# 2.Handheld Lidar Mapping

This function requires starting the program in the slam_gmapping function package. The source code is located in the [yahboomcar_ws] folder.

Here we use the matching virtual machine to explain how to start the program. If you want to put it on your own RDK motherboard, put yahboomcar_ws in the root directory and compile it.

## 2.1 Start lidar

Input following command in the terminal.

```
ros2 launch ydlidar_ros2_driver ydlidar_launch.py
```

## 2.2 Release static odom conversion

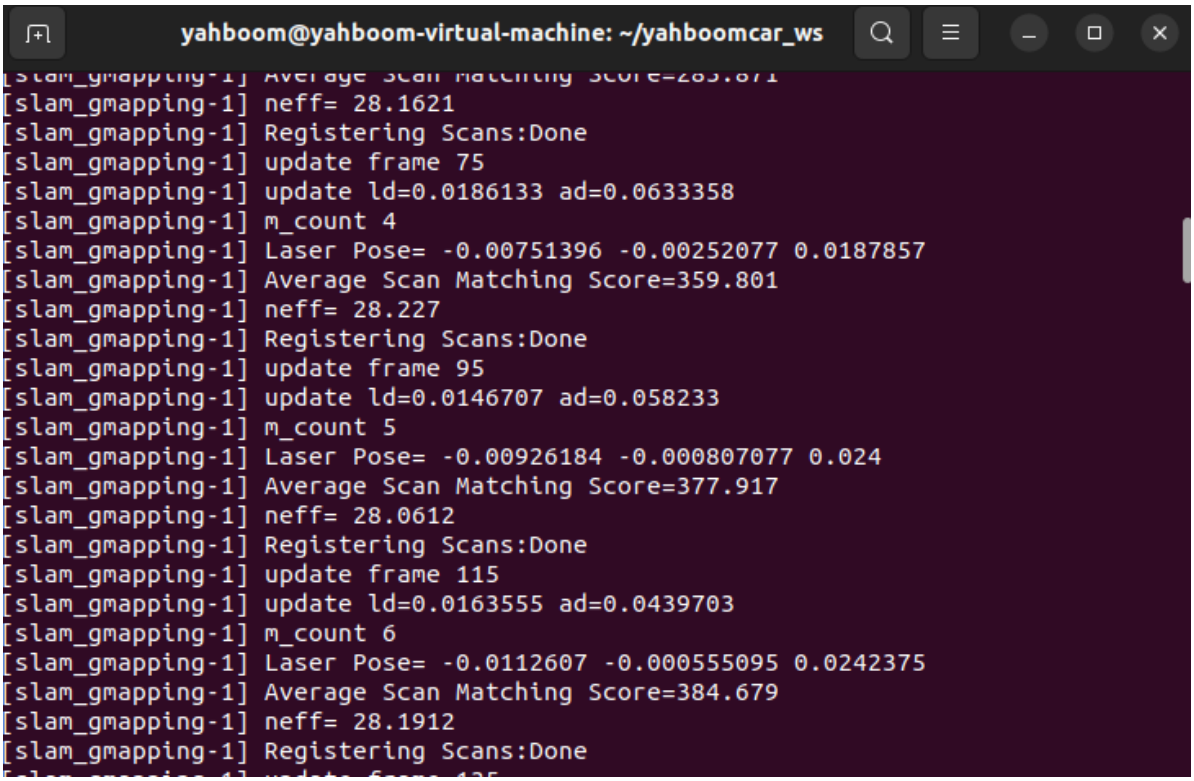
Input following command in the terminal.

```
ros2 launch rf2o_laser_odometry rf2o_laser_odometry.launch.py
```

## 2.3 Start gmapping mapping

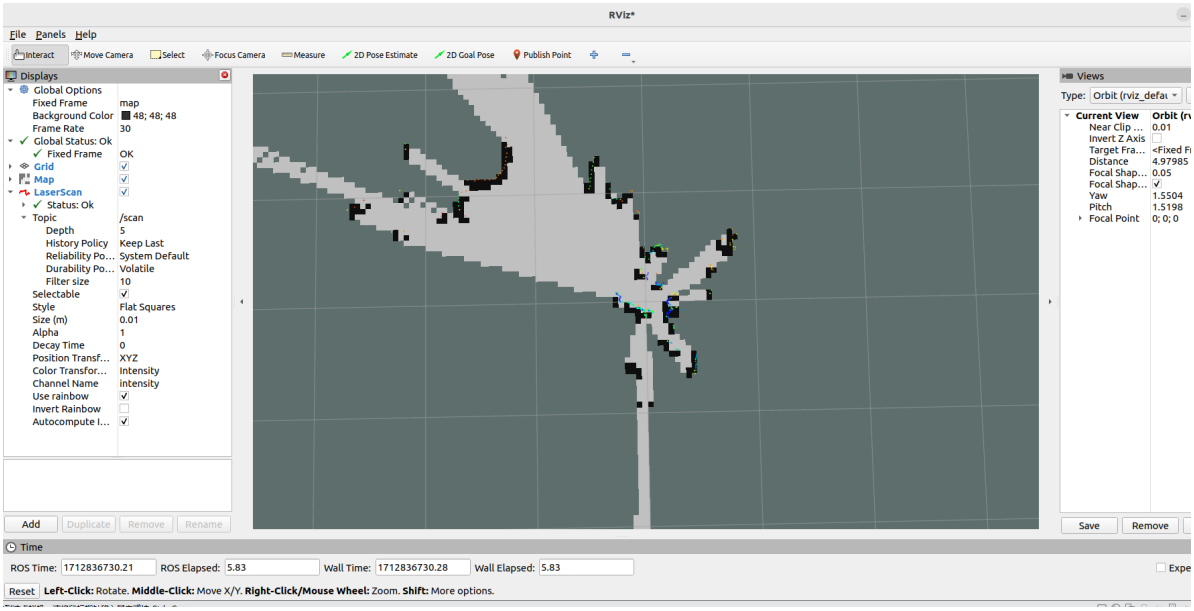
Input following command in the terminal.

```
ros2 launch slam_gmapping slam_gmapping.launch.py
```




rviz displays as follows.

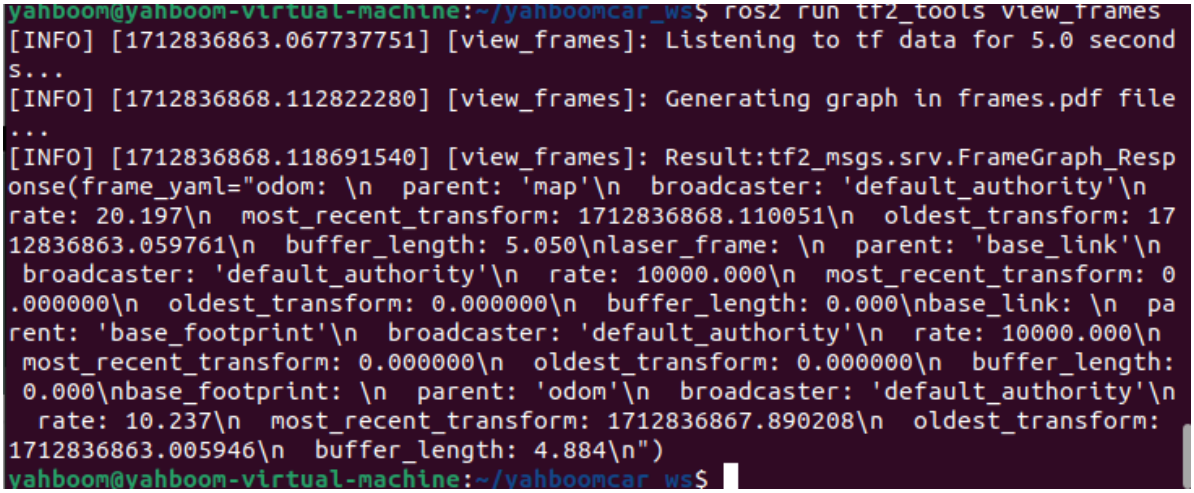
If there is no map display, click file --> Open config --> sunrise --> yahboomcar_ws --> src --> slam_gmapping --> rviz --> map_view.rviz in the upper left corner to open the rviz map display configuration.



