

Lab 4c

Stepper Motor Controller with Speed control

Ver 1.0

Taking what was previously done in lab 4b (Stepper motor controller) and lab 5 (ADC), add speed control to lab 4b by using the ADC input from the pot to adjust the time delay between steps.

Connect the pot to Arduino pin A0 and use that as the analog input. There is NO reason to convert the ADC value to voltage for this experiment (see below for scaling)

Notes:

- **Problem:** remember that `_delay_ms()` or `_delay_us()` can only take a constant as an input (ie `_delay_us(100)` is ok, but using a variable in the call: `_delay_us(x)` will NOT work.

Solution: create a function (see

https://www.tutorialspoint.com/cprogramming/c_functions.htm for help) that will take an integer input (representing uSec) and execute a `_delay_us(1)` that number of times.

- You will need to scale the ADC value so that 1024 from the ADC generates a very slow, but detectable speed, and ADC value of 0 generates a fast, but smooth operation of the motor (too short of a time delay can cause the motor to operate in an erratic manner or stop all together and produce an audible hum)

