Individual Lab Report 8

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Team B: Monkey Bot
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ILR08
April 9th, 2015

Individual Progress

Manufacturing and Assembling Components

This week, helped assemble the various parts of the robot so that we could visualize the full system and understand how all the components fit together. My first task was to make aluminum spacers for our 3-stage gearbox since the acrylic ones broke the week before. I also assembled the cleaning unit and attached the servos for the actuation of the squeegees. Here is a picture of the fully assembled cleaning unit .

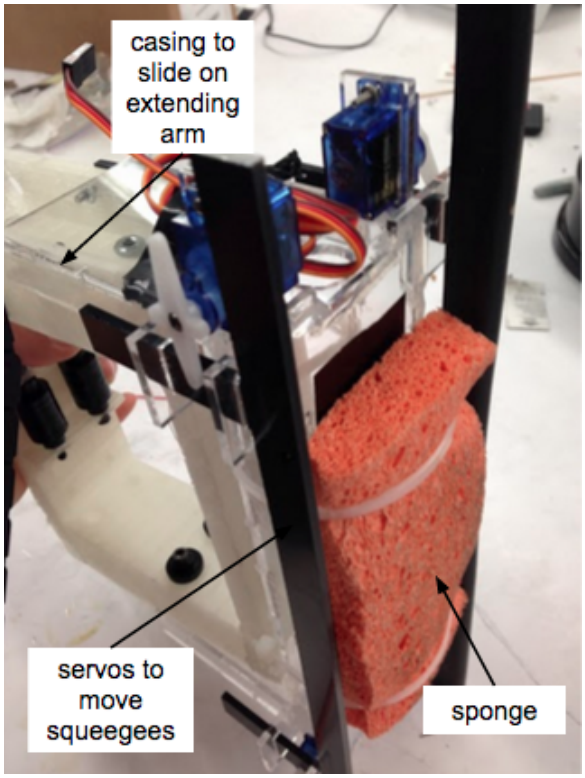

Figure 1. Cleaning Unit

Challenges

The dimensions on the spacers in the CAD model did not correlate directly with real dimensions which caused me to go through multiple iterations of the spacers before I could get the correct fit.

The robot could not hold itself onto the window and it kept slipping during the demo. This could be due to factors that include the width of the C-channel, the material on the inside of the gripper and the distance between the gripper and the window. Reducing the width of the channel and using a more flexible material with a high coefficient of friction on the inside

surface should help us stay on the window better. Another related issue is maintaining the balance of the robot with only one side gripped to the 80/20 aluminum. The size of the cleaner needs to be re-evaluated because it currently pushes the extending arm too far from the window. The solution could be to take out the water tank since it would reduce thickness and we may be able to clean by just wetting the sponge.

Cross-Referencing with Other Team Members

This week Ian H. worked on the wiring of the robot as well as motor control with the Discovery board. This allowed us to demonstrate movement of the extending and pivoting units during our system demo. Trevor worked on some of the CAD models as well as the assembly of various parts of the robot. Ian R. designed a solution for moving the cleaning unit.

Future Work

I plan to modify the cleaning unit so that it is an appropriate distance away from the window and does not push the extending arm away from the window. I also will do more testing of the C-channel gripper to determine the optimal parameters for our new gripping method. By the weekend, I wish to settle son the best material for wiping the dirt off the window as well. Overall, we were able to accomplish a lot this week in terms of assembly and I will continue to help with the re-design of subsystems this week.