Title: Low-Interference Wheelchair Footrest

Date: 4/12/2024

Client: Dan Dorszynski
Advisor: Dr. John Puccinelli
Team:

Charles Maysack-Landry — Leader   maysacklandr@wisc.edu

Jayson O'Halloran — Communicator   ohalloran2@wisc.edu

Haoming (Bobby) Fang — BPAG   hfang45@wisc.edu

Sam Tan — BWIG   stan68@wisc.edu

Problem statement:

The project aims to innovate wheelchair footrest design to overcome the limitations of current models which are often cumbersome, heavy, and restrict leg movement or access to the ground. The goal is to create a footrest that is lightweight, easily detachable, and foldable, enhancing the wheelchair user's comfort, and allows interactions with surroundings through the footrest.

Brief status update

- Front and back Actuator Holder reprinted/modified
- Circuit put together
- Footrest cut and started welded

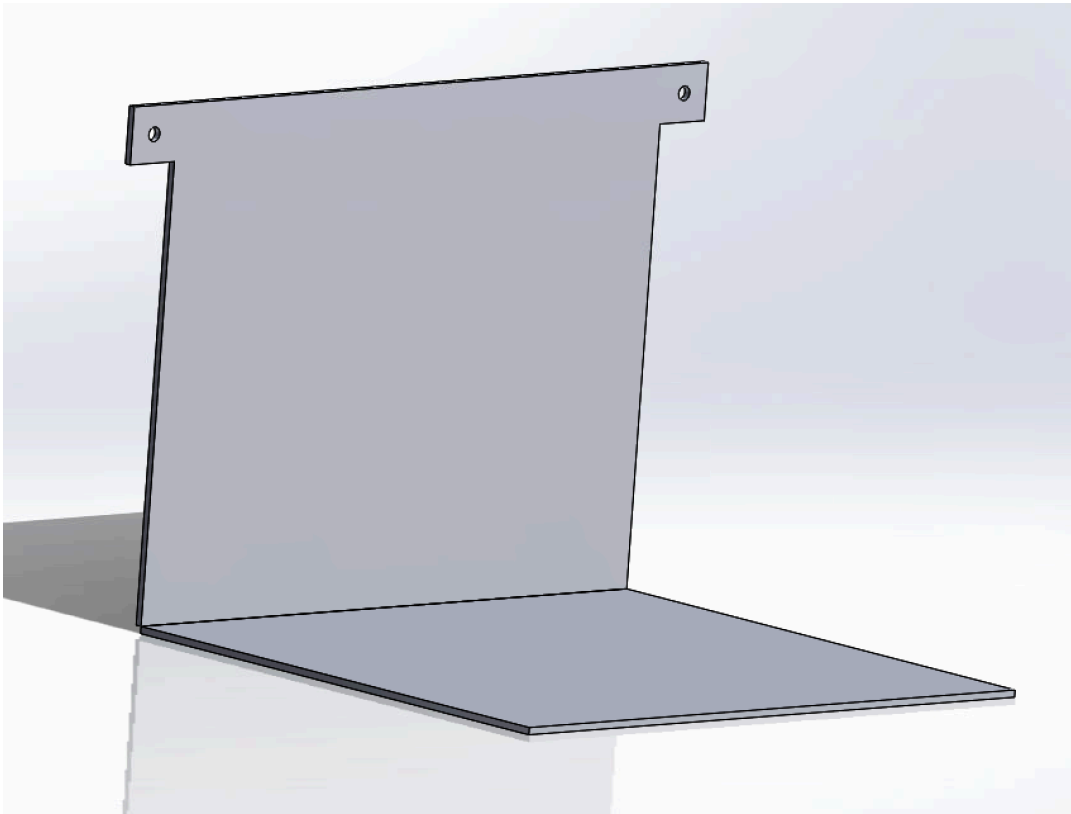## Difficulties / advice requests

- Continue to look into multiple testing methods

Current design:

Current design is a footrest on 2 linear actuators that will be controlled by a button on the wheelchair to move back and forth under the wheelchair.
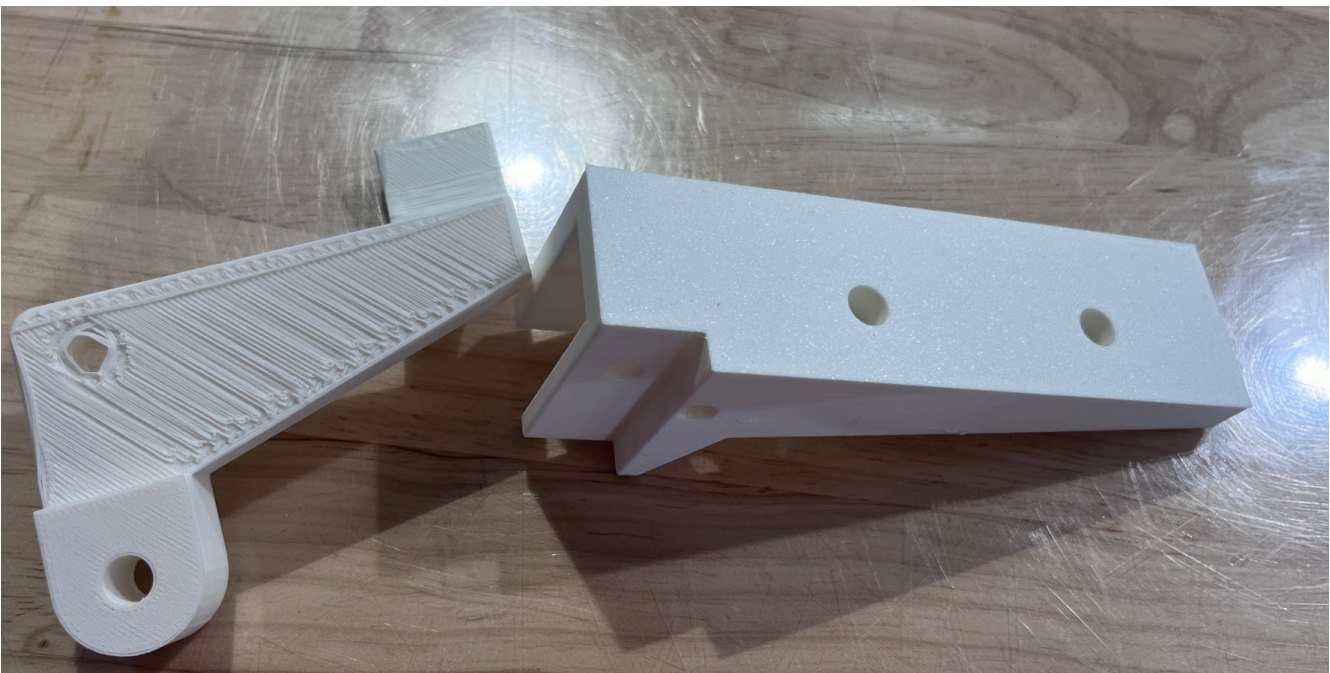
Holder for linear actuator

Footrest Design, will round out sharp edges

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Linear Motion										
Linear Actuator	A device that converts rotational motion into linear motion to move or control objects in a straight line.	Demotor Performance				3/15/2024	2	$35.68	$71.36	https://www.amazon.com/Linear-Actuator-Stroke-Output-12-Volt/dp/B00VFXIRW4?th=1
									$0.00	
Raw Materials										
Aluminum	½''x36''x1/8''	Home Depot				3/15/24	5	4.73	$23.65	https://www.homedepot.com/p/Everbilt-1-2-in-x-36-in-Aluminum-Flat-Bar-with-1-

											8-in-Thick-800207/204604761
Mounting Bracket for PA-14, PA-14P, PA-08		PROGRESSIVE AUTOMATIONS								$13.92	link
Zinc ⅜ inch threaded screws	Zinc screws	Everbilt						1	$8.98	$8.98	https://www.homedepot.com/p/Everbilt-6-x-3-8-in-Zinc-Plated-Phillips-Pan-Head-Sheet-Metal-Screw-100-Pack-823322/317479248
Current Total									Total	$103.99	

Major team goals for the next week

1. Finish fabrication and begin testing

Next week's individual goals

- Jayson
  - Finish fabrication
  - Continue testing
  - Begin final reports
- Sam
  - 3D printing and testing
- Bobby
  - Fabrication/Finish welding
  - Testing methods
- Charles
  - Test the prototype, find problems and attempt to fix them
  - Meet with client to continue testing

Timeline

Task	Jan	Feb				March					April				May	
	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10

BME Design: 301

Project R&D	X	X	X	X	X	X	X	X	X	X	X	X				
Empathize	X	X	X	X	X	X	X	X	X	X	X	X				
Background…	X	X	X	X	X	X	X	X	X	X	X	X				
Prototyping								X	X	X	X	X				
Testings												X				
Deliverables																
Progress Reports	X	X	X	X	X	X	X	X	X	X	X	X				
PDS			X	X	X	X	X	X	X	X	X	X				
Prelim presentation						X										
Final Poster																
Meetings																
Client			X			X		X		X		X				
Advisor	X	X	X	X	X	X	X	X	X	X	X	X				
Website	X	X	X	X	X	X	X	X	X	X	X	X				
Update	X	X	X	X	X	X	X	X	X	X	X	X				

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Sam previous goal
  - 3D printed holder piece
  - Circuit
- Bobby previous goal
  - Fabrication and testing protocol
  - Meeting with welding expert
- Charles previous goal
  - Began fabrication with water jet and circuit design
- Jayson previous goal
  - Fabrication
  - Testing
- Team previous goal 6
  - Begin fabrication
  - Welding, water jetting, circuit, 3D printing

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sam	4/12/2024	CAD, 3D printing, circuit	3	3	32
Bobby	4/12/2024	Fabrication/Welding setup	2	2	28
Jayson	4/12/2024	Fabrication, Assignments, Circuitry	4	4	40

Charles	4/12/2024	Fabrication, Circuitry	6	6	36