

Ian Rosado

Team B: Monkey Bots

Teammates:

Stephanie Chen, Trevor Decker, Ian Hartwig

ILR05

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Individual Progress

Since our mid-semester presentation, we have worked to finalize the CAD model in order to get ready to machine and manufacture the robot. Most of my work has gone into testing and refining the gripper design so that we can assemble at least one half of the robot. This has consisted of tweaking parts through machining and looking for different materials that can be used to effectively grip to the aluminum of the test bed. I also ran a test with Stephanie to test the strength of the gripper, which has shown us that we need to improve the design in order to support the entire robot when moving. Figure 1 is a picture of the gripper during testing.



Figure 1: Picture of the gripping unit during testing.

Challenges/Issues

The biggest issue has been finding a material that can effectively grip onto the smooth aluminum of the test bed without slipping. With the motor we have chosen, and the amount of mechanical advantage that the gripping unit gives us, we feel that we have enough gripping force necessary, as long as we are able to find a material that doesn't slip. The original rubber sheet that we had put on there was too slippery, even when clean. After that, I attached 1/8" strips of neoprene to the gripper, which at first seemed to grip well enough, but the shear force experience across the thickness of the neoprene caused the material to deform and eventually fail. Perhaps a thinner layer of neoprene, or another

material that is not slippery would solve the issue. If we are not able to solve it soon, we will redesign the gripping unit to gain more mechanical advantage.

Teamwork

Trevor and Ian did a lot of work with the cad model and figuring out dimensions so that we can make part drawings and begin machining the majority of the robot. Ian H worked with our microcontroller to get the touchscreen working, which will be useful for debugging and general control in the future. Trevor has continued to work on the cleaning unit design as well as prepping for machining. Stephanie helped me with the gripper iterations and testing, as well as working with Trevor and Ian to ensure that everything is machinable.

Future Plans

Much of our time in the next week will be taken up by machining parts for various parts of the robot, focusing first on the extension arm, then the rotating wrist. We also hope to finalize the gripper design soon so that we can assemble the majority of the robot once it is machined and begin to work on controls.