



Universidade de Aveiro
Mestrado em Robótica e Sistemas Inteligentes
Robótica Móvel

Lesson 9: SLAM

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In this assignment we will use ROS to test several different SLAM methods and build a map of simulated environment. We will test 4 SLAM methods: gMapping, Hector, Lama and cartographer. You should follow the evolution of the ROS node graph, tf tree and list of topics as you follow the steps of this assignment.

1. gMapping

1.1. Start the turtlebot3 simulated world using the waffle_pi turtlebot model:

```
export TURTLEBOT3_MODEL=waffle_pi  
roslaunch turtlebot3_gazebo turtlebot3_world.launch
```

1.2. Visualize ROS node graph, tf tree and list of topics using rqt (or other).

1.3. Start robot_state_publisher:

```
roslaunch robot_state_publisher robot_state_publisher
```

Changes in tf tree?

1.4. Use teleop_key to control the robot in the simulated world:

```
roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch
```

1.5. Run gmapping:

```
roslaunch gmapping slam_gmapping
```

Check all changes in ros node graph.

1.6. Run rviz and visualize the current map and use teleop_key to build a complete map of the environment.

1.7. Save the map using the map_server:

```
roslaunch map_server map_saver -f mapname
```

2. Repeat the previous procedure for Hector mapping method. To run hector mapping use:

```
roslaunch hector_mapping hector_mapping
```

3. Repeat the previous procedure for Lama mapping method. To run lama mapping use:

```
roslaunch iris_lama_ros slam2d_ros
```

4. Repeat the previous procedure for cartographer.