

Title: Low-Interference Wheelchair Footrest

Date: 3/22/2024

Client: Dan Dorszynski

Advisor: Dr. John Puccinelli

Team:

Charles Maysack-Landry — Leader

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Haoming (Bobby) Fang — BPAG

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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.

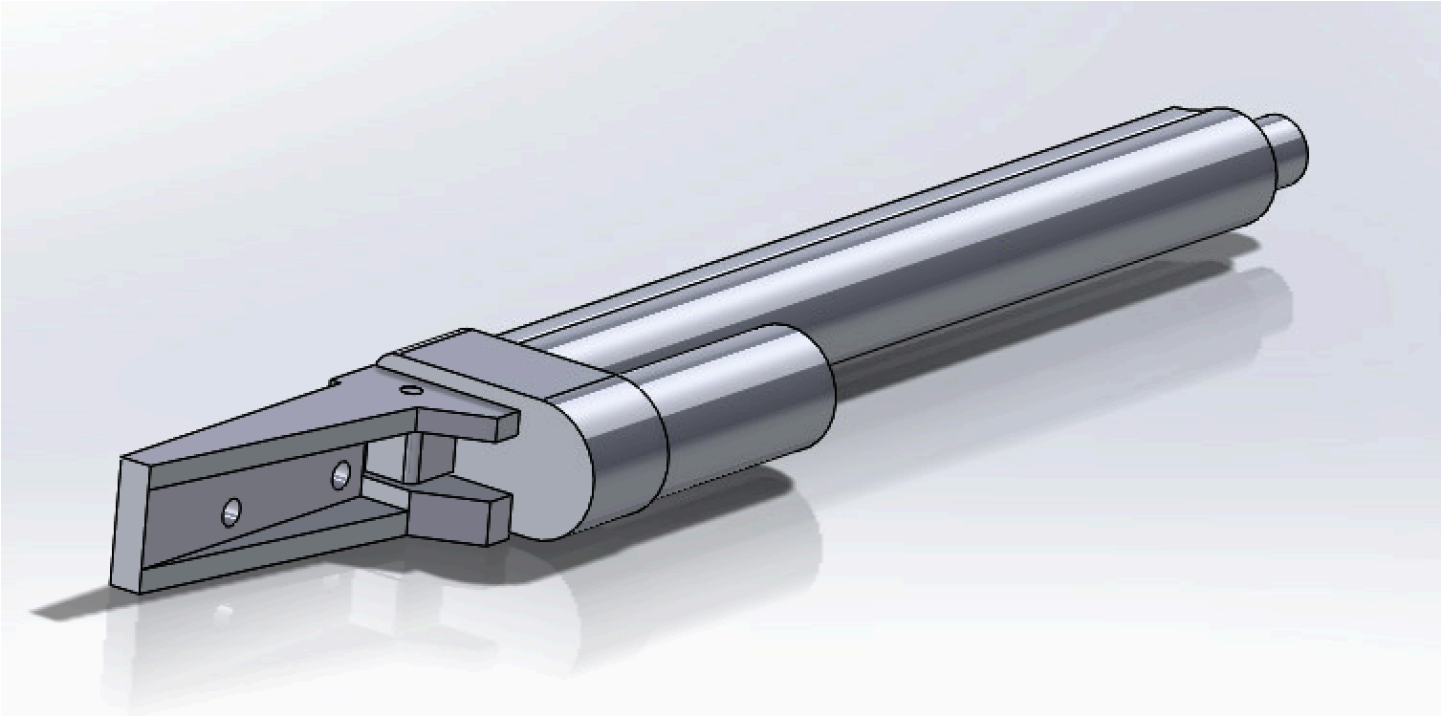
Brief status update

- Cardboard prototype completed
- Materials Ordered
- Fabrication can start

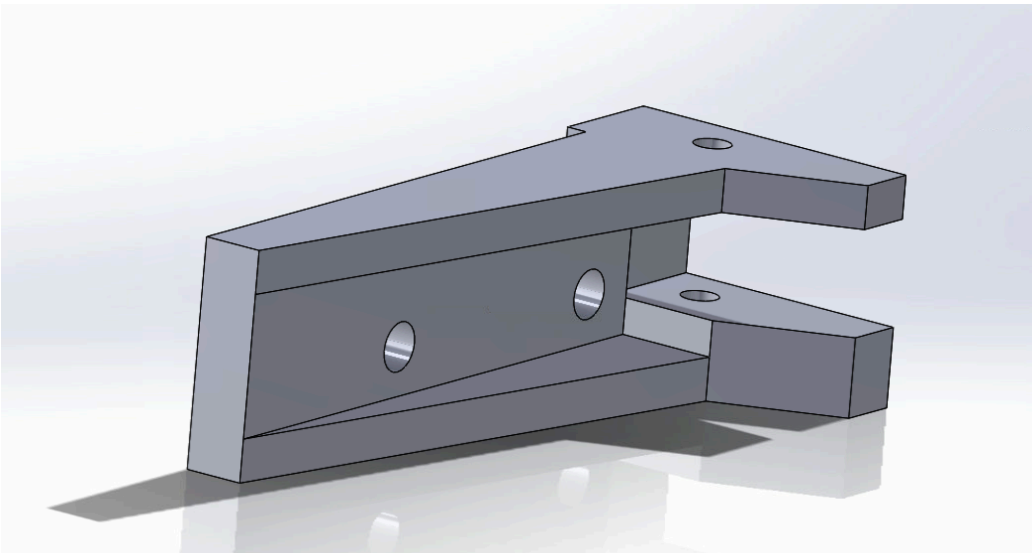
Difficulties / advice requests

Current design:

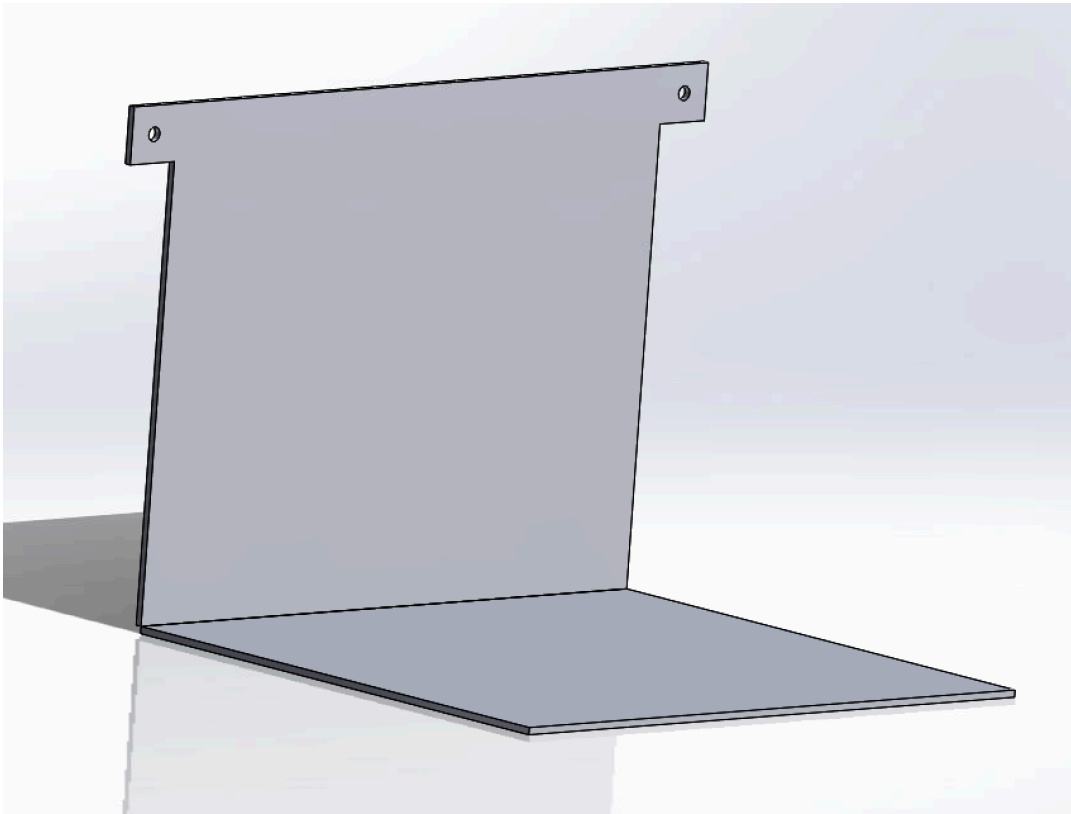
Current design is a footrest on 2 linear actuators that will be controlled by a button on the wheelchair to move back and forth under the wheelchair.



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.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. Begin Fabrication after spring break

Next week's individual goals

- Jayson
 - Prepare for Fabrication and Testing
 - Continue to revise ideas
 - Fabrication and Testing Protocol
- Sam
 - Fabrication+3D printing
- Bobby
 - Support CAD design and prototyping
 - Finalize on material ordering (footrest part)
- 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							

Empathize	X	X	X	X	X	X	X	X	X							
Background...	X	X	X	X	X	X	X	X	X							
Prototyping								X	X							
Testings																
Deliverables																
Progress Reports	X	X	X	X	X	X	X	X	X							
PDS			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							
Website	X	X	X	X	X	X	X	X	X							
Update	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
 - Linear Actuator Holder design and CAD
- Bobby previous goal
 - Footrest support modeling
 - Footrest material ordering
- Charles previous goal
 - Take final measurements to double check the correct materials are ordered
- Jayson previous goal
 - Materials selection
 - Finalize dimensions and prototyping

- Team previous goal 6
 - Order materials

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sam	3/22/2024	CAD	4	4	23
Bobby	3/22/2024	Modeling	4	4	22
Jayson	3/22/2024	Prototype , Measurements	5	5	33

BME Design: 301

Charles	3/22/2024	Material Selection, Measurements	4	4	26
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