Eric Kondor

Portfolio

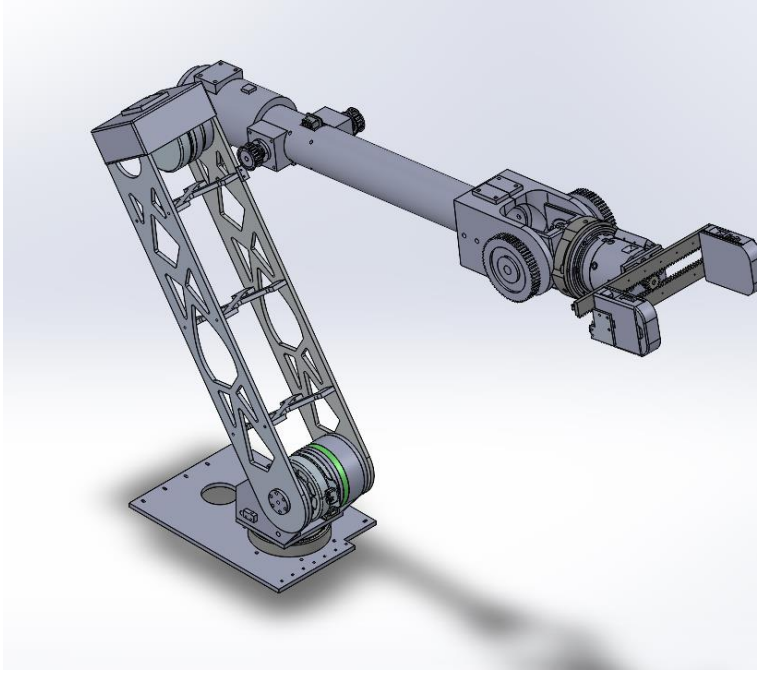
UBC Rover

New Arm Design:

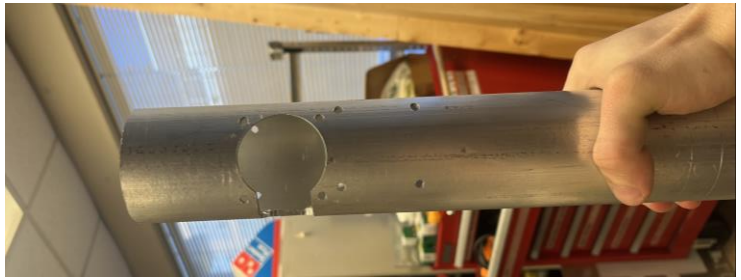
This is the CAD of the new 6 axis arm.

Personal Contributions:

- Designed axes 1 to 4 (bottom to start of link 2) and link 1
- Assisted with motor selection and design of axes 5 and 6
- Contributed to design of differential wrist
- Currently manufacturing and assembling the arm using water jet cutting, as well as lathes and mills.



CAD Of New Arm



Parts Manufactured As Of 22/4/2025
(Not including 3D printed parts)

UBC Rover

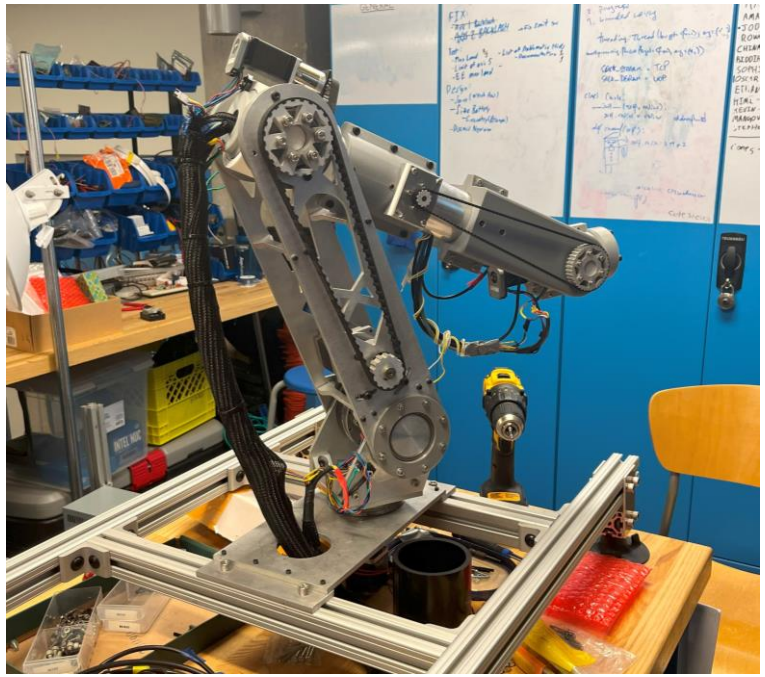
Current Arm:

This is a six-axis robotic arm designed by previous Rover members

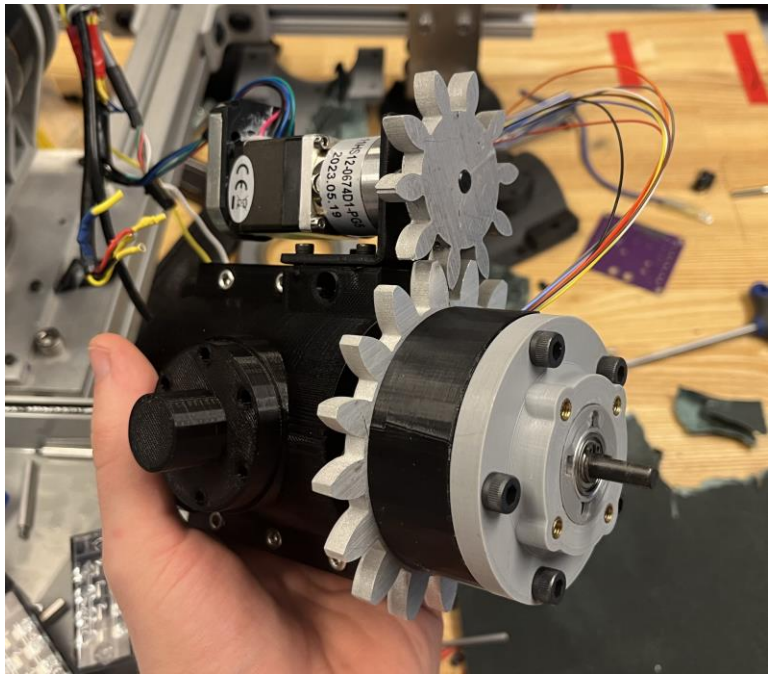
Redesigned Wrist:

I redesigned the wrist to allow for continuous rotation of the end effector. This was done using a slip ring integrated into the back of the wrist.

It is constructed mainly out of 3D printed parts, held together by fasteners. The inner wrists rotates using 2 bearings fit using close tolerances.



Current Arm



Redesigned Wrist

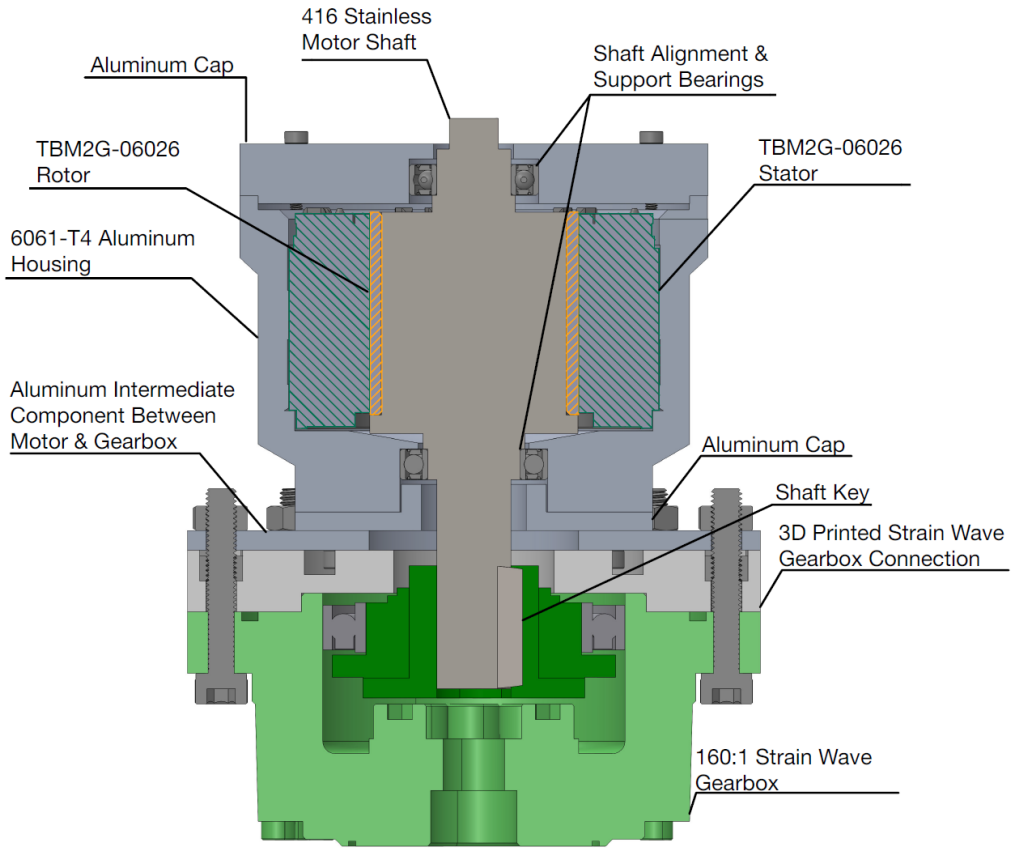
UBC Rover

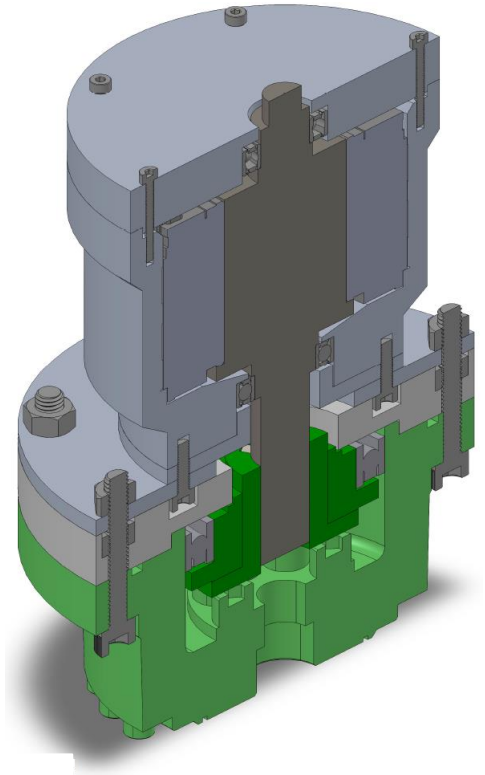
Frameless Motor Integration

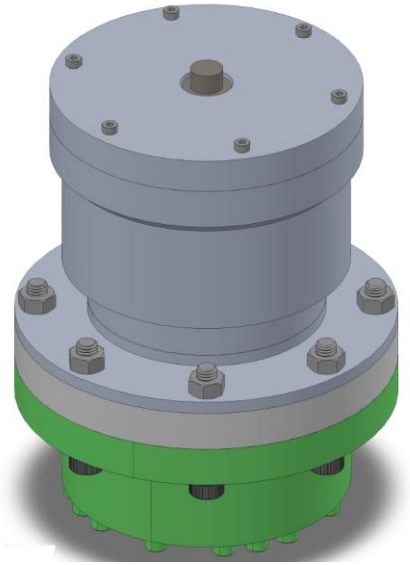
Using a Kollmorgen TBM2G-06026 frameless motor we are going to power the second and third axis of our arm.

I designed the housing for the motor to minimize mass while keeping it flexible enough so that if the design were to change, the motor could be reused.

