

Title: Low-Interference Wheelchair Footrest

Date: 3/15/2024

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

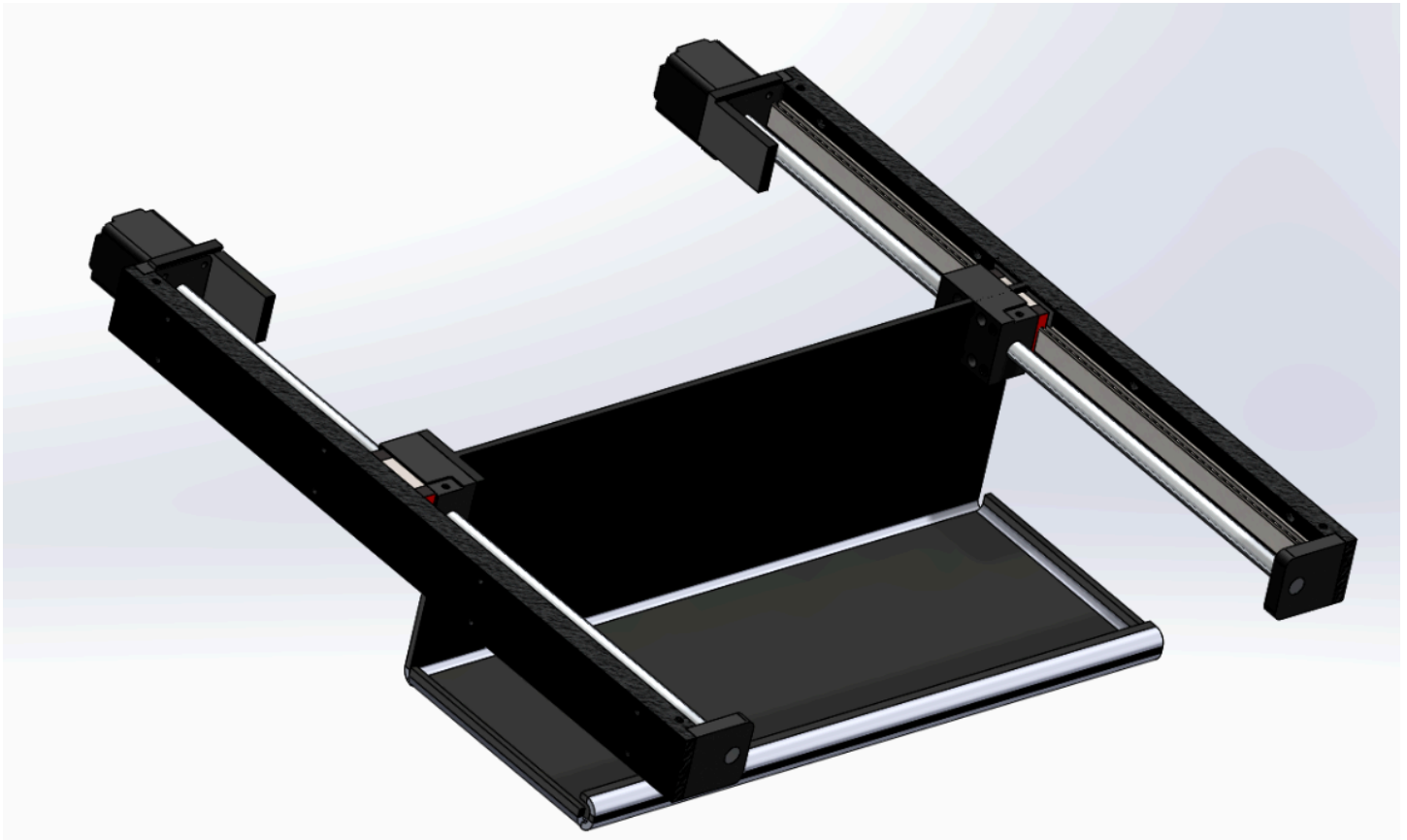
- Preliminary report completed
- Materials Order initiated

Difficulties / advice requests

- Begin Fabrication

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.



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-Fl at-Bar-with-1- 8-in-Thick-800 207/2046047 61
Steel										\$0.00	
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. Finish fabrication protocol
2. Purchase linear actuators and materials
3. Begin Fabrication

Next week's individual goals

- Jayson
 - Order materials
 - Finish Cardboard box prototype
 - Fabrication and Testing Protocol
- Sam
 - Prototyping
- Bobby
 - Support CAD design and prototyping
 - Decide on material ordering (footrest part)
 - Decide on which footrest design to go with
- Charles
 - Order materials
 - Begin fabrication of prototype with cardboard and actual materials if they arrive

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								
Empathize	X	X	X	X	X	X	X	X								
Background...	X	X	X	X	X	X	X	X								
Prototyping																
Testings																
Deliverables																
Progress Reports	X	X	X	X	X	X	X	X								
PDS			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								
Website	X	X	X	X	X	X	X	X								
Update	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 6
 - Material Sheet
- Bobby previous goal 6
 - Footrest support modeling
 - Further demographic research
- Charles previous goal 6
 - Complete preliminary design and report
- Jayson previous goal 6
 - Cad Design finished
 - Finish preliminary report
- Team previous goal 6
 - Finish preliminary report
 - Finish preliminary cad drawings

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sam	3/15/2024	Sketches	1	1	21
Bobby	3/15/2024	Modeling, Presentation, Research	4	4	18
Jayson	3/15/2024	Materials Selection, Measurements	3	3	28

BME Design: 301

Charles	3/15/2024	Report, Meetings	4	4	22
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