Smart Walker
Progress Report 6: 10/16/2025

Client: Mr. Daniel Kutschera
Advisor: Duc-Huy Nyugen
Team:

- Leader: Nicolas Maldonado
- BSAC: Carolyn Randolph
- Communicator: Aidan Burich
- BWIG: Nial Donohoo
- BPAG: Henry Salita

Problem Statement: Mr. Daniel Kutschera a physical therapist working in neuro-rehabilitation need objective, real-time data from walker use to guide therapy and meet documentation needs required by medicare. Today these metrics are gathered manually (wheel + stopwatch) and do not quantify load, making measurements inconsistent and hard to track. Earlier attempts to add sensors by modifying frames have compromised walker safety and usability. We need a small, lightweight, clip-on module for common walkers that shows speed, distance, and how much weight the user puts through the walker in real time, saves a short session summary after each use, and doesn't change how the walker is used or folded. Our budget to complete this is $500.

Brief Team Status Update: Team has ordered the parts needed to start prototyping

Summary of Weekly Individual Design Accomplishments:

- Nicolas Maldonado: Ordered components and began working on prototype housing
- Carolyn Randolph: Found sources to help with coding for the load cells and lidar.
- Aidan Burich: I finished up my required training, edited the preliminary report, and looked at possible lidars to order.
- Nial Donohoo: Researched components to order and worked on CAD models of lidar sensor housing
- Henry Salita: I ordered the load cells and have modified our load sensor CAD holders to fit the specific sensors we have ordered.

Weekly/Ongoing Difficulties: We had no notable difficulties this week.

Upcoming Team Goals: We plan to 3D print the first prototype of our housing design in order to see if our components fit correctly. After the team feels happy with their design, they will move forward with testing and improvements

Upcoming Individual Goals:

- Nicolas Maldonado: Prototyping and testing
- Carolyn Randolph: Work on load cell integration.
- Aidan Burich: Order the lidar device, start testing load cells, and edit the preliminary report.
- Nial Donohoo: Start testing and refine component housing for the load cells and lidar sensor

Smart Walker
Progress Report 6: 10/16/2025

- Henry Salita: I would like to continue to modify our load sensor design and then actually start printing some more prototype to test on the walker.

Project Timeline

Project Goal	Deadline	Team Assigned	State of Completion
Initial Research	9/12	All	The team will continuously research throughout the semester.
Product Design Specifications	9/18	All	The PDS has been completed
Design Matrix	10/3	All	Complete
Preliminary Presentation	10/3	All	Complete
Preliminary Report	10/8	All	Complete
Customize Load Cell sensor holder	10/24	Henry Salita	First iteration is done
Initial Fabrication - Circuitry and Coding	11/7	All	

Expenses

Item	Description	Manufacturer	Part Number	QTY	Cost Each	Total	Link
Walker	2-wheel walker, **gifted** by client	Performance Health Supply, Inc.	081561703	1	$136.73	$0	Performance Health
Load Cell initial 3D print	3D print of End-Cap 2.0 design **gifted** by friend with printer.	bambu lab a1 mini	N/A	1	$1.60	$0	N/A
Load Cells +	4 50 kg load cells with	Nextion	702795764	1	$16.8	$16.8	https://a

HX711	HX711		555		5	5	.co/d/2wlwmol
HX711							
LiDar							
TOTAL:							**$0.00**