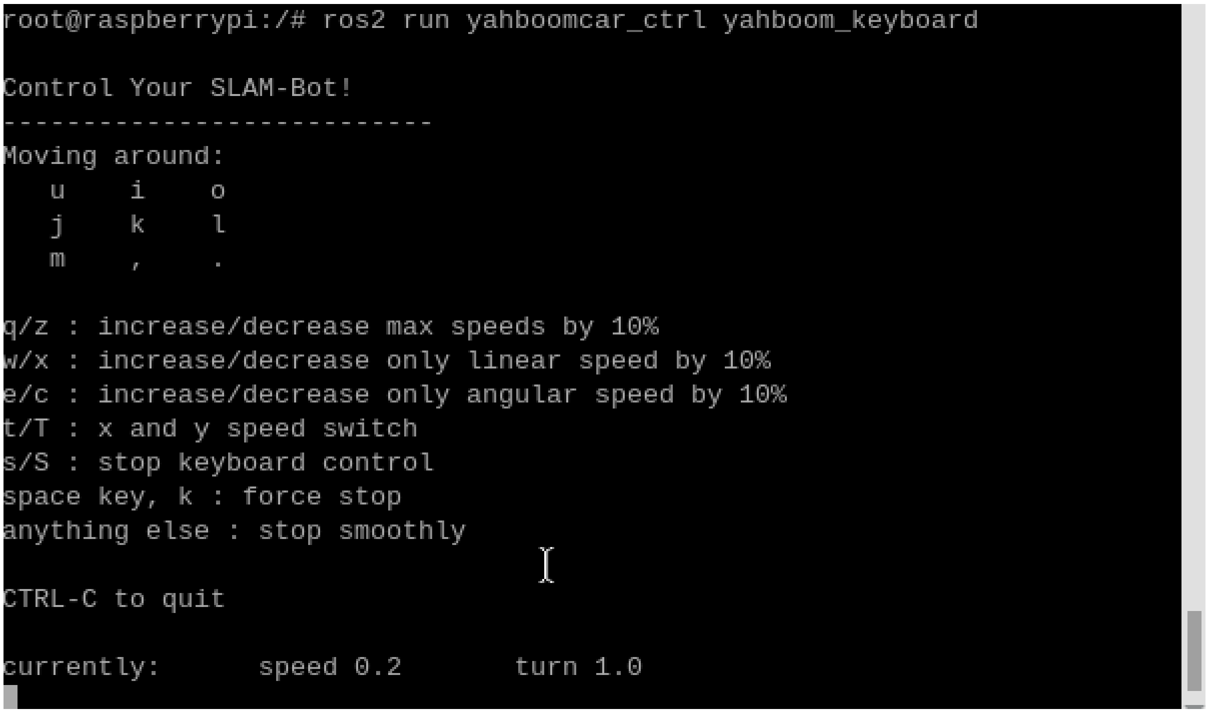


```
root@raspberrypi:~# ros2 node list
/YB_Car_Node
```

4. Start the keyboard control program

Enter the following command in the terminal to start the keyboard control program.

```
ros2 run yahboomcar_ctrl yahboom_keyboard
```



```
root@raspberrypi:/# ros2 run yahboomcar_ctrl yahboom_keyboard

Control Your SLAM-Bot!
---------------------------
Moving around:
   u    i    o
   j    k    l
   m    ,    .

q/z : increase/decrease max speeds by 10%
w/x : increase/decrease only linear speed by 10%
e/c : increase/decrease only angular speed by 10%
t/T : x and y speed switch
s/S : stop keyboard control
space key, k : force stop
anything else : stop smoothly

CTRL-C to quit

currently:      speed 0.2       turn 1.0
```

The keyboard key descriptions are as follows.

Directional control

keyboard keys	Function Description	keyboard keys	Function Description
【i】or【I】	【linear，0】	【u】or【U】	【linear，angular】
【，】	【-linear，0】	【o】or【O】	【linear，-angular】
【j】or【J】	【0，linear】	【m】or【M】	【-linear，-angular】
【l】or【L】	【0，-linear】	【.】	【-linear，angular】

That is to say, press the **[i]** key to move forward, press the **[,]** key to move backward, press the **[l]** key to rotate to the right, and press the **[j]** key to rotate to the left. And so on.

speed control

keyboard keys	Function Description	keyboard keys	Function Description
【q】	Linear speed and angular speed increased by 10%	【z】	Linear speed and angular speed are reduced by 10%
【w】	Linear speed increased by 10%	【x】	Line speed reduced by 10%
【e】	Angular speed increased by 10%	【c】	Angular speed reduced by 10%
【t】	Linear speed X-axis and Y-axis direction switching	【s】	Stop keyboard control

Note: Since the car has a four-wheel drive structure with ordinary tires and cannot move sideways, the [t] button has no meaning. Before each use of keyboard control, you need to click on the terminal that starts the program, otherwise the key event cannot be detected.