NOTE: Due to time constraints and manufacturing complexity (low tolerances provided by Kollmorgen), it was decided to purchase ready made motors instead.







UBC AeroDesign

2023 REG Class Plane:

This is the 2023 REG class plane, it had a 15 ft wingspan and took about 2 weeks to manufacture.

2023 REG Class Building:

This is a friend and I building the vertical tail we designed. The ribs were cut using a laser cutter.

2024 MICRO Class Plane:

This plane has a wingspan of roughly 3 ft. I integrated the servo motors into the various control surfaces and worked on electrical integration.

2023 REG Class Vertical Tail:

Final CAD of the 2023 vertical tail I made in SolidWorks

2023 REG Class Plane

2023 REG Class Building

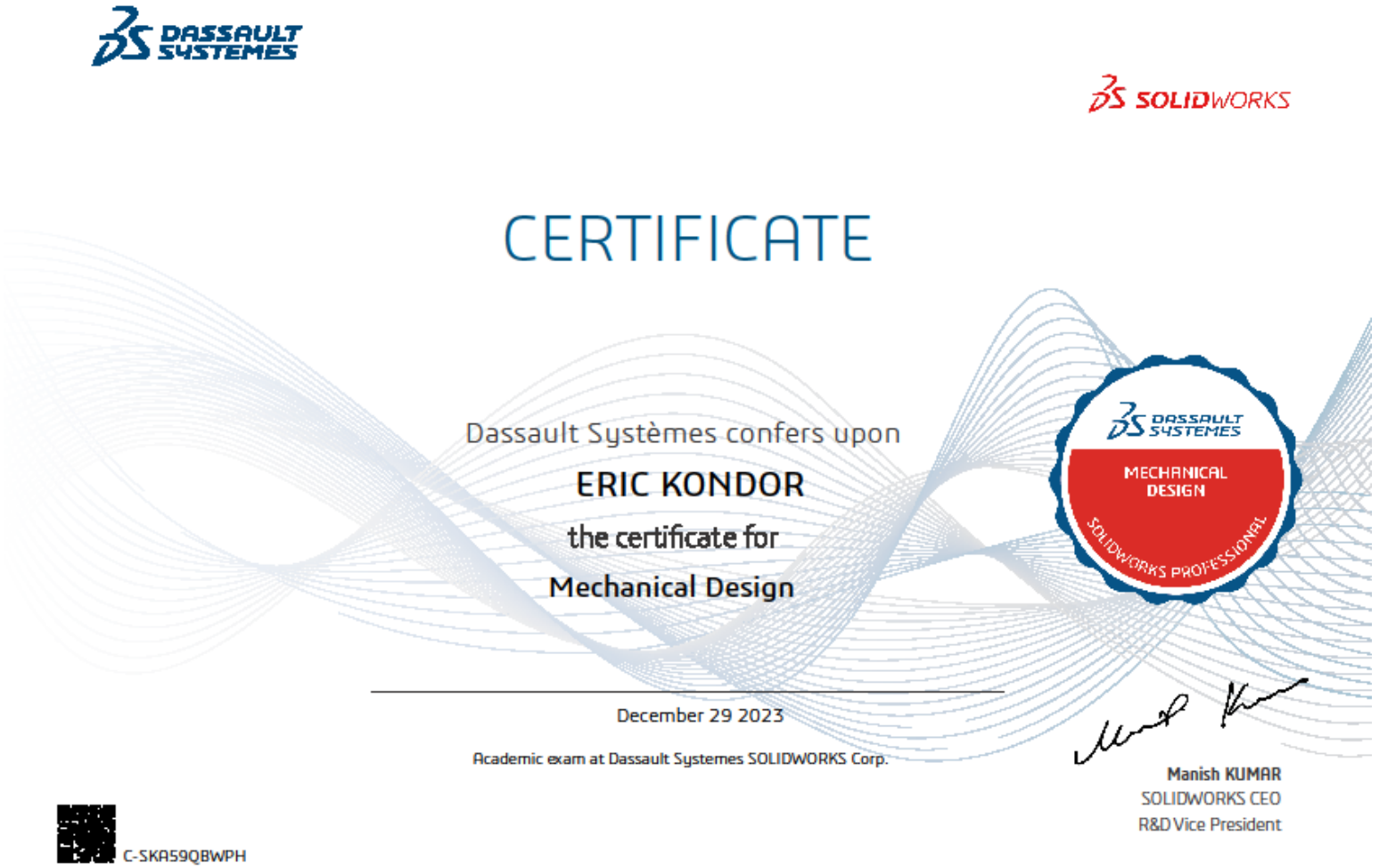
2023 REG Class Vertical Tail

2024 MICRO Class Plane

Certified SolidWorks Professional

In December of 2023 I completed the SolidWorks Professional exam. It involved:

- Interpreting engineering drawings
- Modifying assemblies and part material properties
- Creating “advanced” assemblies and managing mates



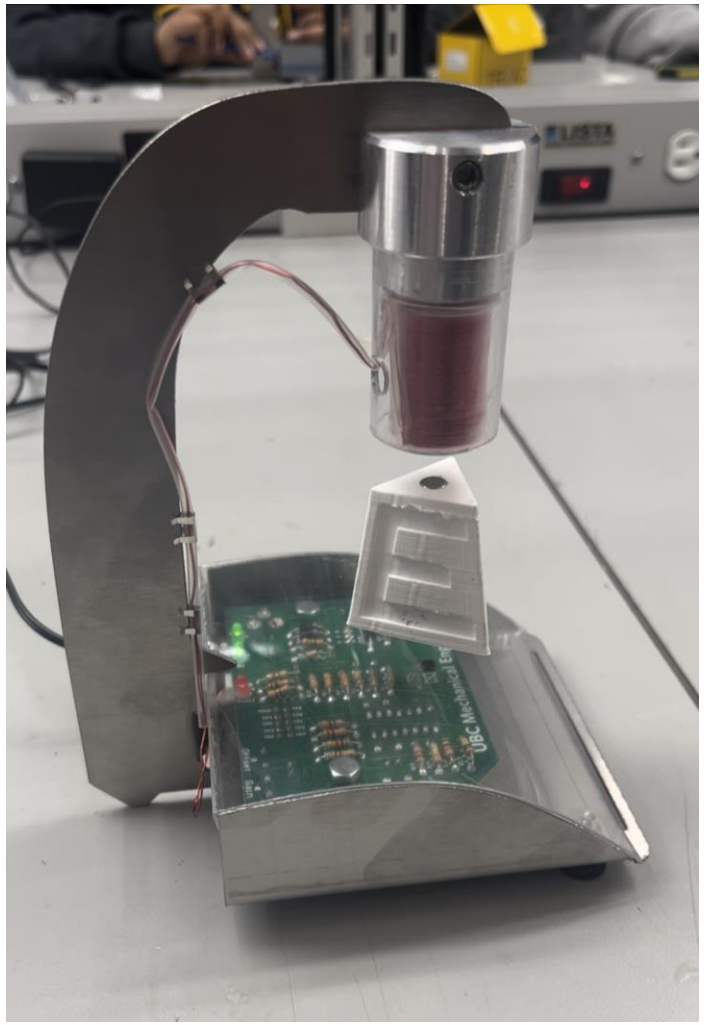
Certificate

MECH 220

I built this magnetic levitation device during the MECH 220 course from August to September 2023.

It involved reading, drawing and interpreting engineering drawings, soldering, milling, turning and CAD.

During this course we were taught proper soldering technique, drafting, machining and CAD.



