Motorized wheelchair mounting system

Progress Report #9, April 4, 2008

Client: Andrea E. Johnson, CASC OTR/IT
Team: Dustin Gardner (BSAC)
Nick Harrison (BWIG)
Richard Bamberg (Communicator)
Tyler Lark (Leader)

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Problem Statement

Design a motorized wheelchair mounting system for a Vanguard Plus speech generating device. The client currently drives an electric wheelchair without the Vanguard mounted. With the device mounted on his chair he cannot see to drive the wheelchair. We are interested to find out if a standard wheelchair mounting system could be adapted so that he is able to move his Vanguard into position to use, then out of the way to drive.

Last Weeks Goals

- Make decision on and begin further pursuit of our top one or two mechanisms.
- Meet with user and client for design validation.
- Continue working on final design.

Summary of Accomplishments

This week we've made significant progress on finalizing our design and are now ready to begin the building process. Last Friday we met and went over all of our designs and decided that the side mounted pivoting collar design was the best option for moving the device into the lap and use positions.

Yesterday we consulted with professor Fronczak from the mechanical engineering department. He looked over our design and gave feedback and advice. Overall, it appears to be a good and feasible design. However, there are some important things that we need to keep in mind when building it. Most important is that we keep everything in-line and vertical, especially at the joints, otherwise large moments could build up and cause excessive friction as well as other problems. We also got lots of advice on the materials we should use to obtain proper strength, and the best ways to connect the different arms and components.

Today we are meeting with Will and his family to validate that the finalized design will work within the parameters of the wheelchair.

This Weeks Goals

- Meet with user and client for design validation.
- Order all necessary parts.
- Complete a simple mock-up of the mechanism.
- Begin construction of final design.

- **Project Schedule**

Week	Date	Goals
1	1/25	Form team, contact client, assign team roles, set up client meeting
2	2/1	Literature research, meet with client
3	2/8	PDS, brainstorming, post preliminary PDS and photo on website
4	2/15	Brainstorm, preliminary design ideas
5	2/22	Work on designs
6	2/29	Decide on design alternatives, make presentation
7	3/7	Oral presentation
8	3/12	Notebooks, evaluations and written report due
	3/14	Decide on final design
	3/21	SPRING BREAK
10	3/28	Work on final design
11	4/4	Work on final design,
12	4/11	Work on final design, begin preparing poster and paper
13	4/18	Product validation/verification testing, work on poster and paper
14	4/25	Complete design, print poster, edit paper
15	5/2	Final Poster Presentation
16	5/7	Hand in final deliverables
	5/9	Final meeting with advisor; deliver product to client

Activities

Dustin: Team meetings (1.5 hr)
Advising meeting (0.5 hr)
Mechanical Engineering Consultation (1.5 hr)
Mechanism design (1 hr)
Total: 4.5 hrs

Nick: Team meetings (1.5 hr)
Advising meeting (0.5 hr)
Mechanical Engineering Consultation (0.5 hr)
Mechanism design (1 hr)
Total: 3.5 hrs

Richard: Team meetings (1.5 hr)
Advising meeting (0.5 hr)
Mechanical Engineering Consultation (1.5 hr)
Mechanism design (1 hr)
Total: 4.5 hrs

Tyler: Team meetings (1.5 hr)
Advising meeting (0.5 hr)
Mechanical Engineering Consultation (1.5 hr)
Mechanism design (1 hr)
Total: 4.5 hrs