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Home Service Robot Project

Udacity Robotic Software Engineering Program

The home service robot project simulates a robot that autonomously picks up and drops off an object.

The packages used for this project are slam\_gmapping, teleop\_twist\_keyboard, turtlebot\_interactions, turtlebot\_simulator, pick\_objects, and add\_markers.

Teleop\_Twist\_Keyboard: This package allows the user to manually drive the robot.

slam\_gmapping: This package creates a map of the environment using laser-based SLAM

turtlebot\_interactions: This package is used to launch RViz which allows the user to visualize SLAM, particle filters and send nav goals. Here RViz config files can be saved which will launch the map, robot model, markers etc.

Turtlebot\_simulator: This package contains the turtlebot\_gazebo file which allows you to launch the turtlebot world with the turtlebot(turtlebot\_world.launch) and launches the amcl algorithm (amcl\_demo.launch). The robot is able to localize itself using the amcl package.

Pick\_objects: This package sends pick up and drop off goal to the robot which then uses the ROS navigation stack to get to the goal. Pick\_objects package drives the navigation of the robot.

Add\_markers: This package publishes a virtual object in Rviz that appears in the pick up goal location. Once the robot reaches the pick up location the object disappears and the robot is then directed to the drop off goal location by the pick\_objects package. Once the robot reaches the drop off the goal location then the object appears.