Title: Low-Interference Wheelchair Footrest

Date: 4/19/2024

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

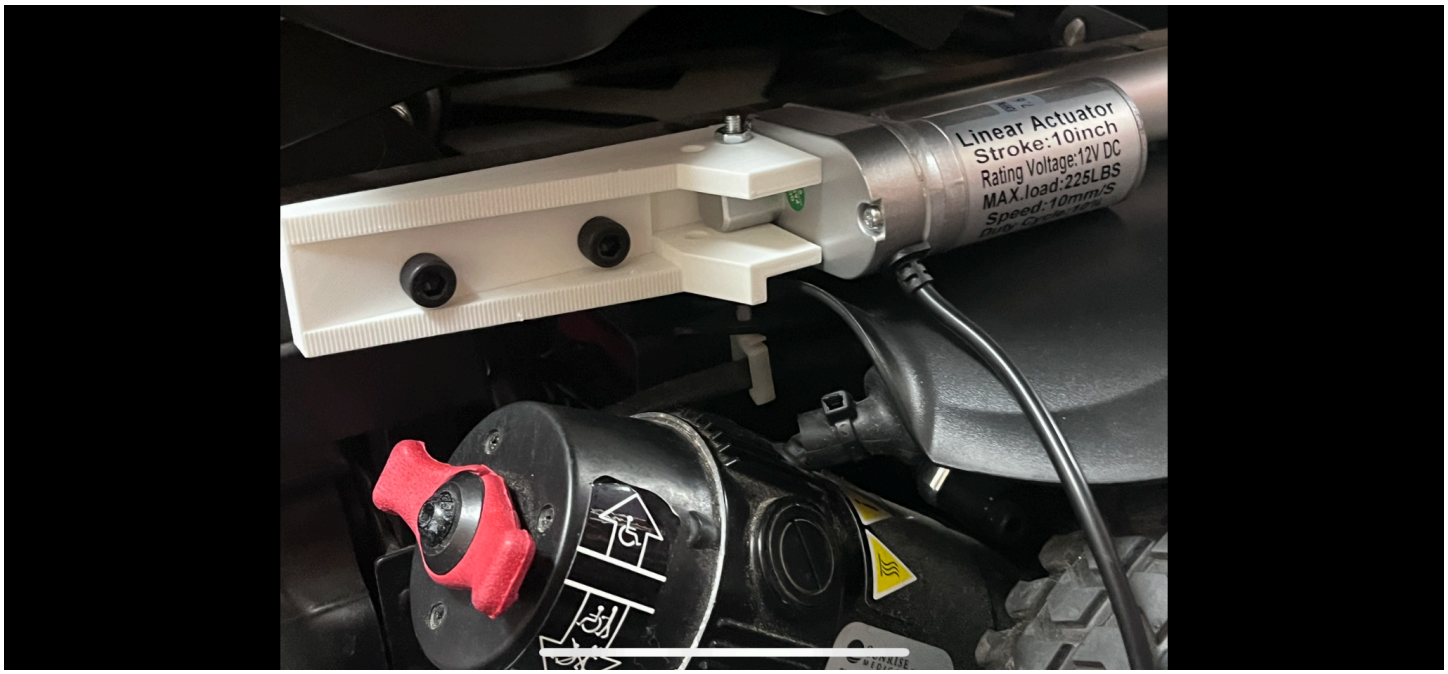
- Footrest fabrication completed
- Circuit put together
- Testing started

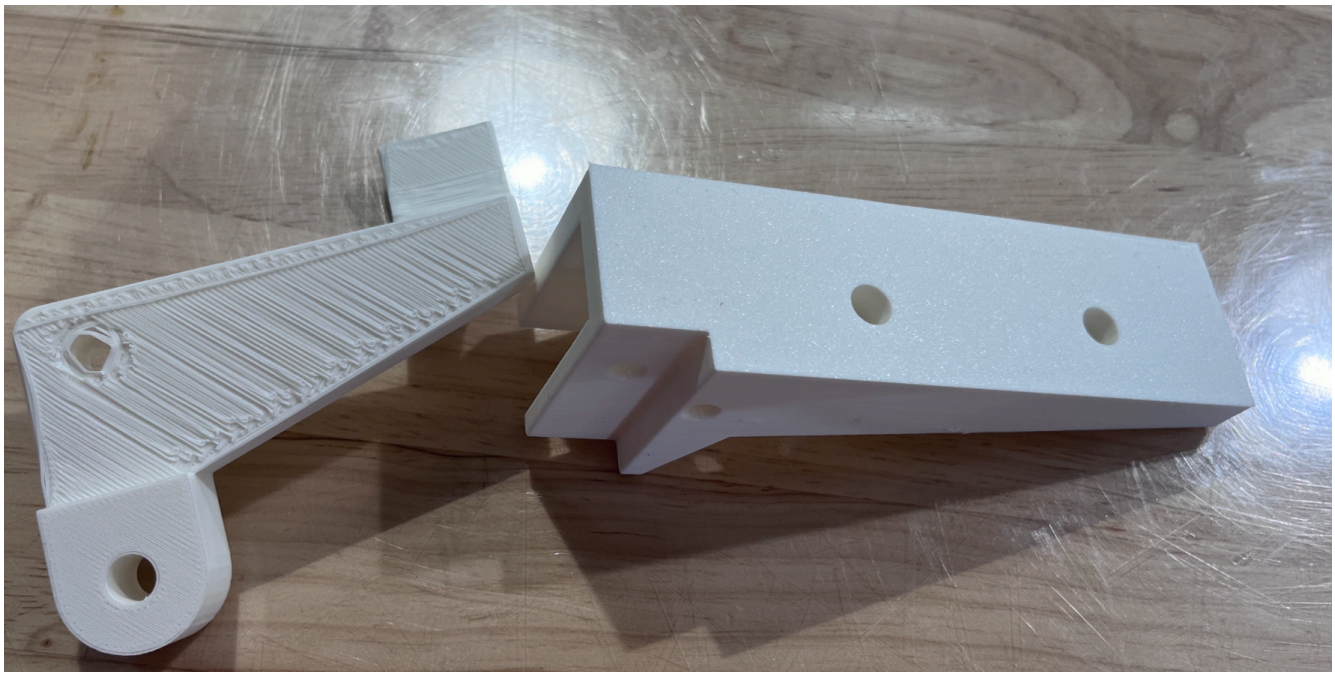
Difficulties / advice requests

- Continue to look into multiple testing methods
- Load distribution for footrest

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

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	Demotor Performance				3/15/2024	2	$35.68	$71.36	https://www.amazon.com/

	rotational motion into linear motion to move or control objects in a straight line.									Linear-Actuator-Stroke-Output-12-Volt/dp/B00VFXIRW4?th=1
									$0.00	
Raw Materials										
Aluminum	½''x36''x1/8''	MakerSpace				3/15/24	3	33	$99	
Mounting Bracket for PA-14, PA-14P, PA-08		PROGRESSIVE AUTOMATIONS				3/18/24			$13.92	link
Zinc ⅜ inch threaded screws	Zinc screws	Everbilt				3/18/24	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
MakerSpace Hardwares + 3D Prints										
3D prints	3D prints	MakerSpace				Varies		$28.1	$28.1	N/A
Hardwares	Screws, Caps, etc	MakerSpace				Varies		$1.25	$1.25	N/A
Current Total								**Total**	**$226.10**	

Major team goals for the next week

1. Finish fabrication and begin testing

Next week's individual goals

- Jayson
    - Testing
    - Finish final poster
    - Work on final deliverables
- Sam
    - Poster
- Bobby

    - Fabrication/Finish welding
    - Testing methods
- Charles
    - Finish fabrication
    - Continue testing
    - Write final report and make the poster

Timeline

Task	Jan	Feb				March					April				May	
	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10
Project R&D	X	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	X			
Background	X	X	X	X	X	X	X	X	X	X	X	X	X			
Prototyping								X	X	X	X	X	X			
Testings												X	X			
Deliverables																
Progress Reports	X	X	X	X	X	X	X	X	X	X	X	X	X			
PDS			X	X	X	X	X	X	X	X	X	X	X			
Prelim presentation						X										
Final Poster																
Meetings																
Client			X			X		X		X		X	X			
Advisor	X	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	X			
Update	X	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 printings
- Bobby previous goal
    - Fabrication and testing protocol
    - Meeting with welding expert
- Charles previous goal
    - Fabricate
    - Test
- Jayson previous goal
    - Finish Fabrication
    - Begin final poster
- 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	4/19/2024	CAD, 3D printing	3	3	35
Bobby	4/12/2024	Fabrication/Welding setup	2	2	28
Jayson	4/19/2024	Fabrication of footrest and circuit box screw holder	5	5	45
Charles	4/19/2024	Fabrication of footrest and circuit box, Circuitry, Ethics in engineering paper	6	6	42