Assistive Feeder October PRAC

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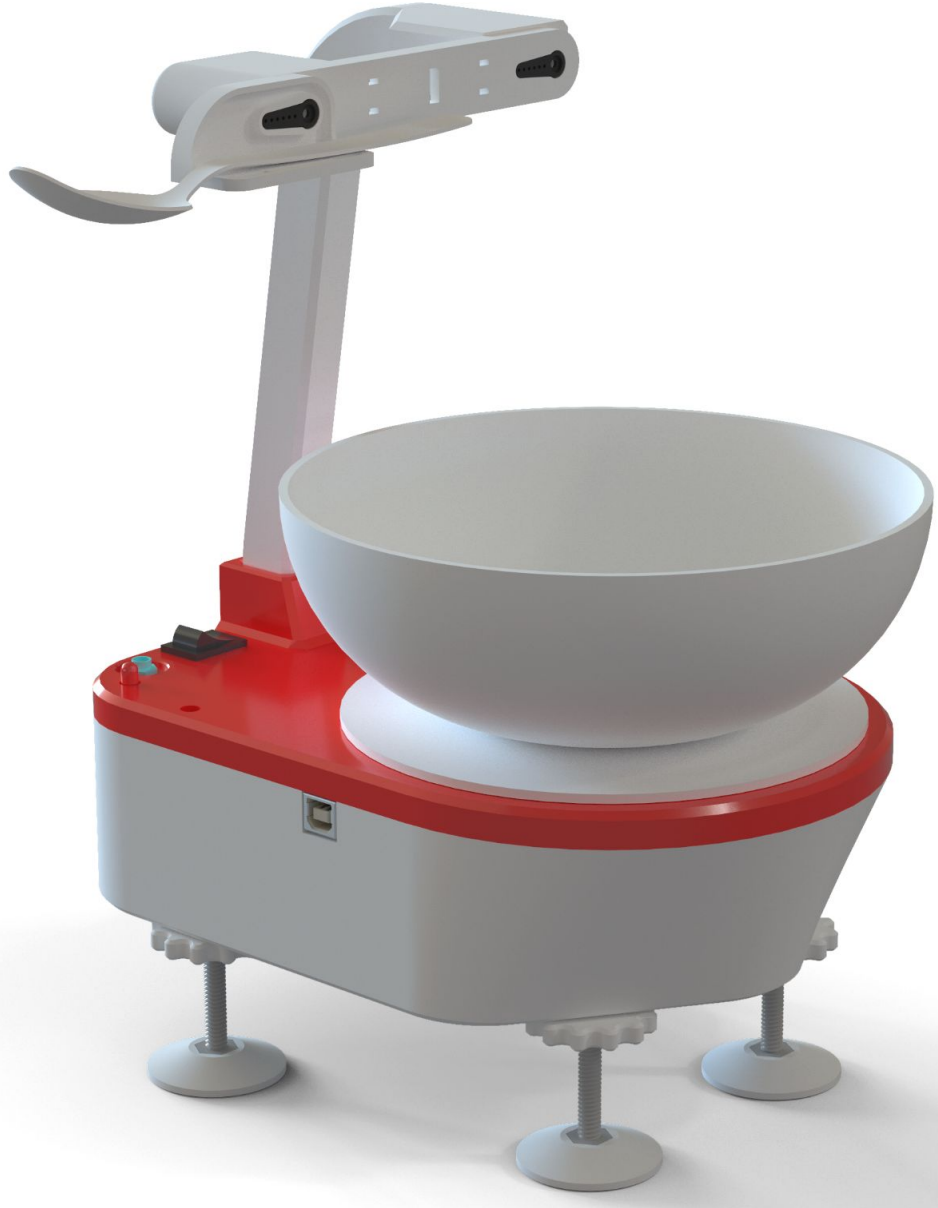


