Milestone 2: Pololu Lane Keeping

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EECS 149/249A Final Project Fall 2023

Progress

- Just got our parts
- Made tracks
- Wrote code for edge detection
    - Code has been tested on video footage from an iPhone camera - parts for the real robot just recently arrived so testing for the rest will begin shortly. Code parses the lane data to be sent to the Pololu.
- 3D Printed mount for raspberry pi
    - The mount is being modified and printed to incorporate the battery as well as proper mounting for the camera. Current iteration however is enough for preliminary testing
- Successfully implemented the camera and set up the Raspberry Pi OS along with any camera dependencies

Goals

Our goals have not changed. We still plan to use Opencv for lane detection, turns, and lane merges.

Class Topics

We will incorporate sensors, modal models, feedback, and interrupts. We have added a camera, which is the main sensor we are using for the operation of the car - no other major sensors are being used. Modal models will be used to switch between turning or staying straight. Feedback will be used to figure out how aggressive turns have to be when in the turning modes. Interrupts will be used for lane changes, as we want the robot to continue as before after the interrupt terminates.

Resources

We have been using OpenCV Documentation and The Pololu Datasheet for planning.

Schedule

Date	Deliverables
11/29/2023 - 12/13/2023	● Get the raspberry pis connected ● Make sure we can get image data from camera ● Make sure edge detection works for straight paths and turns ● Have lane changes done ● Fine Tuning (testing on edge cases), making sure everything is connected and works ● Make poster, work on report
12/13/2023	Poster and demo

Adrian - Finalize the Python OpenCV Code, Modify Lab Pololu Control Code to Work with Pi Input Signals

Jesus - Implement I2C intercommunication between the Pi and the Pololu, conclude 3D Print Design

Megan - Design Final Tracks for Car to Run, Work on Pololu Control Code

Risks

There's a chance we could experience issues with connecting the raspberry pis together. Once everything is, we also worry about unexpected issues, like the Raspberry Pi not processing fast enough for the needs of the Pololu.

Github Link

https://github.com/abotvinik/Pololu-Lane-Keeping