Project 2 part 2

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I. Introduction

Represent the input state based on the input Lidar Data and motor actions. Based on the states and actions use a Q-table to allow the robot to follow a straight wall.

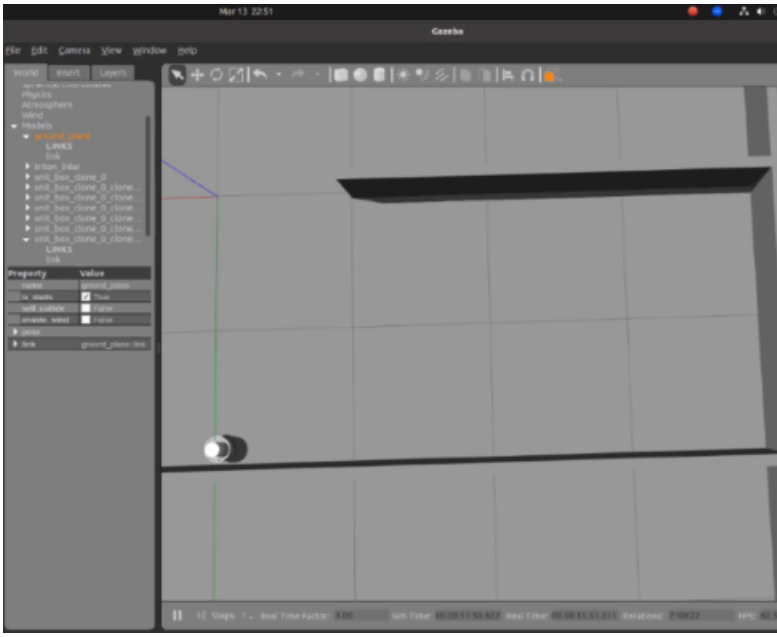
II. States and Actions

States: Close, Far, and Medium. I had 3 visions for my bot: one in front of the bot (80-100 degrees, close and far), one at a left angle (40-70 degrees, close, medium, and far), and one to the right of the bot (30-0 degrees, close, medium, and far). Far is Actions: Forward, Right Forward, Left Forward. Forward is simple if not close to the wall go to the wall, Right and Left forward to similar things they both go forward in the y direction but the difference between them is the turn of the bot, Left rotates the bot counterclockwise while Right rotates clockwise, they help keep close contact with the wall allowing the bot to follow the wall.

III. Q-table

States	Forward	R-Forward	L-Forward
FFF	1	0	0
FFM	1	0	0
FFC	1	0	0
FMF	1	0	0
FMM	1	0	0
FMC	0	1	0
FCF	1	0	0
FCM	0	1	0
FCC	0	1	0
CFF	0	0	1
CFM	0	0	1
CFC	0	0	1
CMF	0	1	0
CMM	0	0	1
CMC	0	0	1
CCF	0	0	1
CCM	0	0	1
CCC	0	1	0

Screenshot



Performance

The bot wobbled a lot, more tweaking needs to be done in order to run more smoothly. It gets stuck in corners sometimes, other times it's able to get around 1 corner but not the next. Also for some reason it can start out moving Left forward or Right Forward, this can happen at random and can be "fixed" by restarting it a few times.

References