

## 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: 9 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 log.

