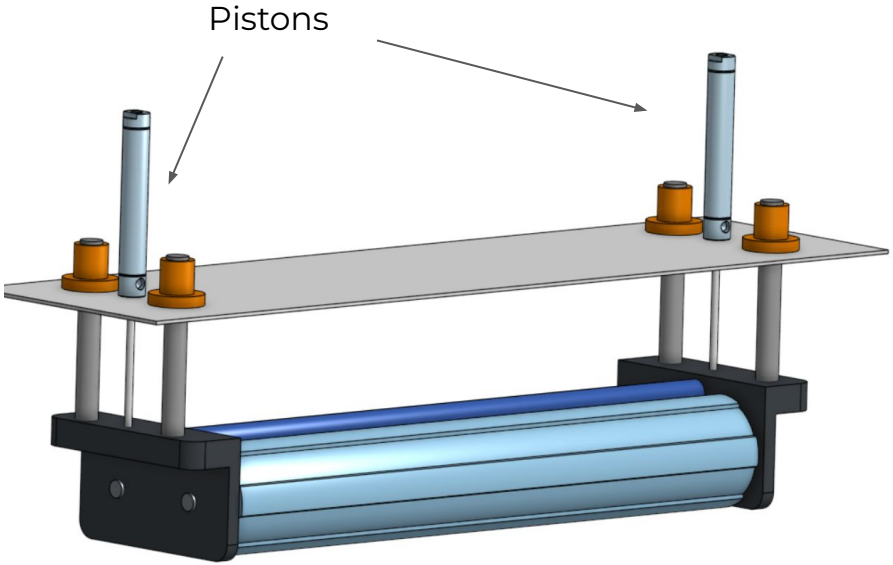
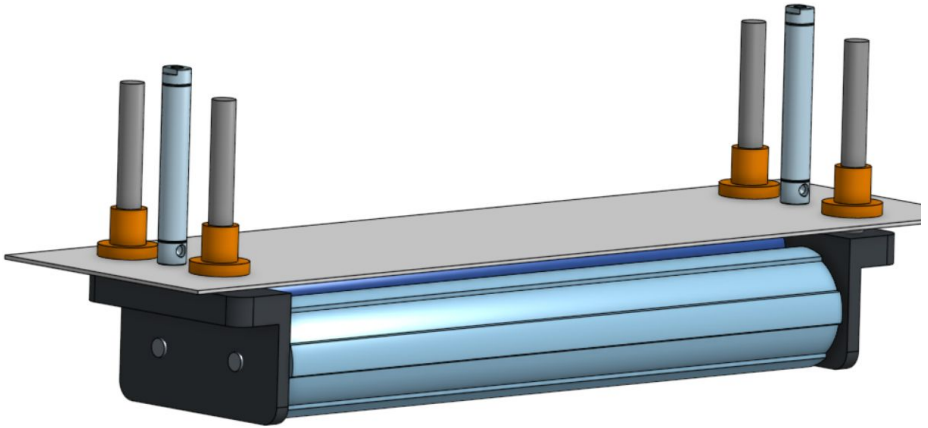
Last time we spoke...

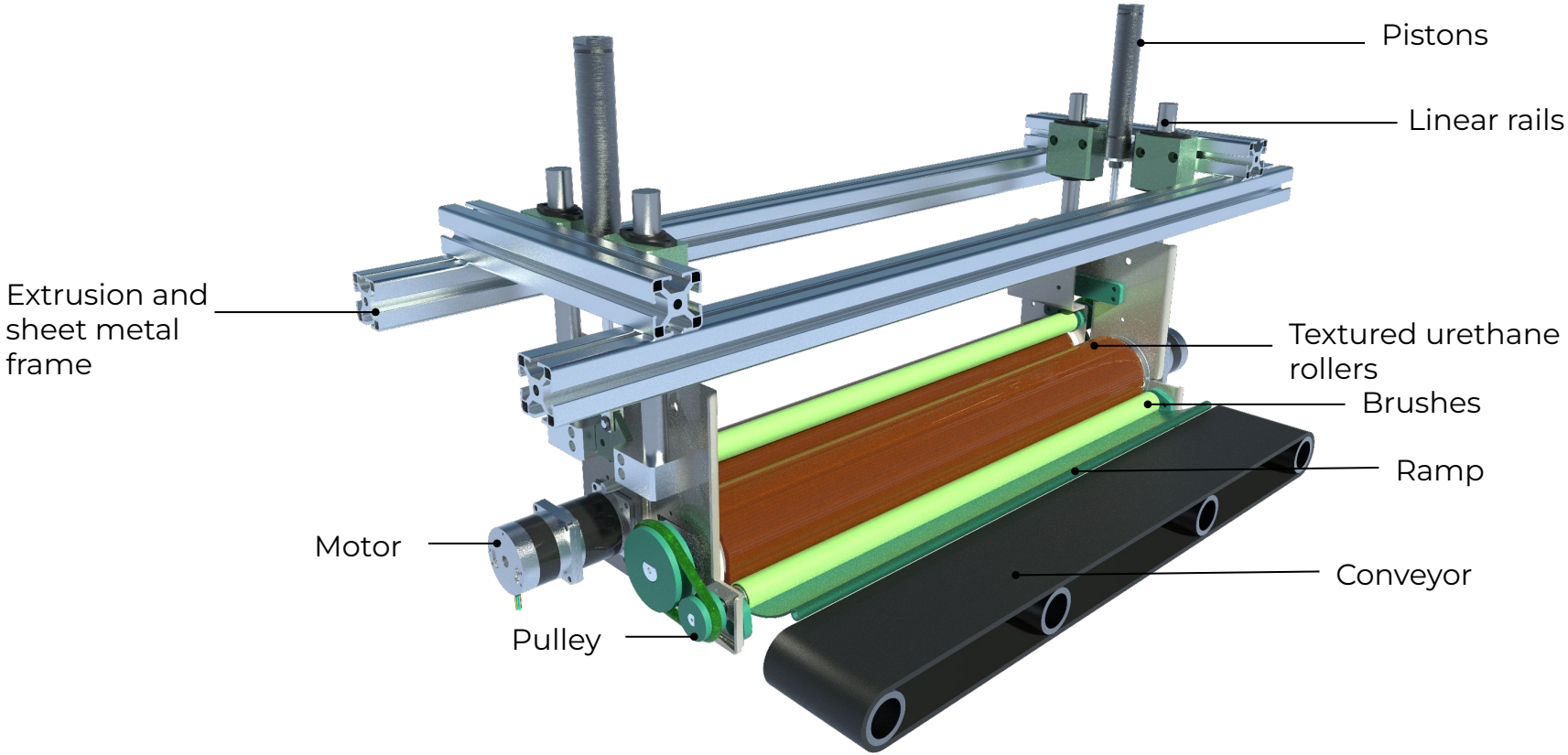


DOWN STATE

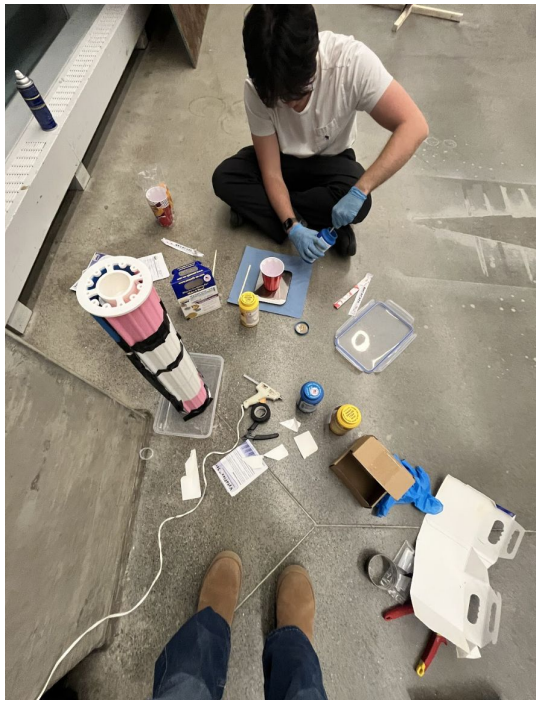


UP STATE

Prototype 2 Design



Building Prototype 2



Casting the 2ft long rollers...

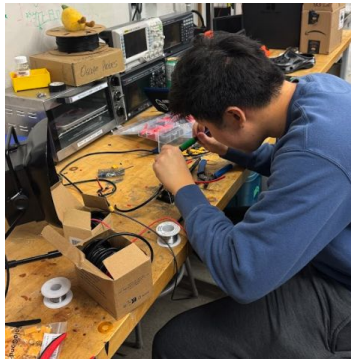
The first one went disastrously

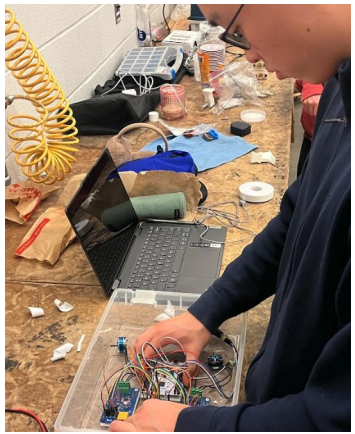
Eventually it was ok

Building Prototype 2

Assembling the frame

Building Prototype 2



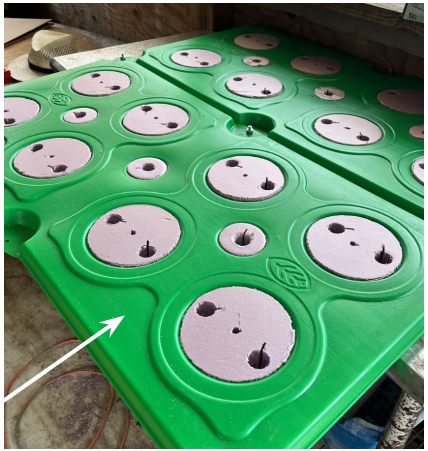


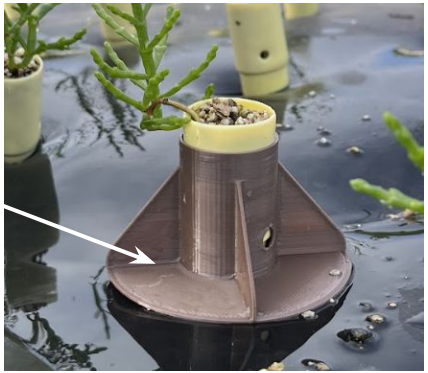
Adding motors and pneumatics

Oahu Trip 2: Fun Drone Shots

Oahu Trip 2: Testing

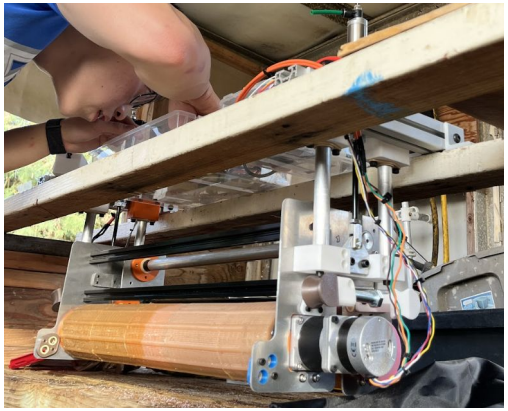
New, more rigid platforms





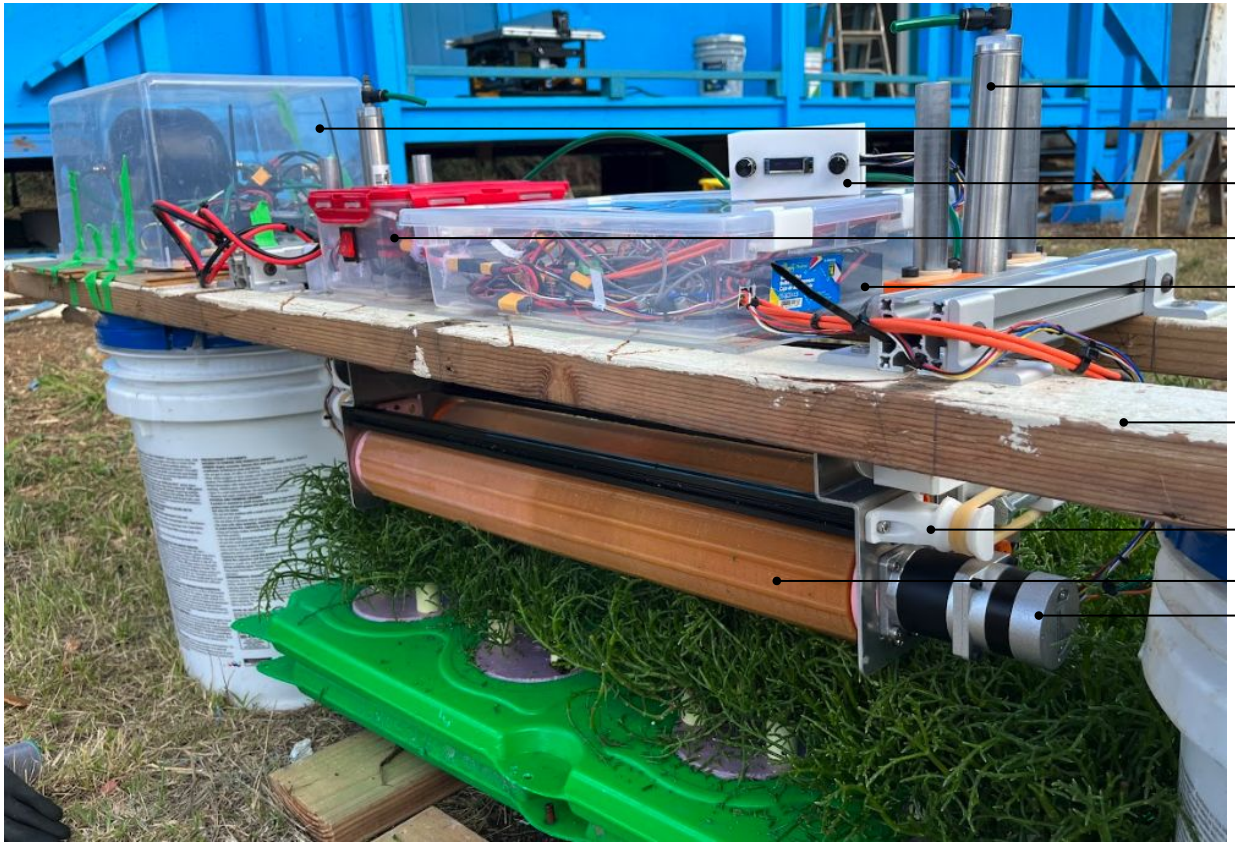
Tried cone attachments

Assembling

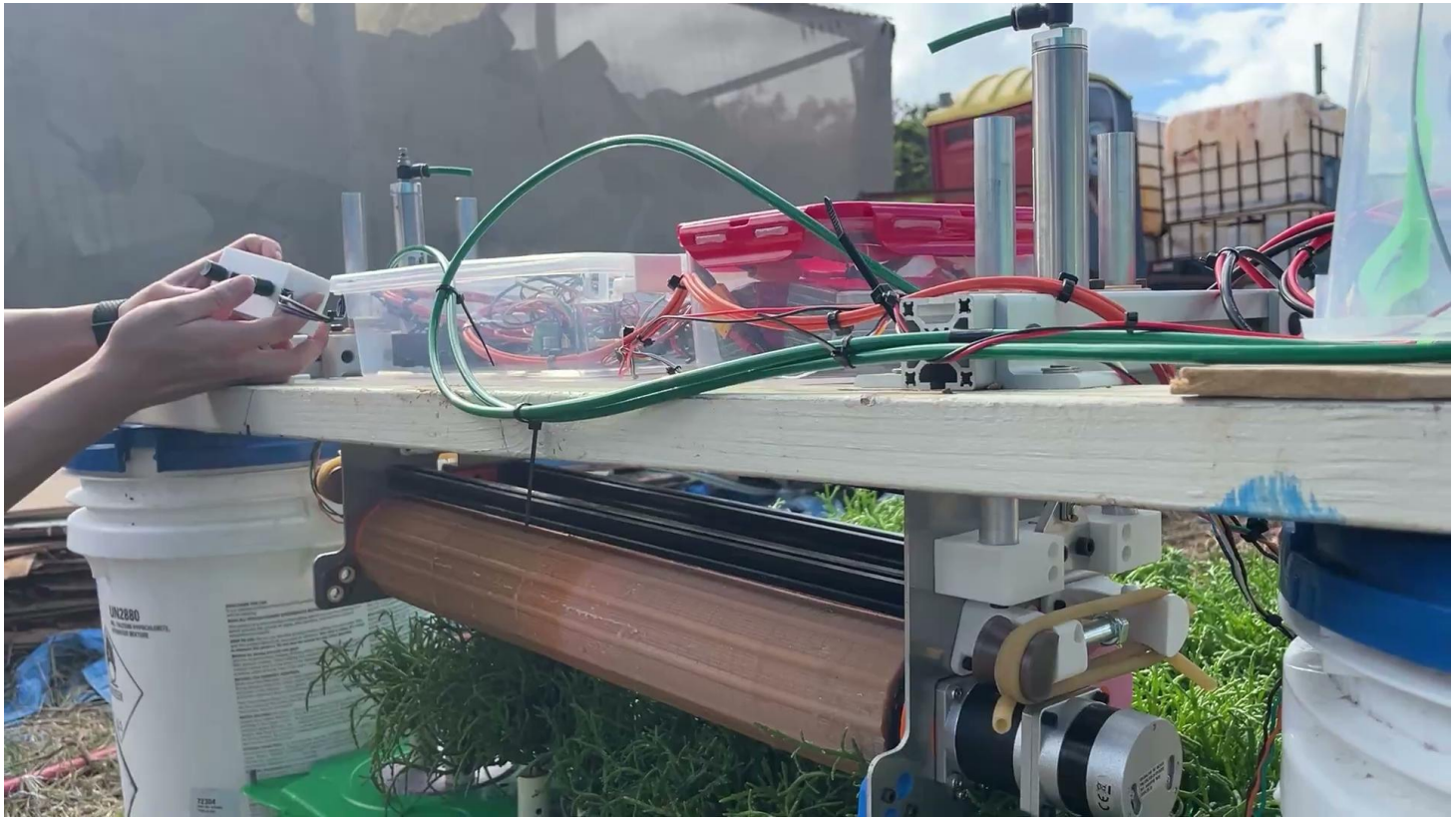


Testing

Oahu Trip 2: Test Setup



Oahu Trip 2: Test Videos

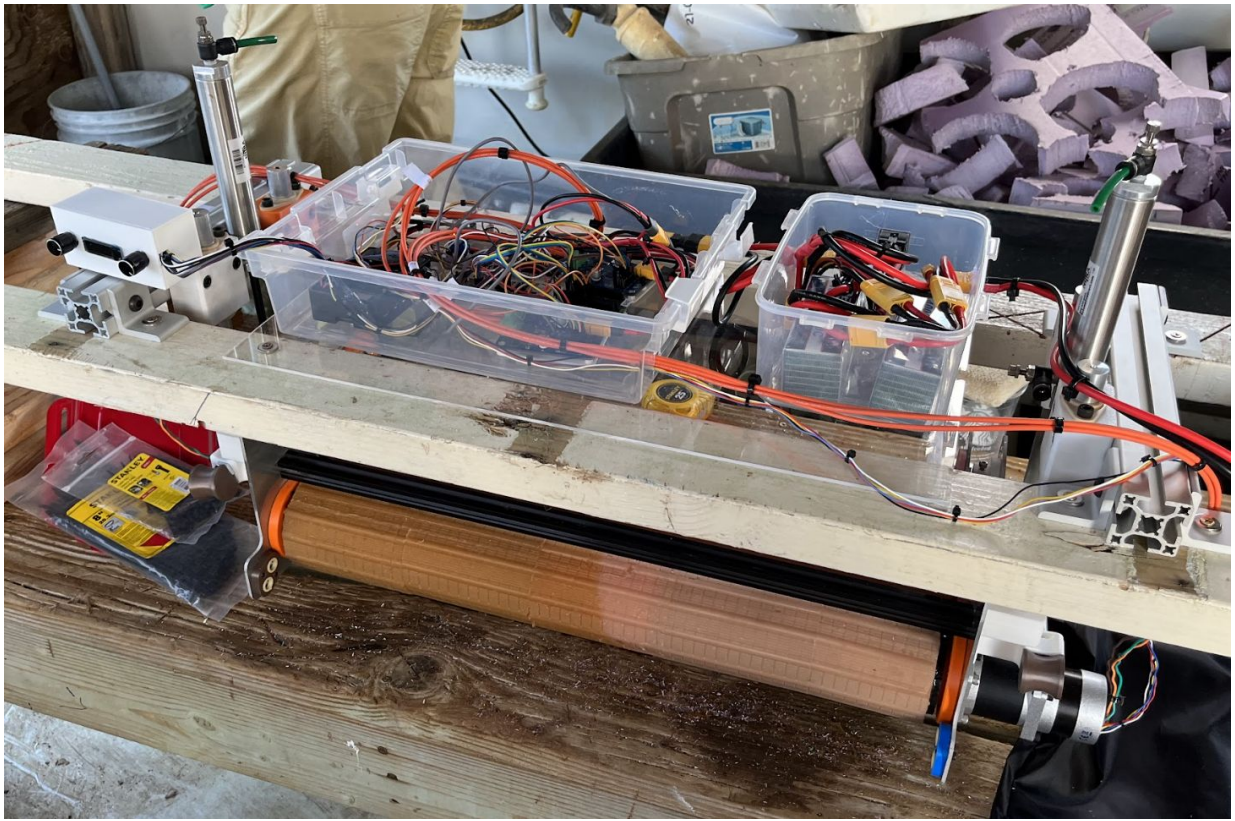


Some motor stalling
-> increasing current limit fixed this

Rollers not completely rigid
-> seeing uneven picking

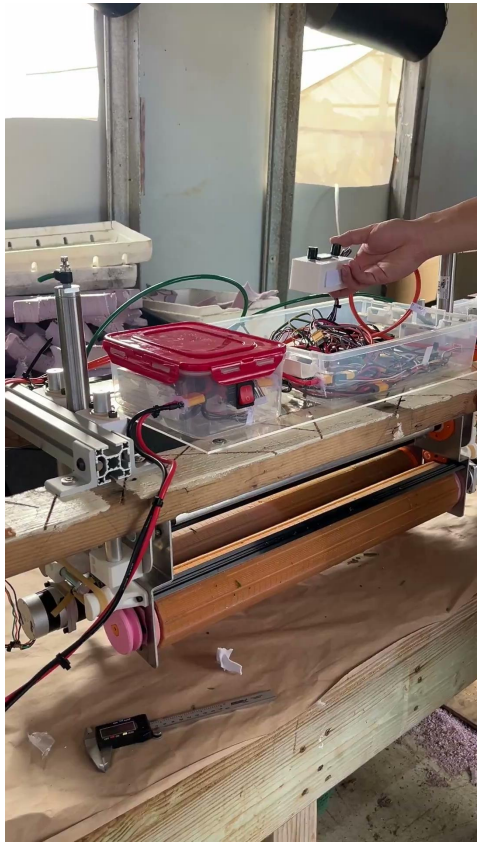
Not picking enough tips
-> could be too many or too large plants being tested. Maybe we can design tusks?

Oahu Trip 2: Test Setup



Tupperware for ebox, batteries, and pneumatics were fine this time, but we need to think of designing a rain shield and enclosure.

Oahu Trip 2: Test Videos



Pistons were uneven (adjusting the valves were not precise)

Rollers were ok but not as effective when wet (better than last time)

We may not be getting enough of the plant (tusks?)

Oahu Trip 2: Pontoon and Cargo Investigation

Pontoons are promising to use for entire mechanism to sit on

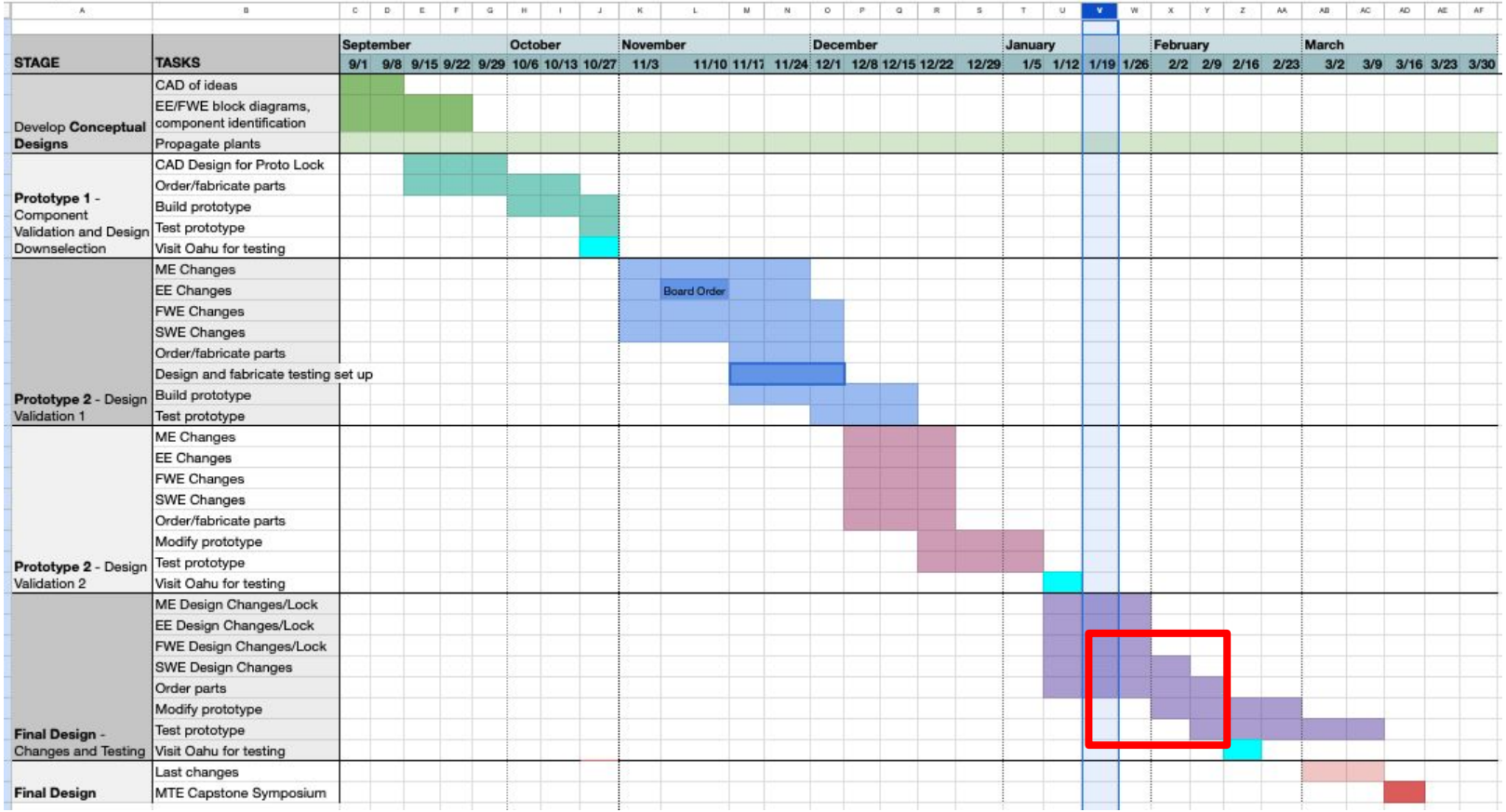
Cargo sits pretty high on top of the plants...

Oahu Trip 2: Main Notes

Pinching Force
1 surgical tubing spring per end of the roller was working decently
2 caused the plant medium to be uprooted
Motor
Motor would stall at the point before the medium was uprooted
Found good speed for motor
Pistons
Slightly out of sync and hard to tune
Rain
Realized that it can rain and that all electronics, batteries, etc. need to be shielded
Parts broken
Some 3D printed pieces broke during shipping -> they are now CNC
Frame
Extrusions we brought were not long enough, found 7ft long planks to replace
Plant ideal pick height
Measured freshly picked plants compared to ripe plants
Rollers
New textured grip seems to be working better when wet
Soft urethane gets dirty very easily
Must be reversed on way up, cannot be free spinning

Pontoons
Took measurements, will be useful to have mechanism sit on them
Electrical
Jumper wires were very unreliable
Some board components were falling off (capacitor)
Heat
Solenoid bottom super hot
Converter warm
Motors warm (fixed side is warmer)
Rasp pi got hot
Buttons and Screen
Screen keeps blacking out
Button will double click sometimes
Logging
Was not logging information when not connected to wifi

Knowing there's only 3 weeks left...



Next steps

01/21 - 02/11

Pontoon and Cargo
- CAD pontoon and cargo design
- Consider box vs bag cargo

E box and enclosure
- figure out footprint and lock boards
- first draft of enclosure and rain shield design

Pneumatics
- rain shield design draft
- maybe add fan if we have time

ME Parts
- order 7 ft long extrusions
- order the rod for the brushes and complete brush design
- file the CNC keyway
- consider tusks

Screen and buttons
- try to reproduce problem and verify robustness

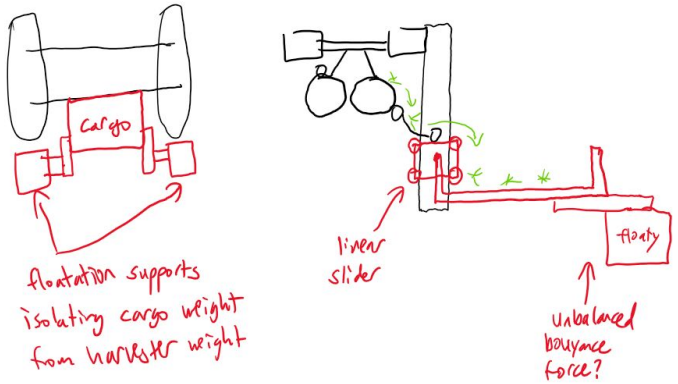
Hardwiring
- work on shield/socket for hardwiring @kevths
  - make sockets for gate driver pins
- begin hardwiring
- work on controller board for symposium

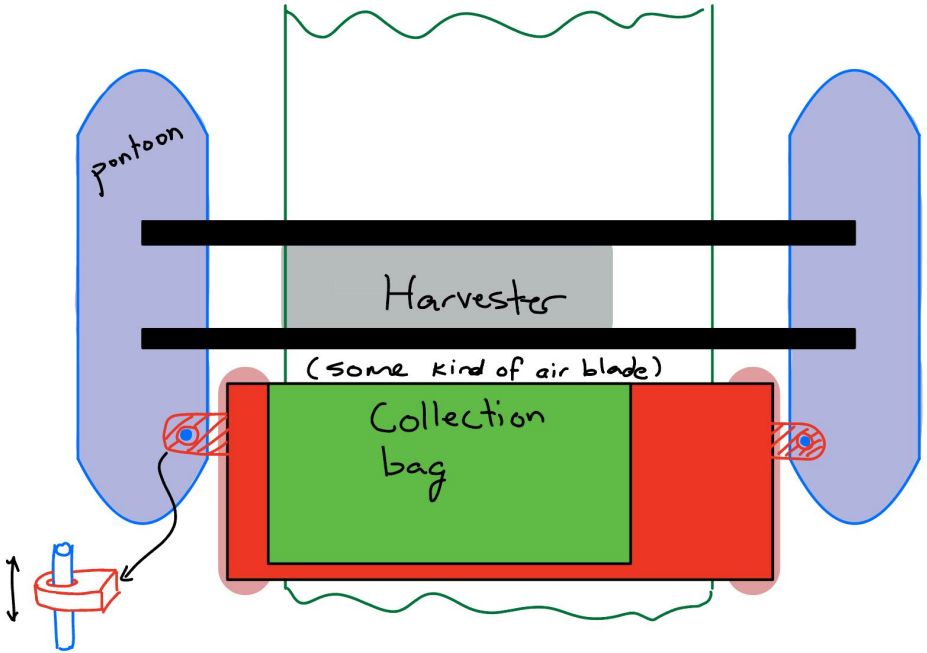
Firmware
- add distance sensor

April Tag
- look into how to implement april tags

#1 Pontoon and Cargo

#1 Pontoon and Cargo





#2 Thoughts on enclosure, rain shield, venting design?
For electronics, battery, and pneumatics

#3 Thoughts on using fans (with air funnel attachment) to blow off tips into cargo instead of conveyor and brushes?

#4 Thoughts on tusks?

Thank you!