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May 19, 2020

ELT 261-101

**Final Lab Report: Line Follower Obstacle Mover**

Abstract:

I decided to do my final to explore the possibility of connecting two arduinos together to communicate over serial to drive two different systems, while coordinating them together. One arduino was used to control the movement of the robot while the other controls a claw. Its goal is to follow a line and detect an object that could be blocking the way. If an obstacle is detected It picks it up and moves it to the side then returns to following the line.

Driving setup:

The car follows a black line on the ground using three IR sensors. This allows Left, Right, and Center. The arduino then drives four wheels using an L289N module. Depending on which IR sensor it detects the line on. It turns just enough for the center one to detect the line making it centered, then continue forward.

Claw/Grasp:

A claw connected on a joint with an ultrasonic sensor mounted to it. The ultrasonic sensor is used to detect an object within the grasp of the claw. It would then attempt to grasp the object and use the joint on the arm to lift the object up enough then send a command over serial to the arduino used for driving. The signal will tell the arduino in charge of driving to turn the car 90 degrees so the arm can set the object down. It would then send another signal to continue tracking the line on the ground.

Problems that I had:

* I was using an esp32 to drive the arm controls and I ran into some technical issues with it. I think If I started with an arduino that I am more familiar with it would have been a smoother build. I ended up using another arduino UNO in the current build
* The tracking of the line had no delay and the wheels had too much power driving them, when it came to correcting a turn, the car would turn too much and throw the IR sensors off the line. I ended up using some references for how it was designed to work and ended up adding a delay in the checking and moving and it was able to fix that problem
* The way I had the claw setup with two switches on each end of the claw was a good idea, except the materials I used, mostly the way the foil was wrapped around the claws, it made the switches not strong. I would come up with a stronger method to do it. It would work but it was pretty fragile. I would look for an alternative to the switches.
* I had trouble with the part for the L298N module in Fritzing to make the schematic so I went the route of using EasyEDA instead for it.

Pictures:





