Justin Ferri
Prof. Wyatt Newman
EECS 376: Mobile Robotics
2 February 2018

Project 1 Writeup

In this project, I was to modify Professor Newman's stdr_open_loop_commander.cpp such that the robot in STDR given, the robot would move from its initial position in the bottom left corner to the top right corner. I first based my values from the ones provided, but then realized as I was giving my robot more commands, its position was getting increasingly farther than my anticipated location. I then noticed that the constants in the file were significantly different enough for me to have less than desirable movements. So I then decided to change the constant yaw_rate to have a ratio where the robot would rotate more closely to 90 degrees after 3 seconds (the time already used in Professor Newman's given file). Changing the yaw_rate to a more precise value resulted in my project working; the robot was moving from the bottom-left corner to the top-left corner without any issues. It was interesting to see how my changes were impacting the robots' movements.

Another interesting problem occurred when running my program. Sometimes I would get “randomness” when running my_stdr_open_loop_commander, even though there are no random elements within the file. Ubuntu isn't a real-time based operating system, so the measurements of time are not exact, so when/if an iteration of the program is missed for some reason, errors in the robot's movements will occur. When looking at the values in the STDR Simulator window, I could tell that both the values of the robot's movements forward and turning are not exact. An error in angle is more noticeable and costly when directly coding the path of success for the robot, which is why I noticed errors in the angles more and therefore, a misdirection of the robot.

A link to my code can be found on GitHub here: https://github.com/justin-ferri/my_stdr_control/commits/master. In addition, a link to a video of my project can be found on YouTube here: https://youtu.be/5Y3QXAEajfI