Journal Report 10
11/18/19-11/22/19
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Daily Log

Monday November 18

I continued writing the program to steer the car via a website. We also got a Raspberry Pi camera today, and I took some pictures and manipulated them using the command line. Tony found a cool way of interfacing Arduino and Raspberry Pi via the Serial.

Wednesday November 20

I used the Pi to continue working on the website. I finally got npm and node working, and I got a dummy express server running on port 8080 on the Pi, and using port rerouting, I was able to serve the website to my laptop. Additionally, when I stayed after school to present to TJPF, I finally got the motor to move via control from an Arduino. Mikhail Allen from the electronics lab helped me debug my issues with an o-scope.

Tony modified our existing Arduino code to print only the value written to writeMicroseconds(), something between around 1000 and 2000, to the serial. He then found a guide online to have the Arduino communicate through the Raspberry Pi and wrote a program to be run on the Pi that would get the writeMicroseconds() value, print it, and put it into a text file.

Friday November 22

Tony linked up the Arduino with the Pi and sent the code he wrote on his computer to the Pi. The code worked as expected; it took the values being put out to the serial on the Arduino and logged it in a text file. He started trying to log the writeMicroseconds() value every half second by modifying the Python code, but started running into some problems. We are trying to figure out how to get steering position in set intervals. He then tried changing the Arudino code.

I got a web socket connected between my computer and the pi. For now, I have only gotten the PI to send over a binary signal. The next step is providing recognizing key presses and sending them over to the PI.

Timeline

Date	Goal	Met
Today minus 2 weeks	Have the car navigate a hallway on its own with hard coding	Yes/No, we have the means of doing so now, we just haven't attempted it yet.
Today minus 1 week	Have the Raspberry Pi gather Lidar data	No, we have not started
Today	Have the Raspberry Pi gather Lidar data	No, we have not started
Today plus 1 week	Find a way to gather camera and Lidar data at the same time	No, we have not started yet
Today plus 2 weeks	Find a way to gather Lidar, camera, steering data, and throttle at the same time	No, we have not figured out the first two
WINTER GOAL	Have training data gathered from the lidar, steering, and camera, and format it all in one array or csv, so that it can easily be fed into a neural net	No, we have not started yet, but we are much closer than last week

Reflection

I have ditched the Edison in favor of using the Pi. It is far easier to work with, and I already got a website to work. In order to use the web socket in a useful manner, we need a way to connect a laptop to the pi, which is currently impossible, as the pi does not have WiFi capability. We may have to buy a WiFi dongle in order to use the Pi as a WiFi router.

While we order and wait for one, we will work with gathering and formatting lidar and camera data from the Pi in order to reach the goals in our timeline.