

2. Handheld lidar mapping

This function needs to start the program in the slam_gmapping function package. The source code is located in the [yahboomcar_ws] source code. Here we use the supporting virtual machine to explain how to start the program. If you want to put it on your own motherboard, put yahboomcar_ws in the root directory and compile it.

2.1. Start radar

Terminal input,

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

2.2. Release static odom conversion

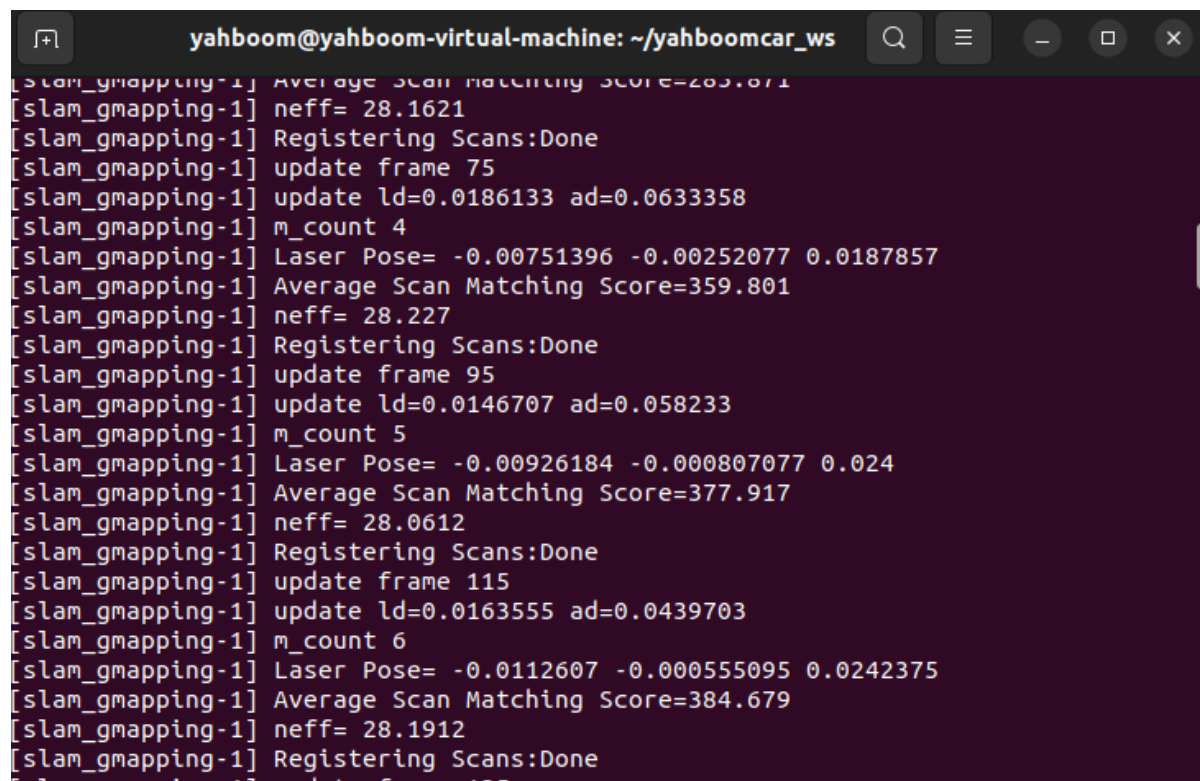
Terminal input,

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

2.3. Start gmapping mapping

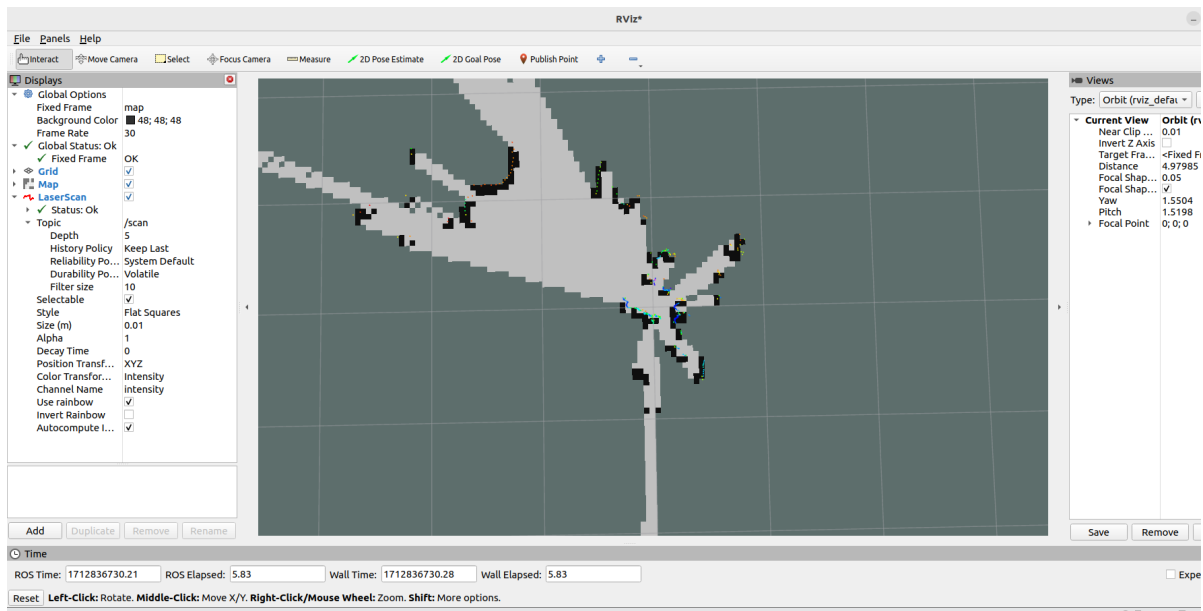
Terminal input,

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



```
yahboom@yahboom-virtual-machine: ~/yahboomcar_ws
[slam_gmapping-1] Average Scan Matching Score=285.871
[slam_gmapping-1] neff= 28.1621
[slam_gmapping-1] Registering Scans:Done
[slam_gmapping-1] update frame 75
[slam_gmapping-1] update ld=0.0186133 ad=0.0633358
[slam_gmapping-1] m_count 4
[slam_gmapping-1] Laser Pose= -0.00751396 -0.00252077 0.0187857
[slam_gmapping-1] Average Scan Matching Score=359.801
[slam_gmapping-1] neff= 28.227
[slam_gmapping-1] Registering Scans:Done
[slam_gmapping-1] update frame 95
[slam_gmapping-1] update ld=0.0146707 ad=0.058233
[slam_gmapping-1] m_count 5
[slam_gmapping-1] Laser Pose= -0.00926184 -0.000807077 0.024
[slam_gmapping-1] Average Scan Matching Score=377.917
[slam_gmapping-1] neff= 28.0612
[slam_gmapping-1] Registering Scans:Done
[slam_gmapping-1] update frame 115
[slam_gmapping-1] update ld=0.0163555 ad=0.0439703
[slam_gmapping-1] m_count 6
[slam_gmapping-1] Laser Pose= -0.0112607 -0.000555095 0.0242375
[slam_gmapping-1] Average Scan Matching Score=384.679
[slam_gmapping-1] neff= 28.1912
[slam_gmapping-1] Registering Scans:Done
[slam_gmapping-1] update frame 135
```

rviz displays as follows,



2.4. View TF tree

Terminal input,

```
ros2 run tf2_tools view_frames
```

```
yanboom@yanboom-virtual-machine:~/yanboomcar_ws$ ros2 run tf2_tools view_frames
[INFO] [1712836863.067737751] [view_frames]: Listening to tf data for 5.0 second
S...
[INFO] [1712836868.112822280] [view_frames]: Generating graph in frames.pdf file
...
[INFO] [1712836868.118691540] [view_frames]: Result:tf2_msgs.srv.FrameGraph_Response(frame_yaml="odom: \n parent: 'map'\n broadcaster: 'default_authority'\n
rate: 20.197\n most_recent_transform: 1712836868.110051\n oldest_transform: 17
12836863.059761\n buffer_length: 5.050\nlaser_frame: \n parent: 'base_link'\n
broadcaster: 'default_authority'\n rate: 10000.000\n most_recent_transform: 0
.000000\n oldest_transform: 0.000000\n buffer_length: 0.000\nbase_link: \n pa
rent: 'base_footprint'\n broadcaster: 'default_authority'\n rate: 10000.000\n
most_recent_transform: 0.000000\n oldest_transform: 0.000000\n buffer_length:
0.000\nbase_footprint: \n parent: 'odom'\n broadcaster: 'default_authority'\n
rate: 10.237\n most_recent_transform: 1712836867.890208\n oldest_transform:
1712836863.005946\n buffer_length: 4.884\n")
vahboom@vahboom-virtual-machine:~/vahboomcar_ws$
```

A frames.pdf file will be generated in the directory where the command terminal is started. This is the generated TF tree.

view_frames Result

Recorded at time: 1712836868.1316395

