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CSE 190 Lab 3 Report

Code overview:

IMU.ino: The sketch for reading data from both axes of the gimbal, with throttle attached to analog pin 1 and yaw attached to analog pin 2. Pins 1 and 2 are initialized as input and then their values are continually printed to the serial port.

gimbal.ino: The sketch for driving a motor attached to pin 2 controlled by the gimbal throttle attached to pin 1. Pin 1 is initialized as input and pin 2 is initialized as PWM output. The throttle value read from pin 1 is scaled to the range 0-255 and written to pin 2 which drives the motor circuit.

Problems encountered:

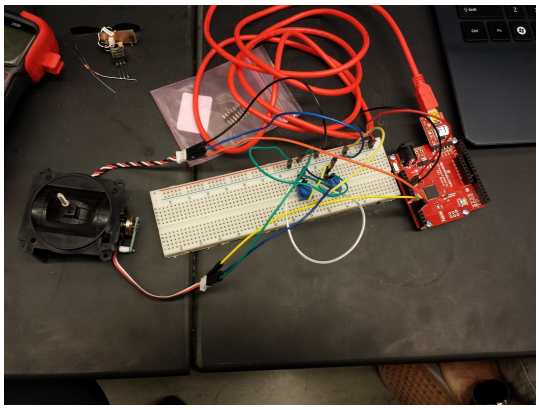
- analog pins used for input can simply be assigned by number (e.g. analog pin 1 is referenced by the int value 1 for input mode), but analog pins used for output must be assigned using the A<number> (e.g. analog pin 2 is referenced by the value A2 for output mode)
- Yaw connection for the gimbal we originally received was broken, received and completed lab with a new gimbal

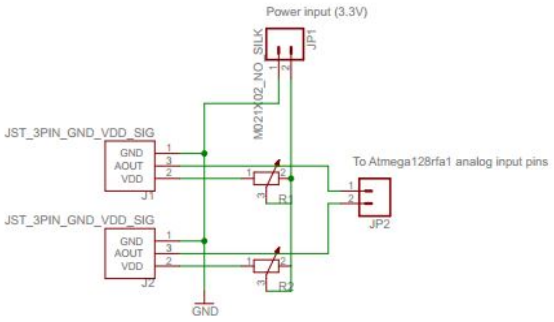
Experimental pot resistances

Optimal resistor values were found by setting/holding the gimbals to their maximum positions. Then the potentiometers were tuned so that they just barely reached 1023. These pot values yield the largest range of analog gimbal readings, roughly [450, 1023].

Throttle potentiometer resistance: 3.5kOhms
Yaw potentiometer resistance: 4.6kOhms

Gimbal reading breadboard photo





Motor driving breadboard photo