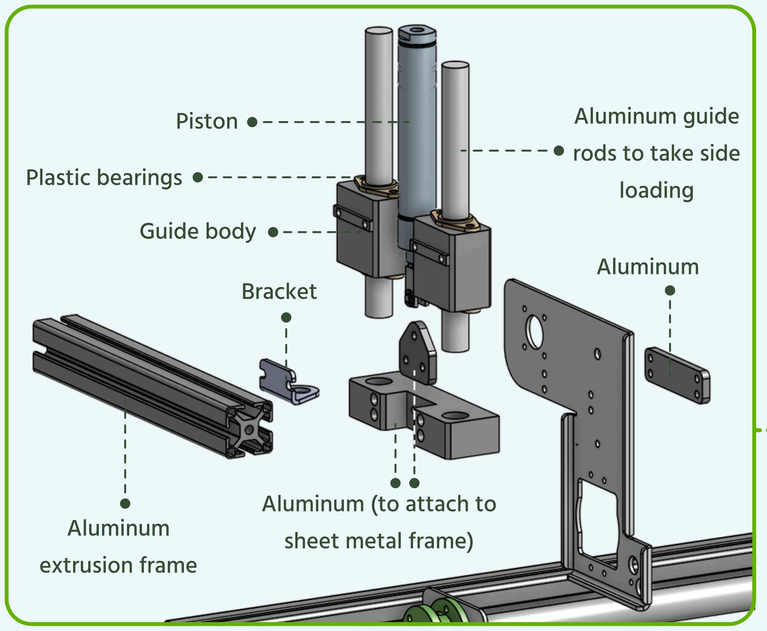
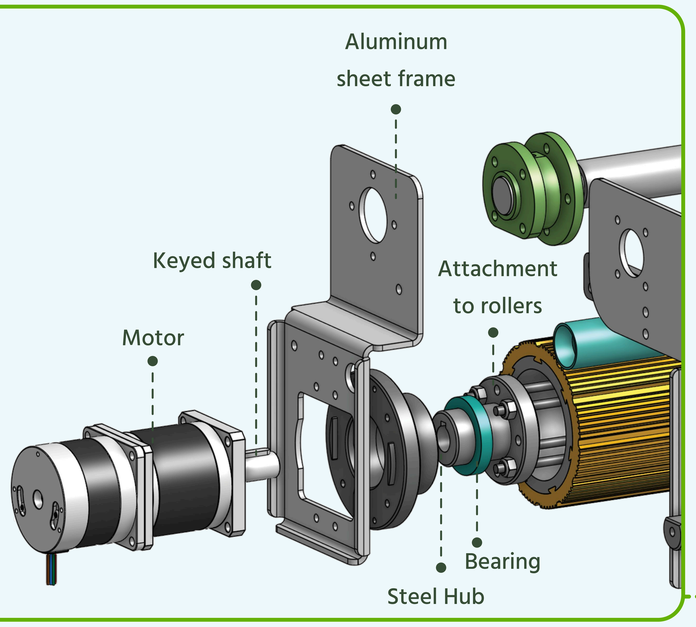
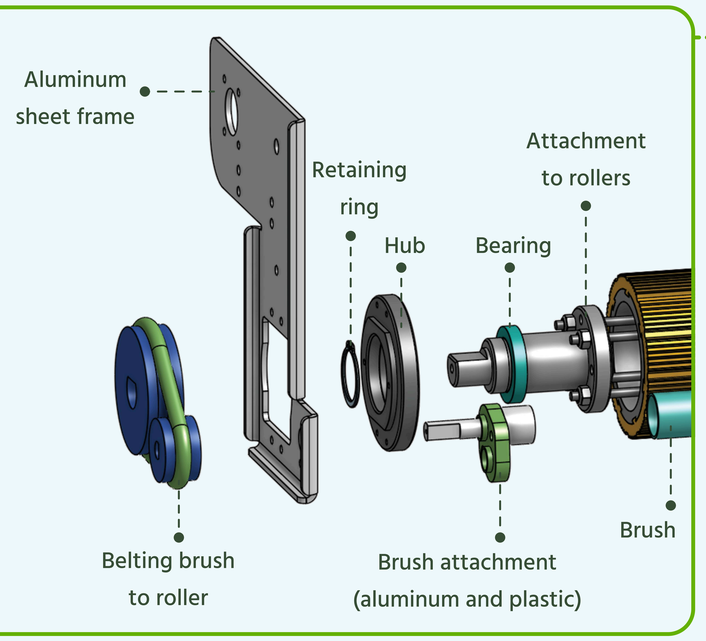
8 **EXPLODED VIEW OF FINAL DESIGN:** The **urethane roller proved to be a promising path forward**. For the second round of testing (which has not happened yet, we are making the second prototype right now), the full scale picker with the frame, piston actuation, and motor will be validated.

OVERALL DIMENSIONS (EXCLUDING CONVEYOR AND CARGO, EXTENDED STATE): APPROX. **1 FT WIDTH X 3 FT LENGTH X 1.5 FT HEIGHT**







PNEUMATIC PISTONS TO LIFT AND LOWER ONTO THE PLANT.

THE ALUMINUM EXTRUSION FRAME ALLOWS FOR EASY ASSEMBLY.

DIRECT DRIVE MOTORS RUN THE ROLLERS, ONE ON EACH SIDE.

THE BRUSHES ARE BELTED TO THE ROLLERS & HELP DIRECT THE HARVESTED TIPS TOWARD THE CONVEYOR.

THE HINGED SHEET METAL FRAME AND THE SQUISHINESS OF **THE URETHANE ROLLERS** PROVIDE COMPLIANCE TO WRAP AND PINCH AROUND THE PLANT.

THE RAMP ACTS LIKE A CUP WHEN THE MACHINE IS LOWERED AND A SLIDE WHEN THE MACHINE IS LIFTED.

THE CONVEYOR IS ELEVATED OVER THE ROW OF PLANTS. IT LEADS TO THE CARGO BIN, WHICH FLOATS ON THE WATER.

9 **QUESTIONS YOU MAY STILL HAVE:**

1. **Where are all the electronics and power components (battery, motor controller board, etc.)? Where is the compressor, air tank, etc. for the pistons?** They will be attached to the aluminum extrusion frame, on the top away from the plants and water. This is not complete yet and not modelled, as we are still designing and testing now!
2. **How is this mechanism going to float and traverse?** This machine will float on pontoons, and the current design is made to be pushed and operated by a human due to the design time and resource constraint. However, this design is a proof of concept that a full autonomous vehicle is possible. We decided to focus on designing a reliable rolling picker harvester as it is the most novel and direct way to help the farm.
3. **What's holding the rollers closed?** An adjustable spring will be holding the rollers closed while still allowing for some compliance for the plants to fit through and be gripped by the rollers. This spring will be added as we test for round 2 of our prototyping and testing process.
4. **Is the mechanism salt, corrosion, heat, UV, and water proof?** Almost all of the machine is made from plastic and aluminum material that is able to withstand the salty water and heat of the Hawaiian sun. Our electrical components will be sealed in a box with gaskets to ensure it is waterproof. Coverings will be made to protect parts such as the urethane from UV.

I fit a lot in this presentation, but I couldn't tell you everything. I'd love to chat if you have questions. You're welcome to reach out via email: j2253che@uwaterloo.ca