

Homework 2

Group 2

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Part 1

1. RobotModel, Camera, TF, DepthCloud2 and Map
2. Three purposes of RViz are to visualize the robot's configuration, to display sensor data and to allow basic interaction via GUI (<http://sdk.rethinkrobotics.com/wiki/Rviz>).

Three purposes of Gazebo are to model the physics of real world, to generate virtual sensor data and to test robotics algorithm without damaging the hardware (<http://gazebo.org/>).

RViz is a native package of ROS framework, while Gazebo is a standalone software; RViz visualizes sensor data, while Gazebo generates the sensor data. RViz can apply to data from either the real world or a simulator, while the simulator is just a model of the real world (same sources, plus hw instructions).

3. After command 1: 8 nodes.
After command 2: 15 nodes.
After Rviz: 16 nodes.

Part 2

1. Ideally, at least 6 navigation goals (4 corners of the playground and 2 fronts of the room doors) are required to build 90% of the environment. However, the Fetch robot was often trapped in the featureless corners in our simulation.

2. There are two topics from the depth camera:

/head_camera/depth_registered/points

/head_camera/depth_downsample/points

Experimentally, the least number of navigation to view the "Fetch Robotics Logo" is 2. The robot went to the coffee table on the left and turned around to see the logo.

