Individual Lab Report 2

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Team G-Bobs the Builders

Teammates-Michael O'Connor, Eric Newhall, Guillermo Cidre

ILR02

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Individual Progress:

Since the last checkpoint, I helped work on the motors lab, contributing primarily to the flex sensor. I once again did the wiring for the flex sensor. I helped with the controls between the flex sensor and the servo. Due to my limited experiences with micro-controllers and actuators I relied heavily on Guillermo and Eric to teach me about the interaction between the motor and the flex sensor. The servo responded to various stimulants on the flex sensor.

In addition to my work on the lab I contributed towards the pre-tinning machine. I worked with Solidworks to make four CAD models on different hopper designs used for sorting the parts. Figure 1 depicts a spiral hopper design, Figure 2 depicts a hopper with relatively steep walls on all four sides, Figure 3 depicts a hopper with relatively steep walls on two sides and relatively shallow walls on two sides, and Figure 4 depicts a hopper with relatively shallow walls on all four sides. I went to the IDeATe Lab with Mike to learn how to use the printers there since the MakerBots in the machine shop are currently under maintenance. Mike and I learned how to use the 3D-printing software Cubify, how to set up the extruders for the printers, and how to apply Cubestick glue to the plate where the part will be printed.

I also helped with the assembly for the rail system used to actuate the tray that holds the parts after they undergo the various processes of our machine. I helped assemble the rail system for the flux extruder and the wire placer at the top of our machine as well. Lastly, I updated the ordered parts list on our website.

Challenges/Issues:

One of the issues that I faced this week was figuring out how to work the IDeATe Lab printers. Neither Mike nor I had much experience with this type of printer and we had complications with the printing process as a result. For instance, we did not take into account that the printers would be much less time-efficient than the MakerBots in the Machine Shop. We made a hopper that would have taken about 30 minutes to print on the MakerBots but had an estimated run time of 2 hours 50 minutes on the IDeATe Lab printers. We plan on making our hopper designs smaller to decrease the run time for our hoppers on these printers.

Another issue that I had was finding a way to contribute to the motor lab with my minimal experiences in Electrical Engineering and Software Engineering. Although I was able to contribute in some ways, such as doing the wiring for the flex sensor and doing a little bit of the coding for the interaction between the flex sensor and servomotor, I realized that my time would be more efficiently spent working on the pre-tinning machine.

Cross-Referencing:

For the motors lab, I looked to Eric and Guillermo for guidance in understanding how to program the interaction between the servomotor and the flex sensor.

Mike and I worked together to brainstorm various hopper designs. We also helped each other learn the intricacies of the printers in the IDeATe Lab.

Figures:

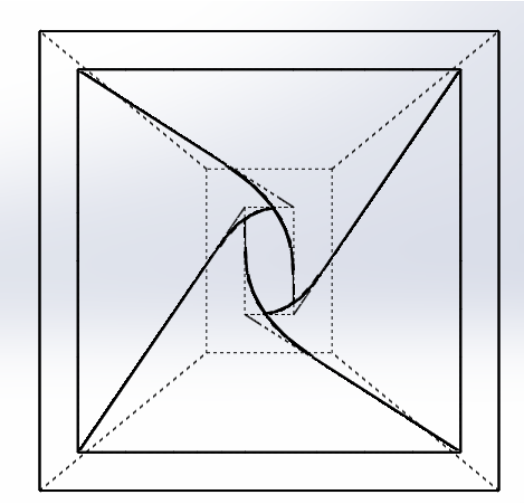

Figure 1: Spiral Hopper

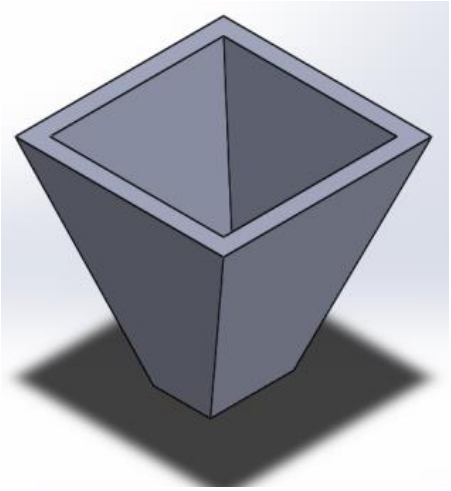

Figure 2: Steep Steep Hopper

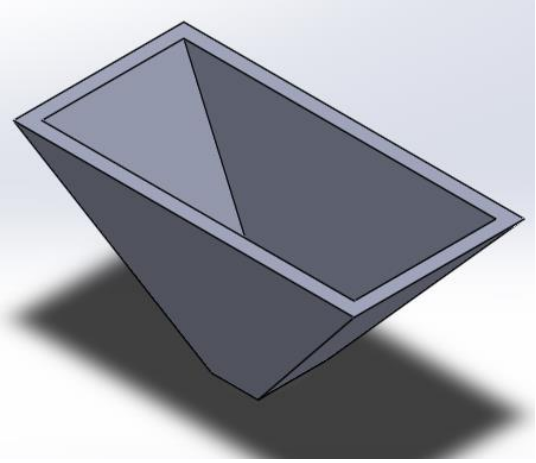

Figure 3: Steep Shallow Hopper

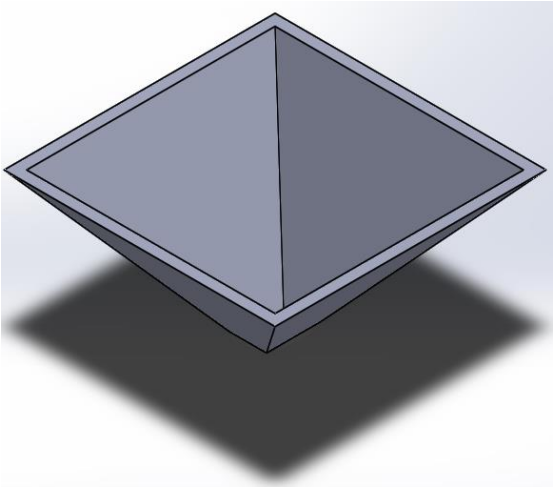

Figure 4: Shallow Shallow Hopper

Future plans:

For the upcoming week I plan on going to the IDeATe Lab in order to print different hopper design and run tests on them. Since we recently got a definitive answer on the parts that we will be handling, I will have to update my CAD models to accommodate for the change in dimensions from the piece that we originally planned on handling. In addition to this, I will be helping the group install the motor, timing belt, and L-brackets to the rail system to hopefully actuate the plate along the specified axis. I will also work on using the drill press to create holes in the L-brackets that will be used to connect the L-bracket to both the motor and the 80/20 aluminum.