

Assistive device to augment strength in the weak hand of a stroke patient

Team 12: “Finger Device” Team

Client: Dr. Matt Jensen

Advisor: Paul Thompson

Team Members: Thomas Fleming (Leader)

Mark Reagan (Communicator)

Brad Rogers (BSAC)

Tyler Vovos (BWIG)

April 25, to May 1, 2008

Last Week’s Goals

- This weekend, we intend to clean up the code and finish fabrication and integration of the parts. We will also attempt to find a simple way to power the stepper motor portably so the prototype can be demonstrated during our presentation.
- During the week, we will refine our presentation and poster.
 - If time permits, we will start finalizing our paper.

Summary of Accomplishments

- We obtained the necessary H-bridge chip to interface the higher torque stepper motor and the microcontroller, and successfully programmed the motor to various output speeds based on various inputs of pressure.
- We configured the components of the device to operate using only a DC wall adapter and a single 9V battery, so bulky lab equipment will not be necessary for demonstration.
- On Wednesday, April 30, we completed the poster for our presentation and submitted it for printing.
 - It should be picked up sometime this afternoon.
- We finished a rough draft of our final paper and intend to submit it for review to Prof. Thompson.

This Week’s Goals

- Finalize the design paper.

- Determine how various minor costs incurred (e.g. poster, electronic chips, hardware, etc.) will be distributed.

Project Difficulties

- None

Activities

- 4/26/08 **Tom, Brad, Tyler:** Interfaced new H-bridge chip, controller, and pressure sensor. Finished physical mount. Minimized the number of power sources needed for the prototype so as to make it usable outside of the laboratory. ~4 hours
- 4/27/08 **Team:** Worked on a rough draft of our final report. Began working on the poster for our presentation. ~3 hours
- 4/28-29/08 **Mark, Brad, and Tyler:** Edited the paper drafts and compiled the poster. ~3 hours
- 4/28-29/08 **Tom:** Created a technical drawing of the device circuitry. Photographed the device and cleaned some of the device code. ~3 hours
- 4/30/08 **Team:** Finalized the poster and submitted it for printing at College Library's Media Center. Practiced the presentation to be given this Friday. ~2.5 hours

Project Schedule

| Preliminary Project Schedule (Updated 3/13/08) | |
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| Dates | Activities |
| Feb. 8 – 15 | Brainstorm design ideas; begin gathering quantitative data to refine our PDS |
| Feb. 15 – 22 | Choose the most feasible design idea, begin refining that design |
| Feb. 22 – 29 | Continue refining design; create a list of parts and materials necessary for the implementation of the design and a list of manufacturers |
| Feb. 29 – Mar. 7 | Work on presentation and paper; finalize the part numbers for materials to be purchased. (Meeting w/ Dr. Jensen 2/29 @ 2:30pm) |
| Mar. 7 – 14 | Resolve any indecisions about materials needed and order parts |
| Mar. 14 – 21 | Spring Break |
| Mar. 21 – 28 | Attempt to interface the single sensor with the microcontroller. Attempt to interface the motor with the microcontroller separately. |

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| Mar. 28 – Apr. 4 | Work on control algorithm for the sensor-microcontroller-motor system. |
| Apr. 4 – 11 | Work on analog to digital conversion of the pressure signal. Use test digital signals to work on the programming of the microcontroller. |
| Apr. 11 – 18 | Continue work on programming the microcontroller. Emphasize the preliminary physical mounting of the device. |
| Apr. 18 – 25 | Continue programming and interfacing electronics. Fabricate motor mount. |
| Apr. 25 – May 2 | Finish fabrication of the prototype and finalize presentation details. |
| May 2 – May 7 | Finalize project paper. |

Expenses

- **None**