

Anugrah Tisbi and Isaac Lam
9/9/21
LM 1 Daily Log and Write Up

This project was done by Anu and Isaac, and we covered controlling a stepper motor using user input. Anu started by doing the wiring for the project, which was fairly simple as we didn't need an external power source and it was fairly simple because all we were wiring was the driver board. The first issue Isaac encountered was getting the stepper motor to move, he was able to do this initially after looking at some resources and importing the stepper motor library. We were originally going to read the input through a text file, but arduino's are actually unable to do that unless through an SD card so we decided to instead use user input through the console instead of through a text file as a way of preserving the original intention of the project while at the same time not using too much time. The second major issue was the fact that we miscalculated the gear ratio as we didn't take into account the gearbox in the stepper motor. Originally we thought this problem was with the user input code, using print statements we were able to decipher that it wasn't the issue. The actual issue was fixed by simply looking at the datasheet for the specific motor we were using and changing the number of steps to reflect the gear ratio. During the course of this project, we learned how to modify our project to fit any restrictions we come across and at the same time being able to debug certain issues associated with our code using internet resources. A suggestion that I would recommend is to keep your requirement malleable so that you can accommodate any restrictions you come across.

Monday 8/30/21 / 9:12 - 9:54: Anu and Isaac began research on the basics of how a stepper motor works. Anu finished the basic wiring of the stepper motor while Isaac began experimenting and learning the basics of arduino code. No real code was completed on Monday because it was mainly a research day.

Tuesday 8/31/21 / 9:12 - 9:54: Anu signed out a computer because the chromebooks were too slow to run arduino code on them. Isaac and Anu both researched the basics of how to control a stepper motor using an arduino. They learned how to use the functions `stepper.step(x)` to move the motor and `stepper.setSpeed(x)` to set the speed (cap of 1000).

Wednesday 9/1/21 / 9:12 - 9:54: After basic learning of stepper speed and movement control. Isaac and Anu went on to research how to control a stepper motor by having it read from a text file. As they were researching, Isaac discovered that arduino code is not able to do that at all. Anu suggested that they move onto a user interface instead of a text file. The goal was not to move the stepper motor by a certain degree, but to move it to a certain degree. If they were to upload the code, the starting position of the motor would be 0 degrees and it should be able to move counterclockwise to degree 90 and clockwise back to degree 0.

Tuesday 9/7/21 / 9:12 - 9:54: Anu encountered a problem while working on the user interface code. The user interface was not working properly and Isaac and Anu had no idea why. They began to fiddle around with the code but were unsuccessful in their attempt to get the motor to read from the console. They began to research how a user interface is properly used and if any information was miscalculated in the stepper motor

Wednesday 9/8/21 / 9:12 - 9:54: Anu and Isaac figured out what the problem was. The problem was the number of steps was off as Isaac did not take into account the fact that the gear ratio modified the number of steps we use. The total number of steps was 2048, but there was a 64:1 gear ratio so the actual number of steps to use in the arduino program was 32. Once this was changed, the motor was moving properly again and was taking input.

Resources: <https://www.arduino.cc/en/Tutorial/LibraryExamples/StepperSpeedControl>

<https://www.arduino.cc/reference/en/language/functions/communication/serial/read/>