ROB 456: Final Project

Project Description:

In this project you will develop an exploration policy for a mobile robot, in order to allow for a robot to construct a map that includes every reachable location in the environment. To complete the project, you will use the gmapping and nav_bundle packages, and you will also create your own node that sets waypoints for the robot to move to. See "ROB456_7.2_Final_Project_Setup.pdf" for details on setting up the built-in ROS libraries.

Groups of up to three students are permitted to work together on the final project.

What to Turn In (26 November 2017):

1. Code and documentation: the relevant packages from your catkin_ws/src folder (zipped). Make sure all code is well commented, and the readme file on rob456_project contains instructions on how to run your code.
2. Final report (~3 pages). Include the following in your report:
   a. Discussion of the exploration problem
   b. Discussion of your gmapping and nav_bundle package implementations
   c. Discussion of your waypoint allocation algorithm
   d. Analysis of your algorithm's exploration performance. Did it result in full coverage of the environment (provide a screenshot from rviz)? Provide suggestions on how your waypoint allocation algorithm could be improved. For example, if the entire environment is not mapped, explain what changes would fix this. If the entire environment is mapped, explain how a different waypoint allocation algorithm may have performed exploration more quickly.

Presentation (27/19 November 2017, in class):

You will give a 10 minutes presentation during class on Week 10 summarizing your project (problem, approach, results). Please upload your presentations to Canvas prior to your presentation.