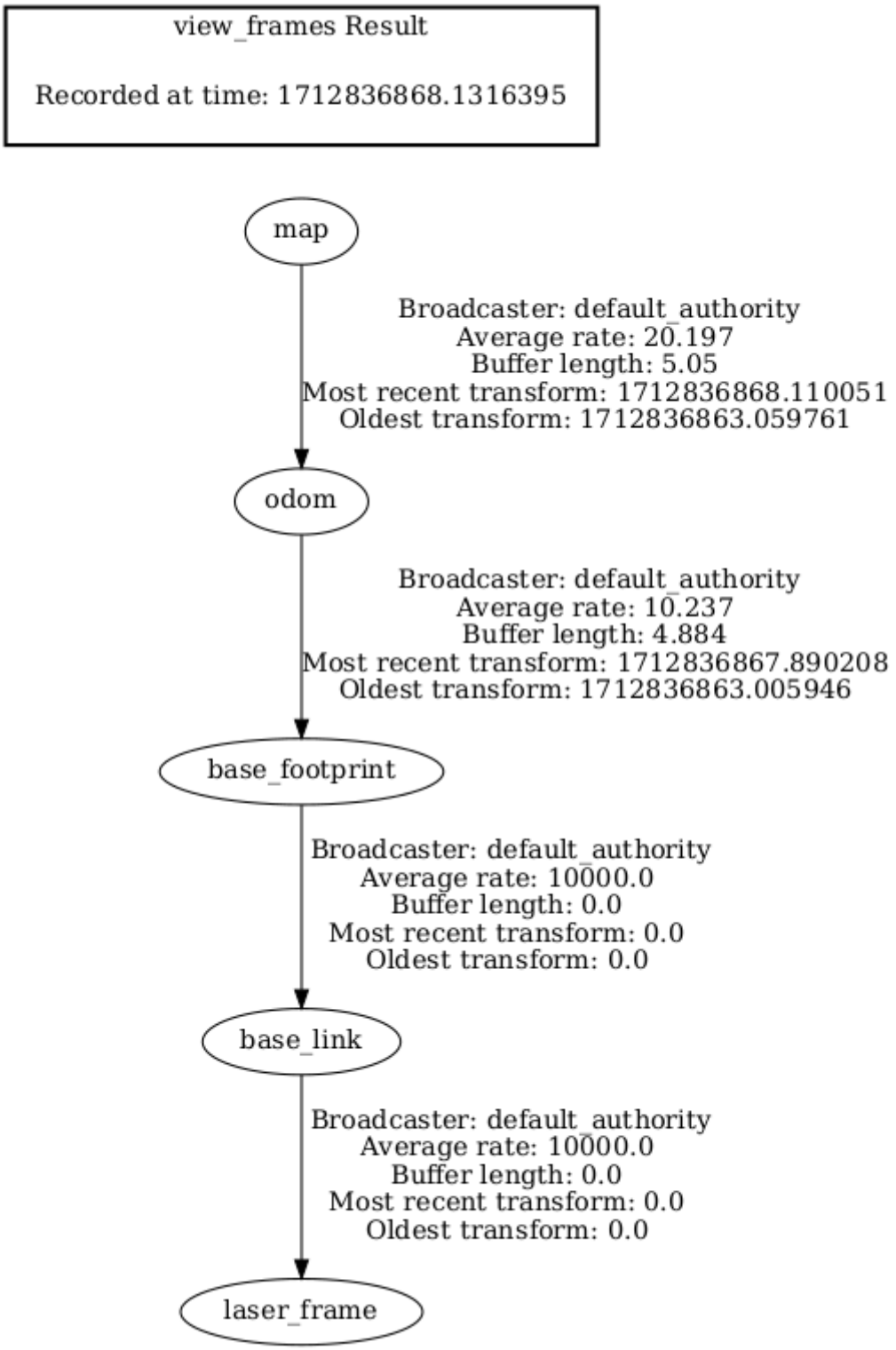

## 2.4 View TF tree

Input following command in the terminal.

```
ros2 run tf2_tools view_frames
```




The system will generate a frames.pdf file in the directory where the command terminal is started. This is the generated TF tree.


view_frames Result
Recorded at time: 1712836868.1316395
map
Broadcaster: default_authority
Average rate: 20.197
Buffer length: 5.05
Most recent transform: 1712836868.110051
Oldest transform: 1712836863.059761
odom
Broadcaster: default_authority
Average rate: 10.237
Buffer length: 4.884
Most recent transform: 1712836867.890208
Oldest transform: 1712836863.005946
base_footprint
Broadcaster: default_authority
Average rate: 10000.0
Buffer length: 0.0
Most recent transform: 0.0
Oldest transform: 0.0
base_link
Broadcaster: default_authority
Average rate: 10000.0
Buffer length: 0.0
Most recent transform: 0.0
Oldest transform: 0.0
laser_frame