Project 3: Motor ControlBarret Glass, Samuel Barton, Nathan Hsiao, Jerry Jiang

**Goal, Steps, Key Functions**

The objective of this project is to set up motor controls for a RC car. In order to do this, we had to configure a new raspberry pi to be able to remotely control the RC car, setup wire connections with the pi, potentiometers, hand controllers, and write the DAC code after experimenting with voltage to get the correct voltage sent to their corresponding channels. Specifically, the majority of the project involved setting up the hardware interfacing between the Linux device and motor control which involved rPi configuration and hardware wiring between our various components. The other functionalities, python control of speed motor, stopping speed motor, servo motor, and straightening motor involved inputting the correct values to mcp4728.channel\_a.value in the python script.

**Challenging, Learned, Another Interesting Application**

We had a lot of trouble with getting the hardware to correctly work, leading to instability with our initial results. One major issue was getting our car to steer and accelerate. We accidentally fried our controller but kept working on it, leading to a lot of failed tests. Another issue was small differences in the code. We were using mcp4278.channel\_a instead of mcp4278.channel\_a.value. Overall, we learned about configuring rPi to establish a wireless connection, set up wire connections between the potentiometer and rPi, and write DAC code in python. There are a lot of possibilities similar to this project. We think another interesting application could be a remote controlled drone.

**Pictures**

Screenshot of main portion of code

*A computer screen shot of a program

Description automatically generated*

Picture of hardware setup

**Sources used:**

User raja\_961, “Autonomous Lane-Keeping Car Using Raspberry Pi and  
OpenCV”. Instructables. URL: <https://www.instructables.com/Autonomous-Lane-Keeping-Car-Using-Raspberry-Pi-and/>

Tan, Nico, Garza, & Patwari. (2022, December 10). “The NicoMobile”. Hackster.io. URL: https://www.hackster.io/team-youngerwoods/the-nicomobile-83caa9