

ECGR 5196 – Introduction to Robotics

Assignment 9

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URL of video:

https://youtu.be/pSjef_cNbLc

Introduction:

The objective of this project was to assemble the Ti-RSLK robot, check for the various peripherals of the robot using the online debugger and fix the broken/non-working parts, place the Ti-bot in the center of the 1x1m room, the robot should find the obstacle and blink the LEDs in front of the obstacle and later it should find the fastest way out and two such trials should be done where the position of the obstacle and the bot should be changed in the second trial. Same code must be used.

Problems and Solution:

The pins were connected properly, the online debugger was opened in the PC and once the robot was connected to the PC, the debugger showed “Hardware Connected”. The IR test was performed first, followed by the bump sensor test. The left motor and the encoder worked fine but there seemed to be an issue with the right motor. The connection of the motor was

done once again firmly and when tested again, the right motor and the encoder worked fine. In order to achieve line following, the bot will be placed in the center of the room, the bot will make 15 degree turns for 24 consecutive times and reach the starting point, there by making 360 turns. Ultrasonic sensor will measure the distance between the bot and the obstacle at each 15 degree using `getDistance()`, it will find the shortest distance and the occurrence as the path in which obstacle is present and will measure the longest path and its occurrence as the one which is the exit. After finding the shortest path, the bot will make turns and face the obstacle, blink the LEDs in front of the obstacle. It will then find the fastest path towards the exit, the bot will make turns to face the exit path and will start moving towards the exit, the ultrasonic sensor will check for any obstacles on the exit and if found the bot will move accordingly and exit from the room and inorder to achieve this, the `move_forward_obstacle()` is used. This logic will be used for both the trials with a delay of 8 seconds after every loop function. For trial two, position of the obstacle, the exit and the position of the bot is changed.

Pictures:

