

Ian Rosado

Team B: Monkey Bots

Teammates:

Stephanie Chen, Trevor Decker, Ian Hartwig

ILR07

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Individual Progress

In the past week, I have worked mainly on machining parts for the sliding mechanism and the pivot wrist of the robot. Steph had previously machined many of the large parts, and Ian H. had laser cut many of the small components, so I worked to fix any problems that we had with previously made parts (filing down edges that were slightly too thick on the aluminum beams, or milling down laser-cut parts that were slightly too thick), as well as machining individual components, such as the shaft couplers, the threaded rod used in the sliding mechanism, or the motor and bearing mounts that go inside the arm.

I have also started to work on the redesign of the gripping unit. This so far has entailed coming up with several different designs, out of which we will choose one and begin manufacturing immediately. Figure 1 shows one of the possible redesigns: a passive system that utilizes binding in a torqued c-channel that fits over the window frame.

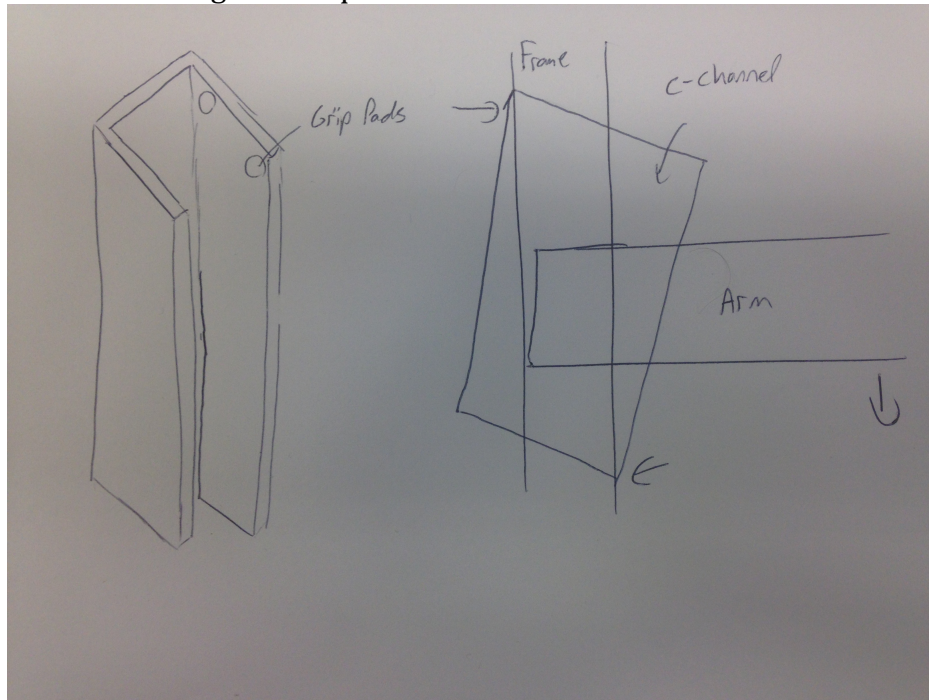


Figure 1: A drawing depicting a preliminary passive gripper design, utilizing a c-channel geometry. When torque is applied to the c-channel, a large normal force is applied at opposite corners, which can be used to hold the gripper up.

Challenges/Issues

As we get closer to our final deadlines, time becomes an ever-increasing pressure on the team. At times, we work for hours on end, well into the night/morning, during which times we get a lot done, but it leaves us taxed for not only our other classes, but for work that we do in the following days. To combat this, we have created a more comprehensive schedule, so that we know what we need to get done each day, and can feel comfortable stopping once we have completed those tasks, knowing that we are still on track to finish on time. We are still working to get ahead of our schedule in order to account for unforeseen problems, but we are more structured in our work now.

We also had issues with breaking, losing, or simply not ordering parts that we needed to assemble certain subsystems of the robot, which delayed some of our goals by a few days. We have since ordered the necessary parts, and are making a conscious effort to be more organized in our storage and handling of parts.

Teamwork

Steph has worked hard to machine different parts of the robot, specifically the sliding arm and the pivot wrist. She has helped assemble those subsystems, and worked with the rest of the team when issues arose and we needed to change designs on the fly. Trevor has worked to finalize the cleaning unit design, and he has also worked to assemble and test the robot, coming up with solutions to problems that we encountered along the way. Ian made many of the plastic components for the sliding arm and pivot, and helped to assemble and test as well. He has also started working with Trevor to get our microcontroller up and running so that Trevor can start to work on controls as soon as possible

Future Plans

With the sliding arm and the pivot wrist working relatively smoothly, one of our next immediate steps is to clamp the wrist and arm to the window frame (in place of the gripper, which we are still iterating on) so that we can start to get our controls working for those two parts of the arm. While Trevor works to refine the controls, Steph and I will rebuild the gripper. Right now, I am putting together several different designs for the new gripper, and we will decide on a design and begin building and testing as soon as possible. We are considering changing some of the requirements (such as clearing the window frame) in order to get a working gripper up and running as soon as possible.