Background

Purpose

Help people with quadriplegia feed themselves without assistance

Key Design Goals

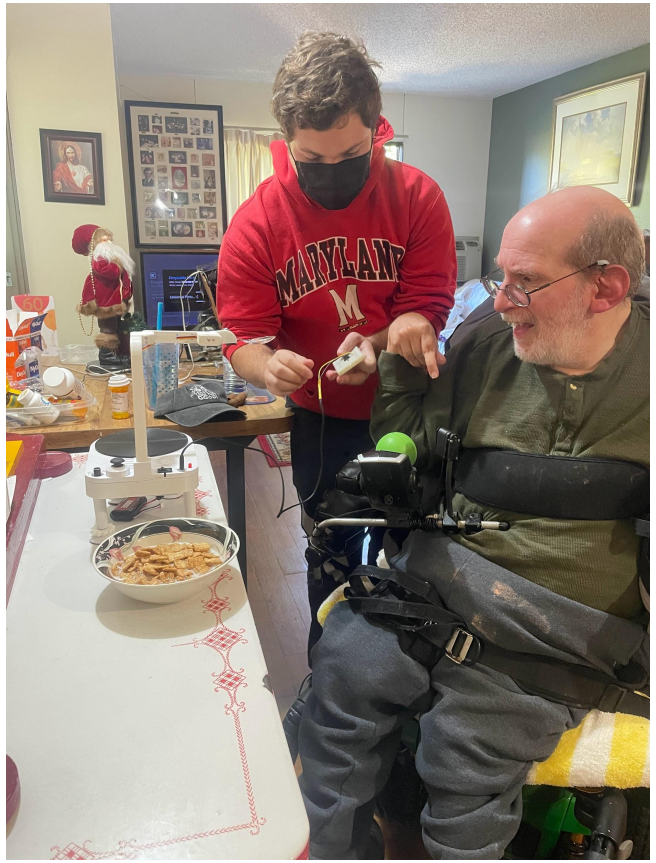
- Keep cost below $250/unit
- Usable with different bowls
- Simple to manufacture
- Reliable operation

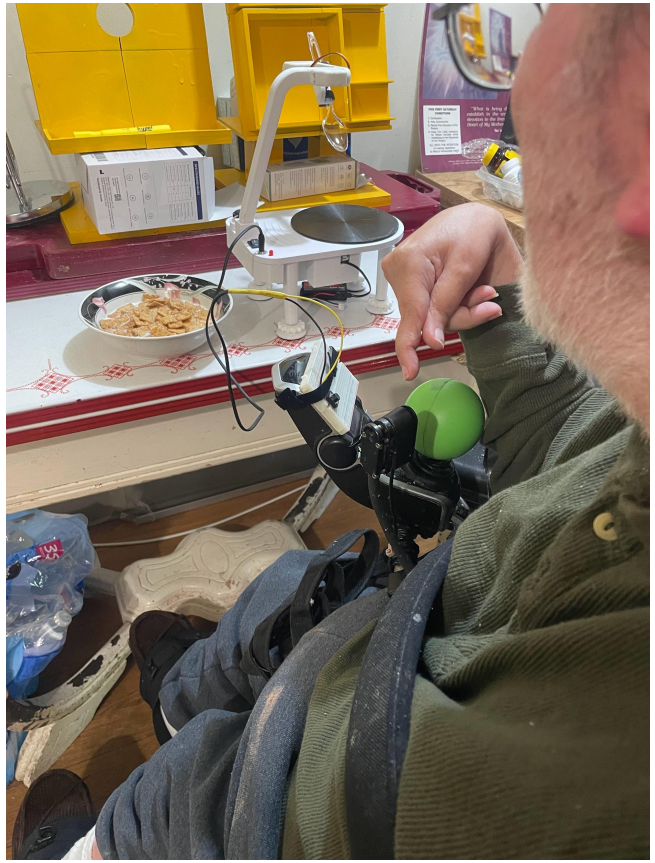
This Semester's Goals

- Improve functionality of device through user testing
- Find organizations to support manufacturing and distribution
- Improve assembly procedure

User Testing

This past weekend we had Andy test out the assistive feeder.
Andy is in his 50's and has cerebral palsy, usually relying on his caretaker to feed him.





Problems from Testing with Andy

- Andy got frustrated when scoop was “canceled”
- Scooping in a full bowl exceeded force limit for servos
- Bowl slid off of flat turntable b/c tape was unavailable
- Device shifted on table when Andy moved around
- Andy did not have a mono jack input, had to improvise one

Planned Improvements

- Replace “cancel” function with a “end scoop early” function
- Improve force sensing logic to avoid scooping too much food
  - High force → move up and back (instead of just slow down)
  - Calibrate force measurement on startup instead of hard-coding
- Use taper to stop bowl from sliding when tape is not used
- Use suction cups on table to prevent shifting

Manufacturing Requirements

Tools

- 3D printer with bed size at least 220x160mm
- Soldering iron
- Wire strippers/cutters
- Phillips head screwdriver

Skills: 3D printing, soldering

Cost/device: $200 for 1, $145 for 2, $125 for 5+

Assembly time/device: 2 hours

3D Printing time/device: up to 50 hours, 5 setups

Going Forward:
Manufacturing and Distribution Support

We want Assistive Feeders in use by people who can benefit from them.

Can you connect us with a manufacturing or distribution partner to make this possible?