Magnetic Levitation Device

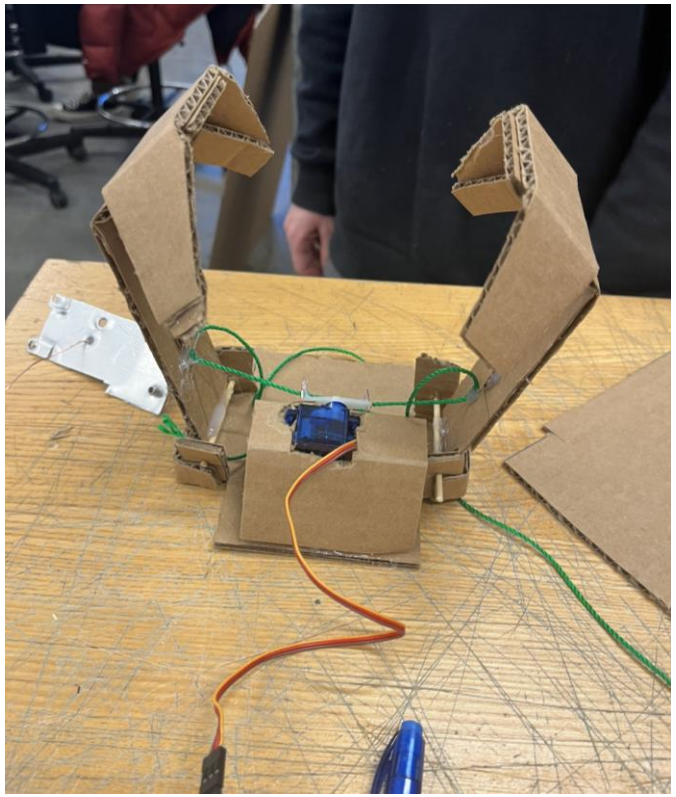
APSC 101

In the 2022-2023 school year I took APSC 101 which culminated in the mechanical claw project as seen on the right.

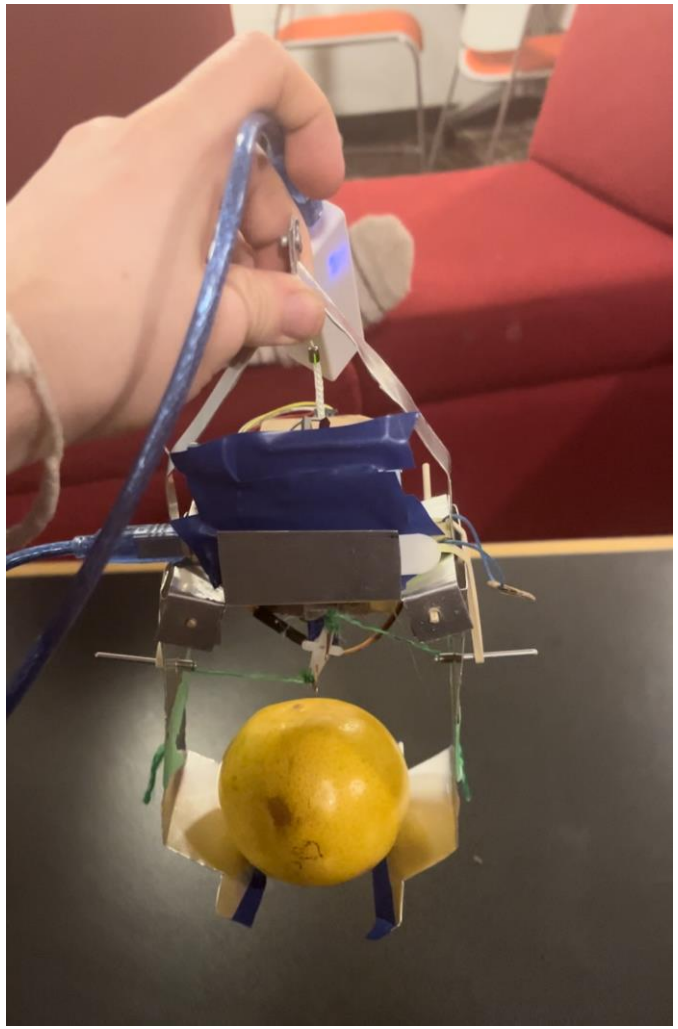
The image on the left is a cardboard protype of the claw and was used as a proof of concept to demonstrate its feasibility to the rest of my group.

The final claw was controlled with an Arduino and used servo to open and close the claw.

As you can see, it had enough strength to pick up a large grapefruit.



Mechanical Claw Prototype



Final Claw