

Title: Low-Interference Wheelchair Footrest

Date: 4/03/2024

Client: Dan Dorszynski

Advisor: Dr. John Puccinelli

Team:

Charles Maysack-Landry — Leader

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Haoming (Bobby) Fang — BPAG

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Sam Tan — BWIG

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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

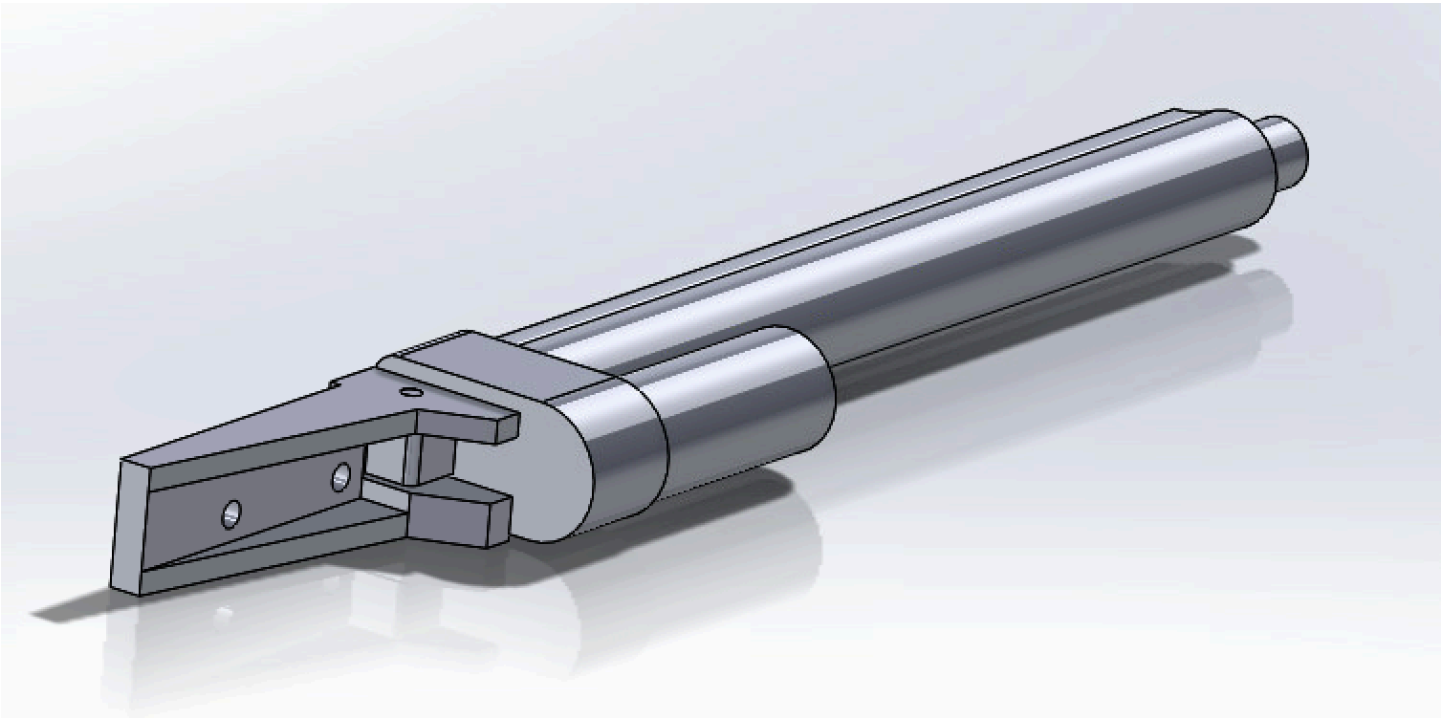
- Actuator Holder printed

Difficulties / advice requests

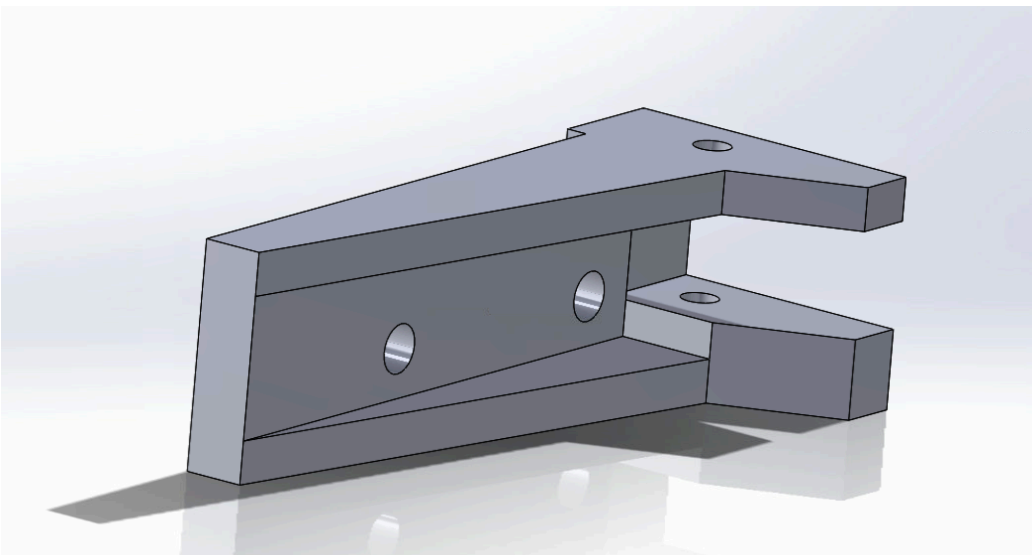
- Continue to look into multiple testing methods

