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ECSE 476

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PS1: Simple 2-Dimensional Mobile Robot (STDR) Report

My code and deliverables are available at: https://github.com/nicolemariegraf/PS1_ECSE476

For this assignment, I created an open loop control that navigates the STDR simulator from the bottom left-hand corner to the top left-hand corner. I began by running the stdr_open_loop_commander node, and I was able to make the robot move. Afterwards, I created my own package (my_stdr_control) and duplicated the stdr_open_loop_commander_node as nmg63_stdr_open_loop_commander.

When in the catkin workspace, the command you need in order to have the robot0 complete its course is:

rosrun my_stdr_control nmg63_stdr_open_loop_commander

I created the path that the robot took through trial and error. I worked with the example code given, having my robot move in intervals of three meters and 90 degrees. This method worked fairly well until I got near the end of the track. At that moment, working with these two settings, I kept getting the robot stuck. I solved this issue by altering the final two angles to be approximately 45 degrees (lines 190 – 197) and 100 degrees (lines 218 – 225). With these manipulations, I was able to get the robot to navigate to the desired location.

I have three videos in my final submission. The different files are the results of altering the final angles by making the addition to the 90 degree angle be 0.5, 0.4, and 0.25. The 0.4 and 0.5 time additions caused the robot to turn too much, having the robot travel farther from the corner then I

wanted. As I decreased the time which decreased the angle, I was able to get closer to the corner until I was happy with the final result.

I could have done this project more efficiently by working in different variable steps besides the length and angle originally given. I really enjoyed the route that I took because of all of the trial and error, and it forced me to look at the problem in a more creative way rather than taking the shortest path that is possible.

Another issue that I had with the robot was that it would sometimes drift and hit the wall. This confused me because sometimes the robot would move perfectly and others it would not, even though none of the code was changes. This issue would usually sort itself out by returning to the catkin_ws and performing a catkin_make.