Introduction and use of lidar

1. Program function description

After the program runs, drive the lidar, turn on the radar scanning data, and visualize the lidar scanning data in rviz.

2. Program code reference path

The source code of this function is located at,

```
#pi4version
#MS200RADAR
/home/pi/cartographer_ws2/src/oradar_lidar/launch/ms200_scan.launch.py
#MS200 Radar Visualization
/home/pi/cartographer_ws2/src/oradar_lidar/launch/ms200_scan_view.launch.py

#pi5version
#MS200RADAR
/root/yahboomcar_ws/src/oradar_lidar/launch/ms200_scan.launch.py
#MS200 Radar Visualization
/root/yahboomcar_ws/src/oradar_lidar/launch/ms200_scan_view.launch.py
```

3. Program startup

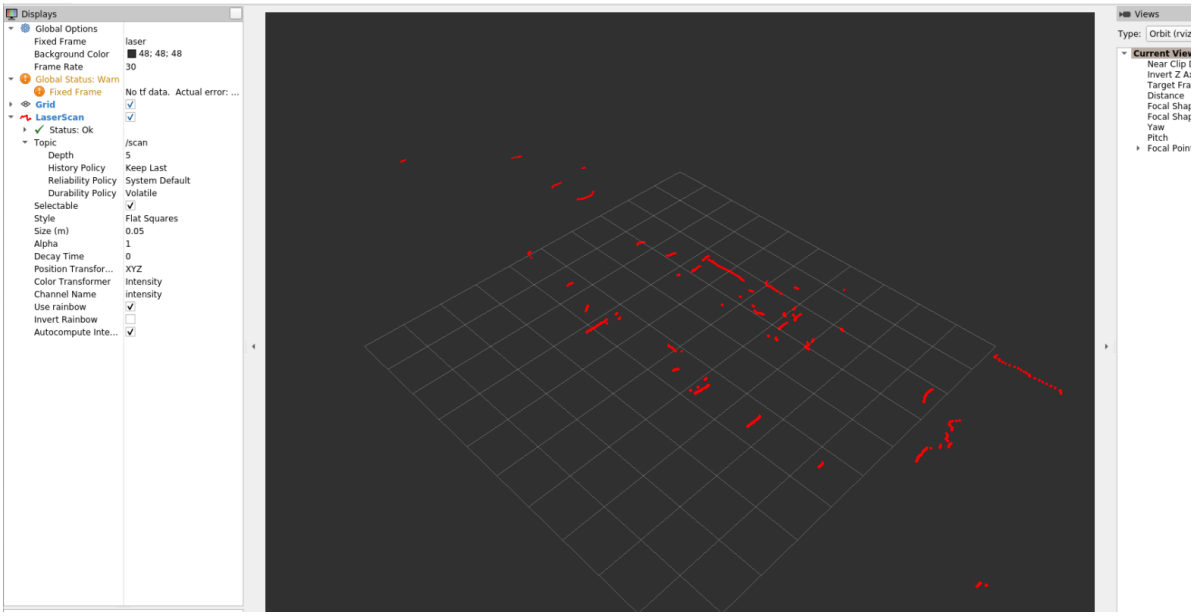
PI4 version driver:

Since the radar chassis has started automatically after powering on, if you want to start the radar separately, please stop the self-starting service first and enter the command in the terminal:

```
sudo systemctl stop YahboomStart.service
```

```
cd ~/cartographer_ws2
source install/setup.bash
#Start MS200 radar
ros2 launch oradar_lidar ms200_scan.launch.py
#Start MS200 radar + rviz visualization data
ros2 launch oradar_lidar ms200_scan_view.launch.py
```

Run screenshot, take starting "MS200 Radar + Visualization" as an example,



You can print radar scan data through the following command,

```
ros2 topic echo /scan
```

```
header:
  stamp:
    sec: 1681983563
    nanosec: 123403675
  frame_id: laser
angle_min: -3.1241390705108643
angle_max: 3.1415927410125732
angle_increment: 0.005806980188935995
time_increment: 0.00011245403584325686
scan_time: 0.1213379055261612
range_min: 0.15000000596046448
range_max: 12.0
ranges:
- 3.0320000648498535
- 3.0399999618530273
- 3.055999994277954
- 2.559999942779541
- 2.559999942779541
- 2.559999942779541
- 2.5480000972747803
- 2.5480000972747803
- 2.5399999618530273
```

PI5 version driver:

Open a terminal in the root directory of the Raspberry Pi and enter the following command to enter docker:

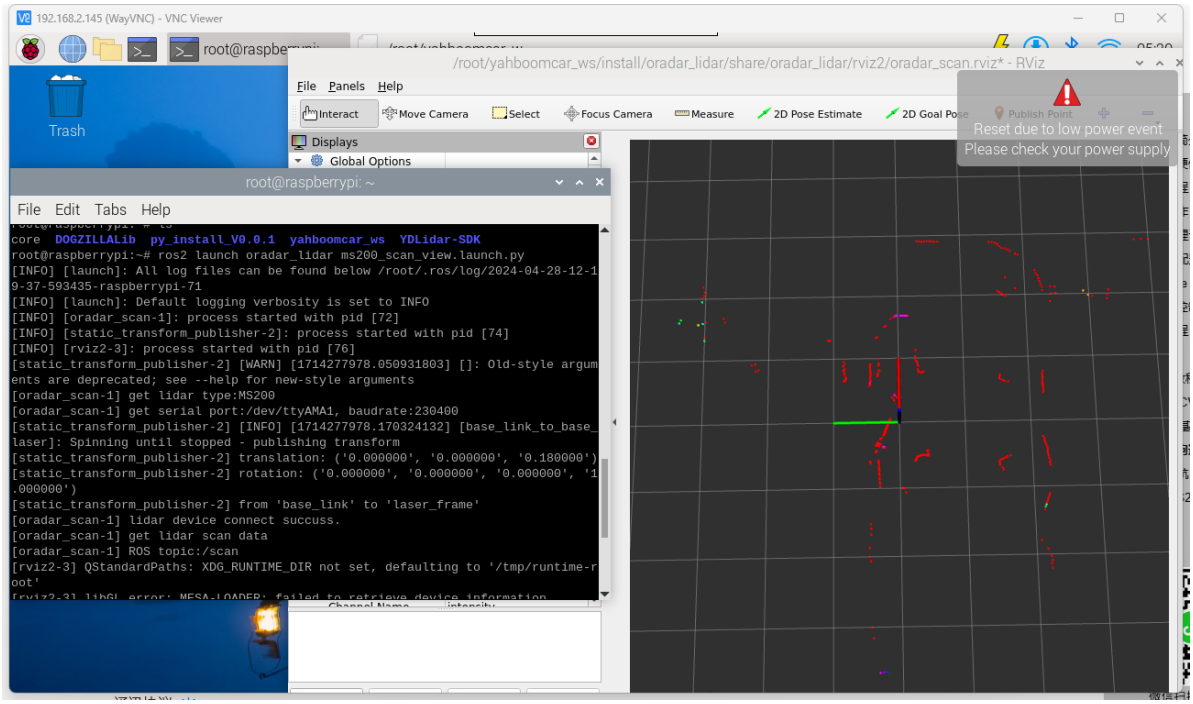
```
./run_humble.sh
```

```
pi@raspberrypi:~ $ ./run_humble.sh
access control disabled, clients can connect from any host
root@raspberrypi:/# cd
root@raspberrypi:~# ls
core  DOGZILLALib  py_install_V0.0.1  yahboomcar_ws  YDLidar-SDK
root@raspberrypi:~#
```

Then enter the command in the docker terminal:

```
#Start MS200 radar
ros2 launch oradar_lidar ms200_scan.launch.py
#Start MS200 radar + rviz visualization data
ros2 launch oradar_lidar ms200_scan_view.launch.py
```

Run screenshot, take starting "MS200 Radar + Visualization" as an example,



You need to enter the same docker container before you can print the radar scan data.

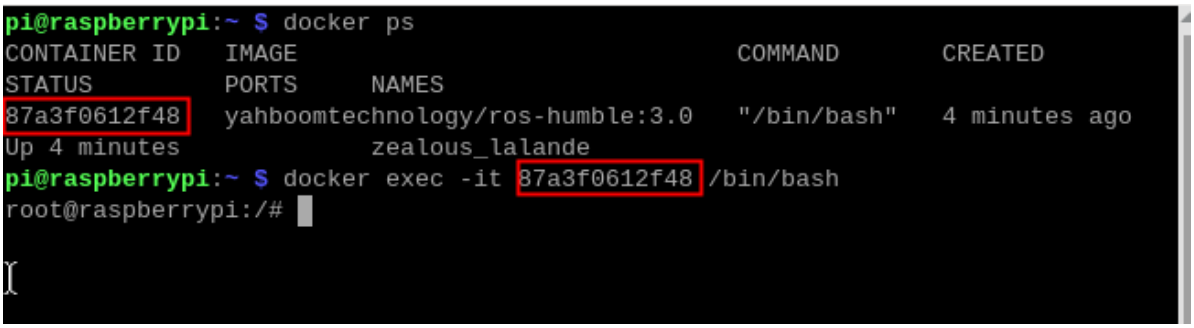
Enter the same docker step:

Open a terminal in the root directory and enter the command to view the ID of the currently running docker container.

```
docker ps
```

You can know that the ID shown in the box is, then enter the following command to enter the same docker,

```
docker exec -it 87a3f0612f48 /bin/bash
```



You can then print the radar scan data through the following command:

```
ros2 topic echo /scan
```