Current design:

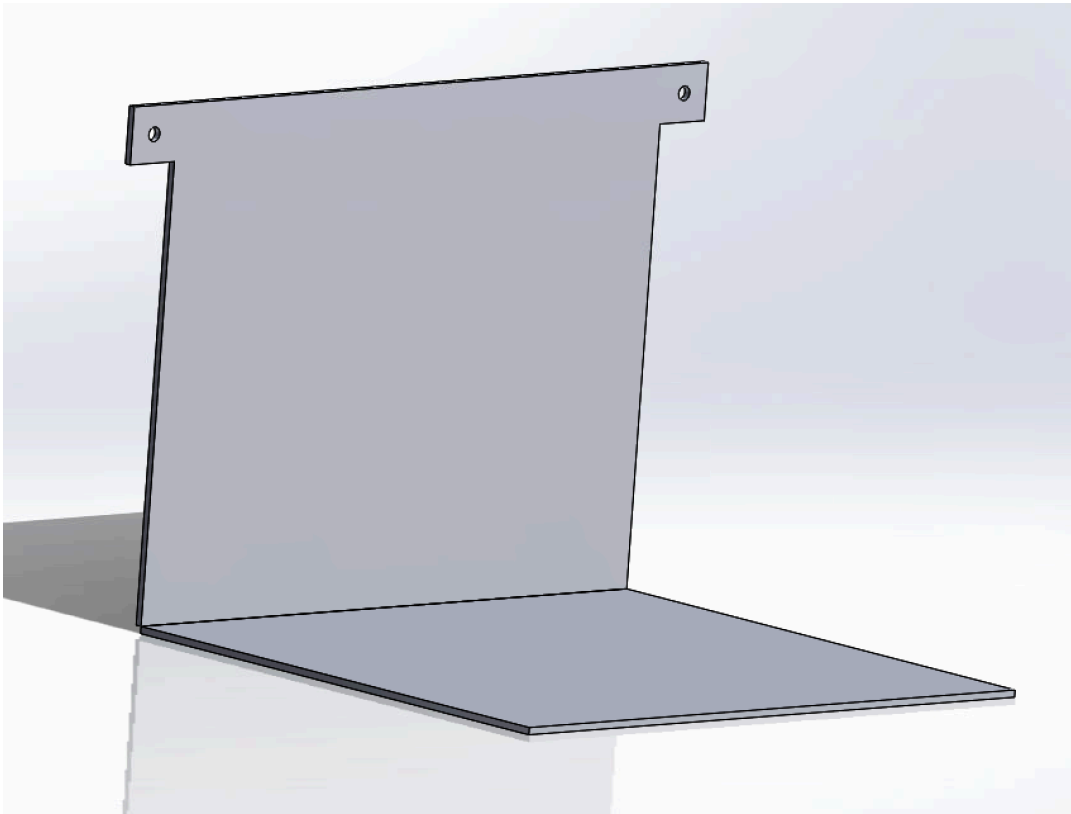
Current design is a footrest on 2 linear actuators that will be controlled by a button on the wheelchair to move back and forth under the wheelchair.



Linear Actuator with holder attached



Holder for linear actuator



Footrest Design, will round out sharp edges

Materials and expenses

Item	Description	Manufacturer	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-800 207/2046047 61	
Mounting Bracket for PA-14, PA-14P, PA-08			PROGRESSIVE AUTOMATIONS														\$13.92	link
Zinc 3/8 inch threaded screws	Zinc screws		Everbilt							1	\$8.98	\$8.98					https://www. homedepot.c om/p/Everbilt -6-x-3-8-in-Zin c-Plated-Philli ps-Pan-Head- Sheet-Metal-S crew-100-Pac k-823322/317 479248	
Current Total																	Total	\$103.99

Major team goals for the next week

1. Finish fabrication and begin testing

Next week's individual goals

- Jayson
 - Work on fabrication
 - Begin testing
 - Fabrication and Testing Protocol
- Sam
 - 3D printing and testing
- Bobby
 - Fabrication
 - Testing
- Charles
 - Began final fabrication

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					

Empathize	X	X	X	X	X	X	X	X	X	X	X						
Background...	X	X	X	X	X	X	X	X	X	X	X						
Prototyping								X	X	X	X						
Testings																	
Deliverables																	
Progress Reports	X	X	X	X	X	X	X	X	X	X	X						
PDS			X	X	X	X	X	X	X	X	X						
Prelim presentation						X											
Final Poster																	
Meetings																	
Client			X			X		X									
Advisor	X	X	X	X	X	X	X	X	X	X	X						
Website	X	X	X	X	X	X	X	X	X	X	X						
Update	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, 3D modeling of pieces, initial assembly
- Bobby previous goal
 - Footrest support modeling
 - Footrest material ordering
- Charles previous goal
 - Began fabrication with water jet and circuit design
- Jayson previous goal
 - Begin fabrication
 - Materials ordered and received
- Team previous goal 6
 - Order and receive materials

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sam	4/03/2024	CAD, 3D printing	6	6	29
Bobby	4/03/2024	CAD, Fabrication	4	4	26
Jayson	4/03/2024	Fabrication, Meetings	3	3	36
Charles	4/03/2024	Fabrication	4	4	30