ECE Senior Design Weekly Report

Engineer’s Name: Brian Pham Date: April 19, 2017

Team Name: Globetrotters Lab Section: TH

Week’s Task: Start developing PID controller and testing for values with magnet and sensors setup in correct setup. Also add/modify content to group website.

Results:

PID and Levitation testing

* Setup hall effect sensors and started measuring values from them with the magnet in the ‘stable’ position
* Began developing PID code for the microcontroller to vary PWM to H-Bridge to stabilize magnet, currently using 2 hall effect sensors for X and Y direction as a starting point
* Results show that electromagnets are strong enough to affect the magnet
* Determined current range that ADC value receives from hall effect sensors in different placements

Website

* Cleaned up some unneeded icons on the website
* Added more content to hardware and software section as well as redoing diagrams to fit the theme

Summary

The past week I’ve been working on adding more content to our website and making minor tweaks to the template. I’ve also worked on redoing some flow diagrams to fit the color scheme of the site. Additionally, I’ve worked on measuring and testing values from the hall effect sensors in different orientations so we know what values to expect when we do the ADC on the microcontroller. Started testing code for PID to see the PWM response we get on the oscilloscope as the magnet changes position over the permanent magnet. As of now the current values we get are roughly 300 to 360 in positive and negative X direction. Stable position is roughly 330 when the magnet is in the middle. We still need to determine the duty cycle we want from the PWM depending on our PID values we get. Mainly just doing a rough test of the system to see if the logic is correct.