

SICK Mobile Robot Presentation



Overview of Project

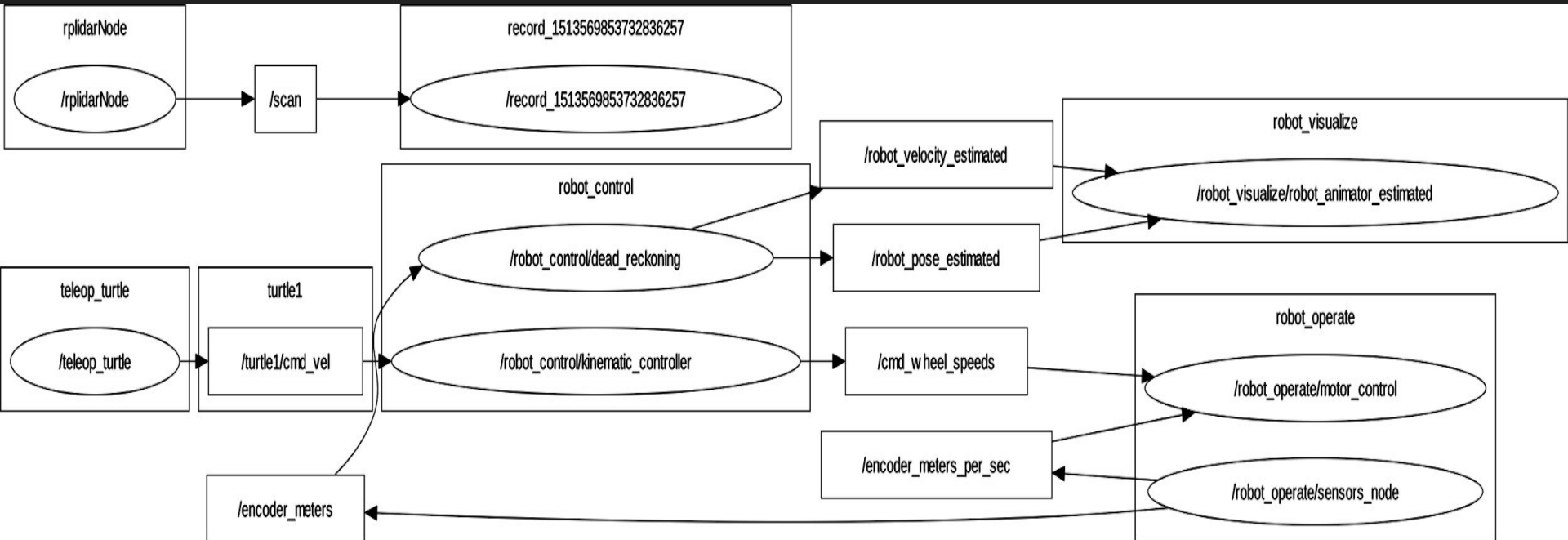
- Use SICK LIDAR to scan for objects directly to the left, right, and in front of the robot
- Have an easy way to obtain this data, and give the objects x, y coords.
- Use this data collected from the SICK LIDAR to orientate the robot in the middle of a hallway
- Create a topic in ROS that will let the robot know it's orientation wrt the hallway



