
CSCE574 – Robotics Spring 2014 – Project 4

Assigned: March 27

Due: April 10

The purpose of this assignment is to give you some experience programming your Turtlebot to move autonomously.

Tasks

For this project you should program the robot to navigate *safely* forward down a hallway or corridor, staying as close as possible to the “safest path” midway between the two walls.

Details:

- The specific method that you use to keep the robot in the center of the corridor is up to you.
- I am primarily interested in how well your program works in the “normal” situation in which it is moving down a corridor whose side walls are visible, and in which there are few or no other obstacles. However, your program should make some reasonable response when it finds itself in other situations: If it’s directly facing a wall, if a person steps in front of it, etc.
- For safety reasons, you should make sure that your robot stops moving *immediately* if it detects any bumps, wheel drops, cliffs, or motor overcurrents. Note that “immediately” and “a second or two later” are not the same thing.
- You should also stop the robot if the WiFi signal strength drops too low. Some experimentation may be needed to determine a reasonable threshold. This safeguard should prevent situations in which the robot drives too far away for your SSH connections to stay open.
- After these problems are resolved (presumably by human intervention), the robot should wait a few seconds before resuming its usual activities.

CSCE574 – Project 4 Cover Sheet

Name(s): _____

Safety (30):

- Stops immediately on any bump.
- Stops immediately on any wheel drop, cliff, or overcurrent.
- Stops immediately when wifi signal is low.
- Restarts shortly after problem is resolved.

Corridor following (60):

- Locates the center of the corridor.
- Drives forward down the center.
- Makes corrections to stay near the center.
- Responds in some reasonable way to unusual circumstances.
- Algorithm is explained precisely in report and demo.
- Implemented algorithm matches its English descriptions.

Report (10):

- Report is complete and clear.
- Report describes the program in enough detail to understand how and why it works.
- Required sections exist under readily identifiable headings.
- Report is free of typos and grammatical errors.

Other comments:

Total:
