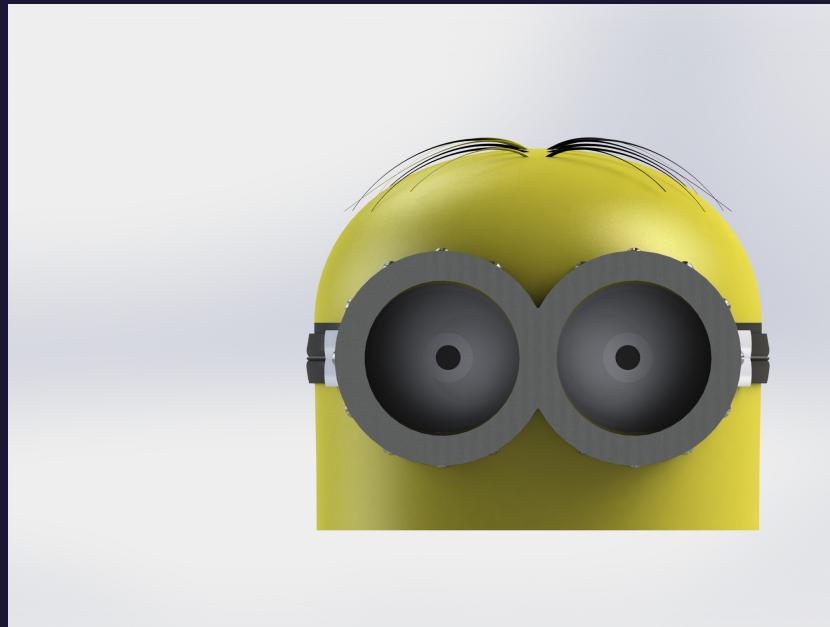


Robotics Studio MECE 4611
Spring 2024
Assignment V
Nicolino Primavera (ncp2136)
Submission: 3/24/24 @ 2:00am
Grace hours: 129:20 hours +22 hrs
Bob the Minion
General Robot Rendering

Robot - Leg Parts

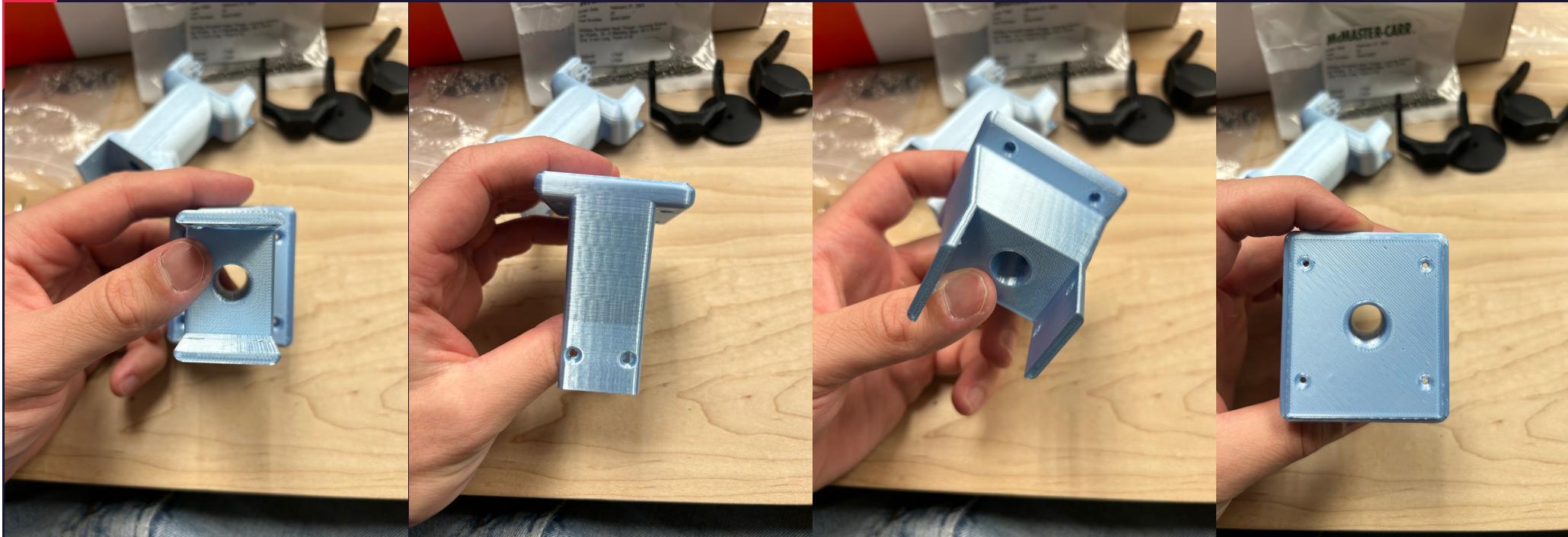


Robot - Minion Parts



- Parts have not been printed yet → wanted to test the legs first and make sure everything works
- Used cardboard as a replacement part

Hip



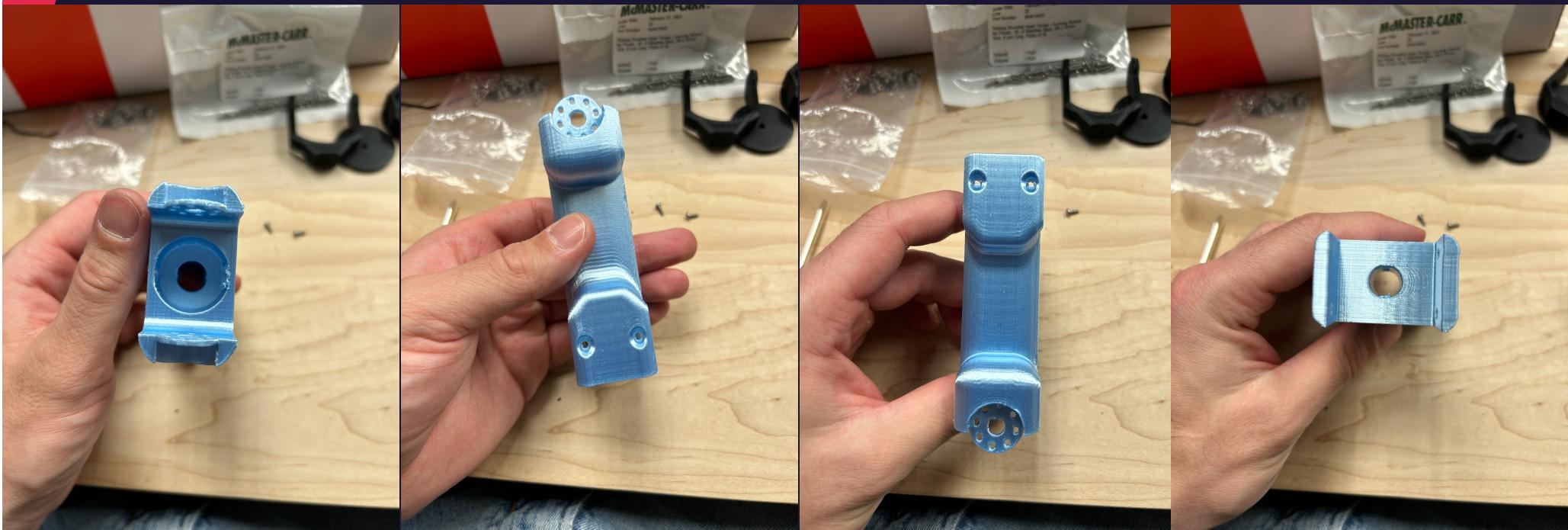
Bottom view

Side view

Side view

Top view

Thigh



Top view

Side view

Side view

Bottom view

Ankle and Foot



Bottom view - ankle

Side view - ankle

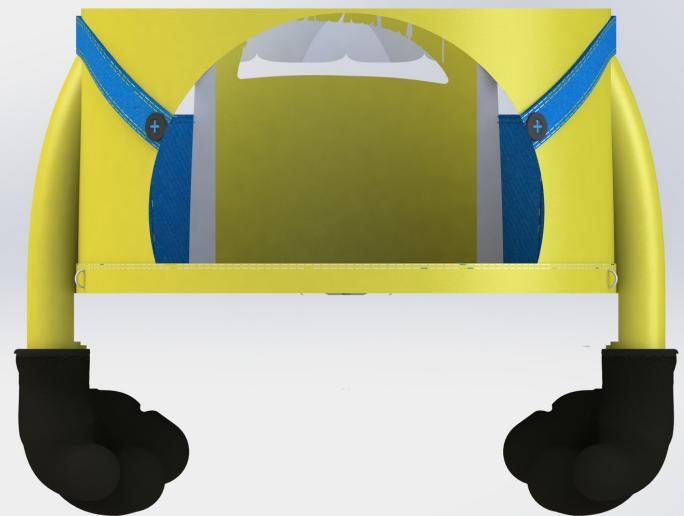
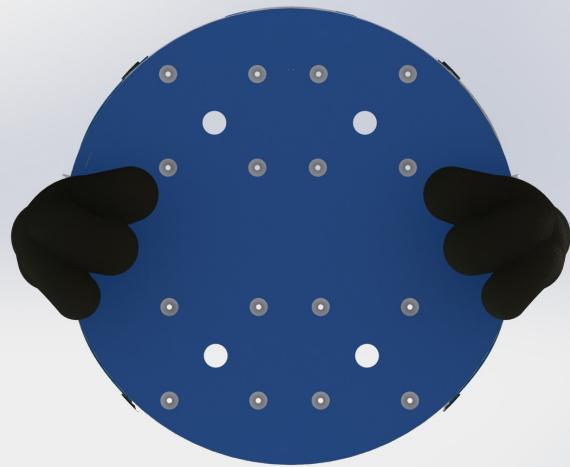
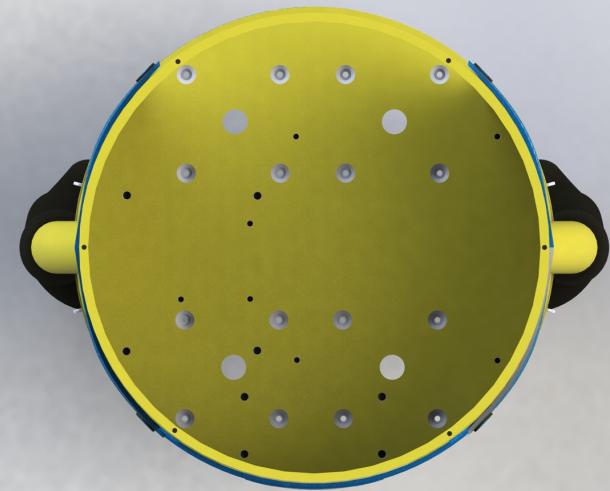
Side view - ankle

Bottom view - foot

Top view - foot

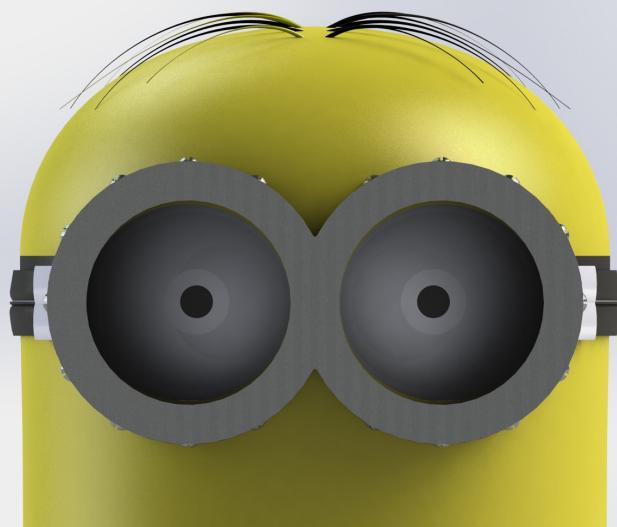
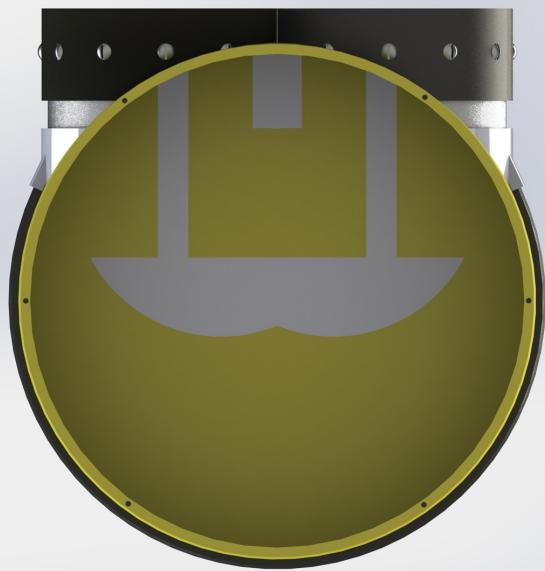
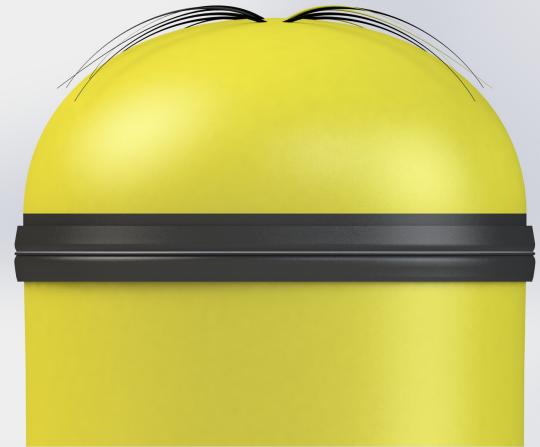
Minion - Bottom

- This design will only change based on the position of the leg screw holes

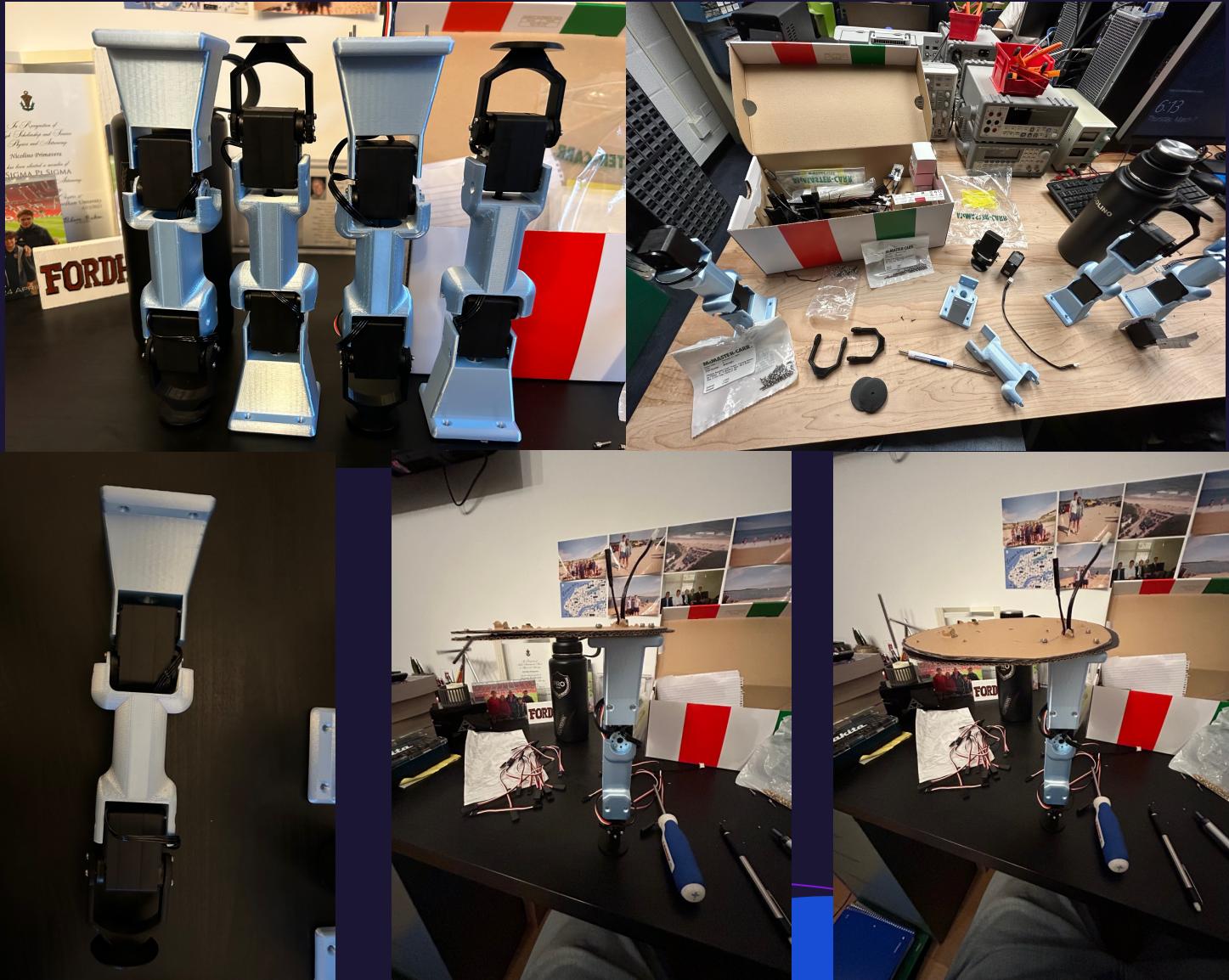


Minion - Top

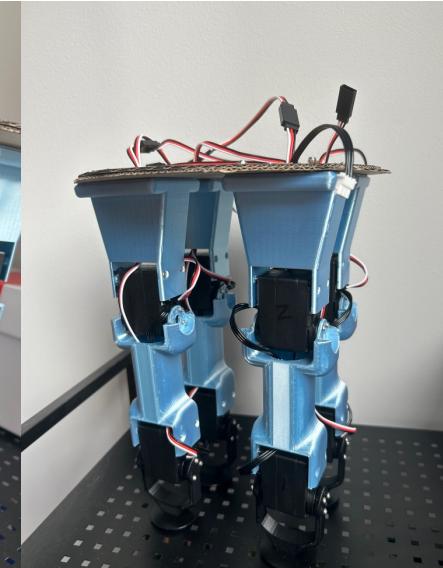
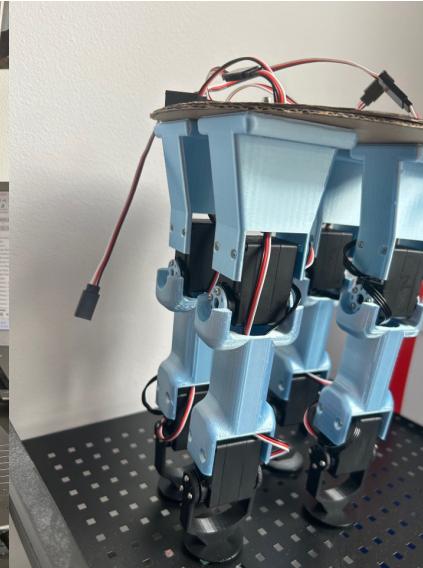
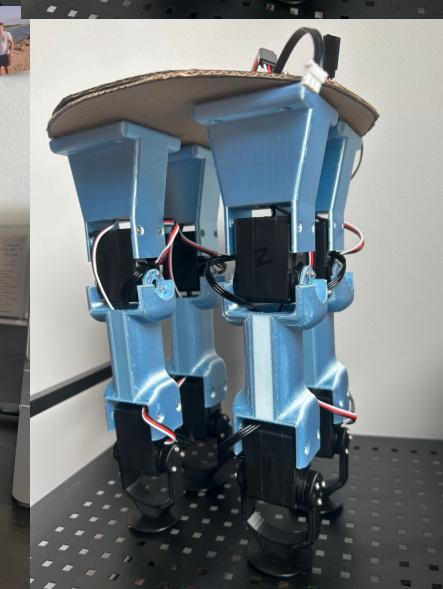
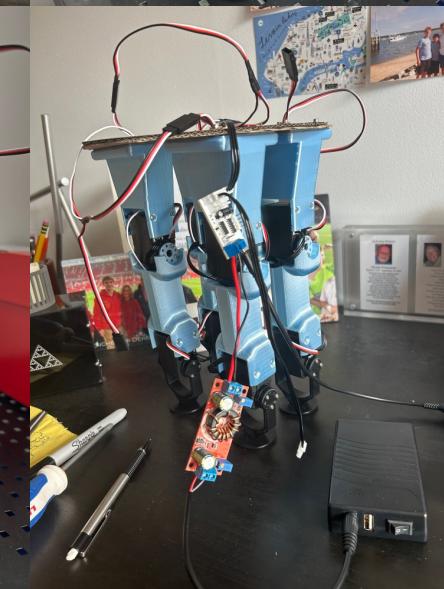
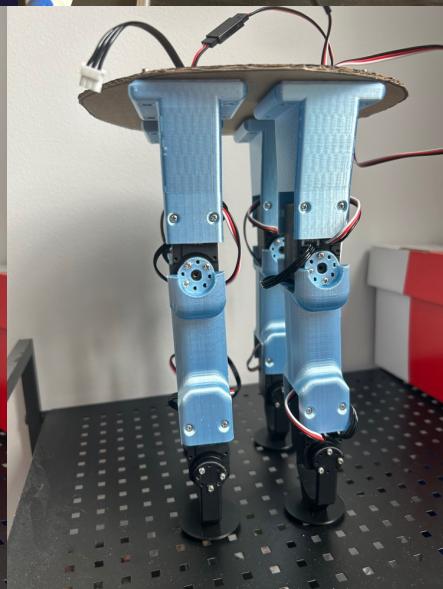
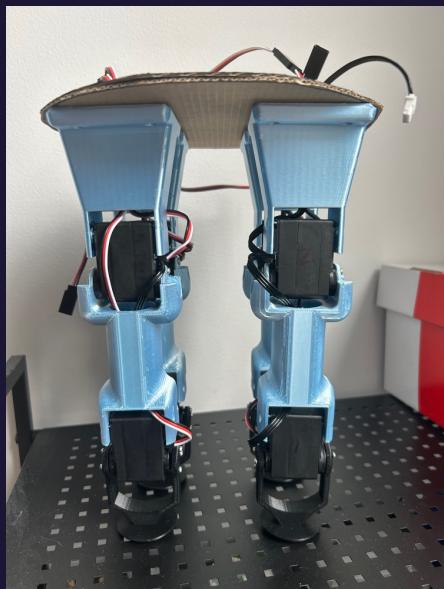
- This design will remain unchanged no matter what



Leg Assembly



Assembled Robot

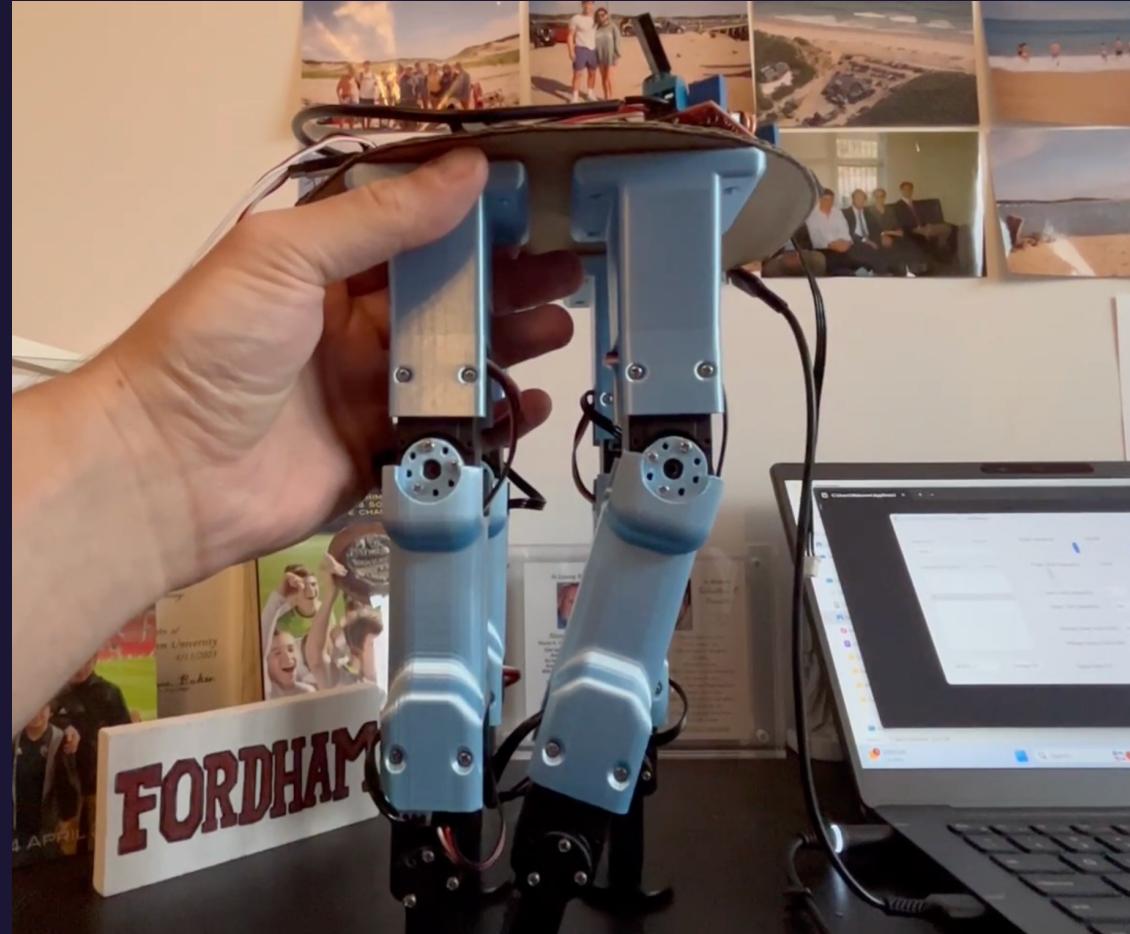


Extreme Leg Interference Testing

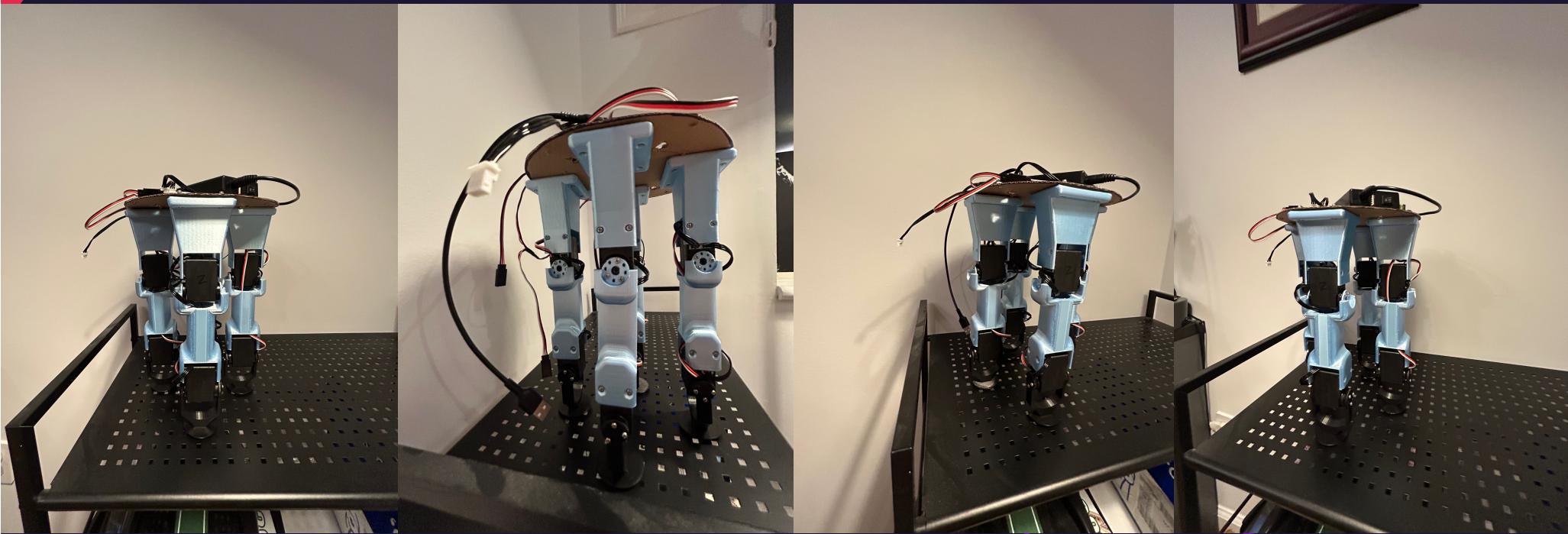
- Google drive link:
https://drive.google.com/file/d/1eMHvKWLJm4dA84XAhLAK_ccDI6jN6UXo/view?usp=sharing
- The legs can only operate between 110 degrees and 240 degrees, otherwise they collide with the leg in front or behind.
- To combat this, I am going to change the positioning from "side by side" to a "diamond."
- Also need to change the screw hole designs on the minion

Form/fit issues

- Collision happens between 0 and 110 degrees of the hip motors
- Going to rearrange the legs into a diamond formation to combat this problem
- Will need to adjust the screw holes in the minion, which is why I did not print those parts until I tested the legs



Fixed Robot Legs



Next Step

- Finalize my CAD
- Print Minion and assemble it to the legs
 - New leg assembly allows for no collisions and more range of motion

Rubric

5 Points Title slide complete (Slide 53)

5 Points overall aesthetics, layout and formatting of the slides (All slides)

10 Points glamour photo of printed robot (Slides 62 and 65)

10 Points posting some rendering of your robot on the discussion board at least 24h in advance of deadline, and commenting constructively and positively on at least three other's postings (show screenshots) (Slide 68)

10 Points robot legs moving (frames shown + link to video) (Slide 63)

10 Points extreme leg interference tested and measured (Slide 63 and 64)

10 Points stability verified in various configurations (Slides 62, 64, 65)

10 Points form/fit issues identified and addressed (Slide 63 and 64)

10 Points all components properly bolted and connected (Slides 62, 65)

10 Points 3D-print quality, support structure cleanly removed (Slides 56-58)

10 Points parts sanded and painted (Slides 56-58)

10 Points Robot modularity demonstrated (Slide 62, 63, 64, 65)

10 Points Multiple configurations tested (Slide 63, 65)

10 Points Cables routed properly and securely (Slide 62)

10 Points motors controlled directly from Raspberry Pi

10 Points motors powered using battery (Slide 63)

10 Points overall aesthetics of the presentation (All slides)

10 Points Robot boot test routine implemented

10 Points Robot homing routine implemented

ED Discussion Post

ed MECE 4611 S1 – Ed Discussion

New Thread

COURSES

- MECE 4606 100
- MECE 4611 S1 33

CATEGORIES

- General
- Sketches
- CAD design
- Working robot
- Simulation

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Debugging pylx16a on any architecture
Working robot Sachin Thakur 3w 7 2

Robot Parts Ordering
General Dominik Nasilowski STAFF 1mth 1

3D printing requests
General Dominik Nasilowski STAFF 1mth 2

Show 3 more

This Week

Assembled Robot #131
Nico Primavera Now in Working robot

Hi all,

Attached are the photos of my assembled robot. I have not printed the minion aesthetic yet (used a cardboard cutout inplace), but the CAD rendering is attached if you want to take a look. I had to reassemble the leg positions in a diamond because there were collisions with my initial design.

13 others online

Commenting on 3 other ED posts

Comment ...

Sort by Newest ▾

Add comment

Nico Primavera now Looks great! Good job!
Kashaf Jabbar 53m Great sleek design and prints! The feet design looks like it'd help with the gait and balance nicely.

General James Vickery 2h Assembled Robot- Joyal & Shivangi
Working robot Joyal Michael Puthur 2h

Robot Assembled - Yuxian Zhang
Working robot Yuxian Zhang 3h

Bobo Assembled
Working robot James Vickery 3h

ElectroEllie Full Assembly
Working robot Melis Jensen 9h

robot assembled
General Jialong Ning 9h

Robot assembled

Filter ▾

General James Vickery 2h Assembled Robot- Joyal & Shivangi
Working robot Joyal Michael Puthur 2h

Robot Assembled - Yuxian Zhang
Working robot Yuxian Zhang 3h

Bobo Assembled
Working robot James Vickery 3h

ElectroEllie Full Assembly
Working robot Melis Jensen 9h

robot assembled
General Jialong Ning 9h

Robot assembled

Link to leg motion video: <https://www.youtube.com/watch?v=XT3c2shKwSA>

Comment ...

Add comment

Nico Primavera now Great design! The elephant dome for the electrical components is great!
Kashaf Jabbar 1h The prints look absolutely great! Are you placing the lid through something like a snap-joint?
James Vickery 3h

Filter ▾

General James Vickery 2h Assembled Robot- Joyal & Shivangi
Working robot Joyal Michael Puthur 2h

Robot Assembled - Yuxian Zhang
Working robot Yuxian Zhang 3h

Bobo Assembled
Working robot James Vickery 3h

ElectroEllie Full Assembly
Working robot Melis Jensen 9h

robot assembled
General Jialong Ning 9h

Robot assembled
Working robot Navin Singh 9h

Sharing (giveaway) some parts
General Aleksandr Vankov 10h

A Ara Uhr 2 hours ago Wow! Your robot looks great. I love the expression and the leg designs. It looks like the legs have a good range of motion to go through. The blue parts look cool, too bad they are weaker. If they were both the same percentage of infill, maybe they are weaker than the black printed legs because a different infill design was used? (ex. triangle vs. hexagon, etc.)

Comment ...

Add comment

Nico Primavera Now I noticed similar issues with the blue parts. When I printed in black the parts were more sturdy. For the blue, it was more flimsy and when removing supports some of the holes I counterbored were messed up. Great robot design though!

Comment Edit Delete ...

Add comment

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