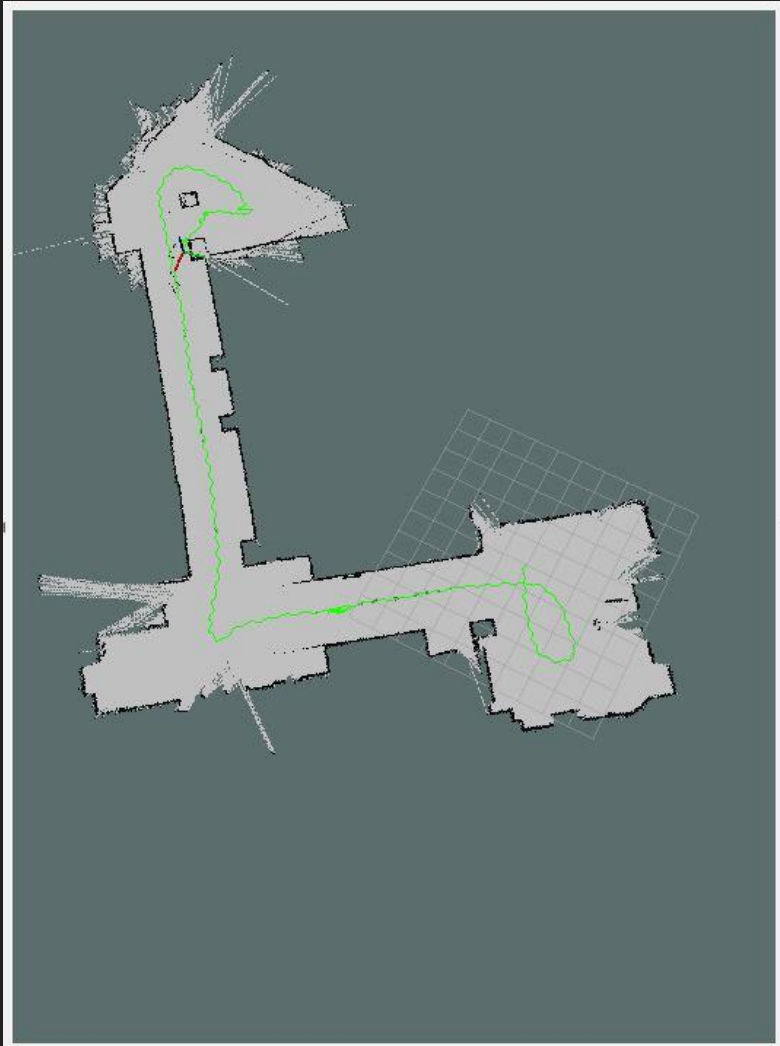
METHODS

RQT_GRAPH from lidar pi and motor pi

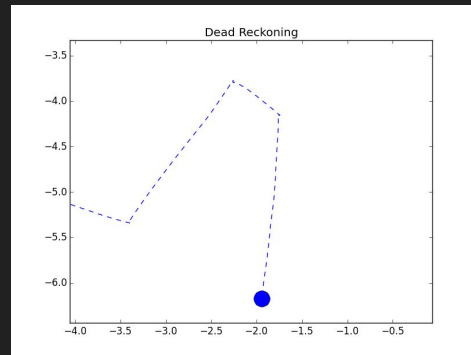
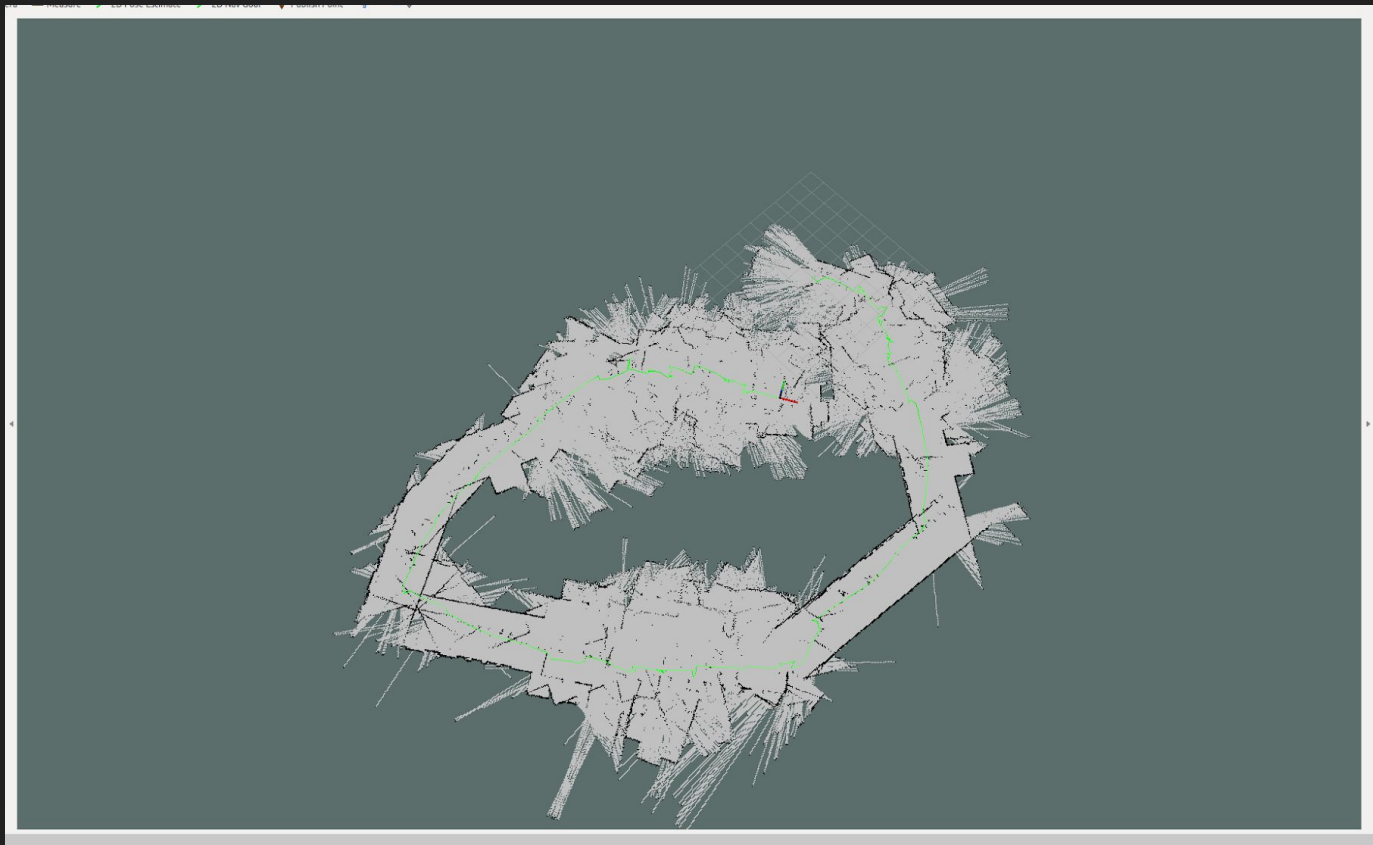
Rosbag recording of lidar node



Mapping



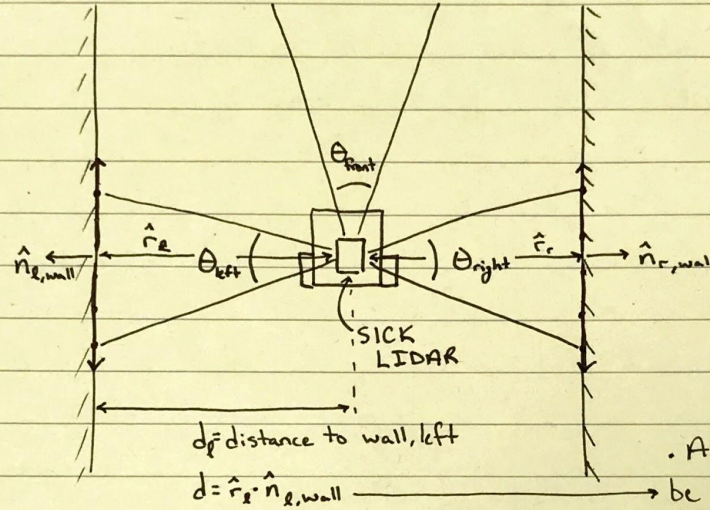
Mapping and Challenges





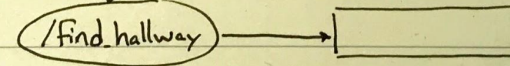
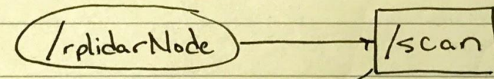
Biggest Hurdle

- Obtaining the data needed to create the walls of the hallway
- Then using the walls to orientate the robot in the hallway
- Turns in the hallway and intersections



• A line across the wall will be created by at least 3 data points collected by SICK LIDAR, the the middle of the line will be determined for (d)

• creating a topic to subscribe to the LIDAR /SCAN TOPIC, x,y coord. would be IDEAL



- distance to left wall
- distance to right wall
- determining orientation of hallway wrt robot

Resources Needed from SICK

- Any ROS nodes that subscribe to the /scan topic and output points in x, y coords.
- In the same node we can then use those points to create a line (the wall left or right)
- From there we can get the necessary vectors needed to orient the robot in the middle of the hallway
- The output of the node can then be a vector for the robot to follow

Milestones

- Create topic to subscribe to /scan and obtain x, y coords.
- Be able to orient the robot in the middle of the hallway
 - Make tests where we can see (d_left or d_right) either increase if we go away from the wall or decrease if we go closer to the wall
- Use vectors to give the robot an output vector to follow
- Determine what needs to be done at intersections and corners
- Test, test, and test
 - Debug anything that comes up