

## **Tactile Auditory Sensory Substitution - Progress Report 9**

3/30/08-4/8/08

**Project Title:** Sensory Substitution Device for Hearing Impairment

### **Team Members:**

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### **Client:**

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### **Advisor:**

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### **Problem Statement:**

The goal is to design and develop an auditory substitution device that through the use of vibrotactile stimulation can substitute for regional frequency hearing loss. We will continue the work from the last three semesters, mainly focusing on refining the technical operation of the prototype and obtaining clinical testing data on the performance of the system.

### **Statement of team goals:**

1. Obtain IRB approval
2. Update PDS (product design specification) and create semester schedule
3. Continue design project
  - a) Review progress from previous semesters
  - b) Brainstorm ideas for direction we want to take the project
  - c) Meet with experts to gain ideas about possible solutions
  - d) Develop possible design solutions
4. Research and develop housing refinements
5. Refine and conduct a clinical study on the performance of TASS
6. Miniaturize electronics to create more aesthetically pleasing device
7. Document and analyze findings in a print-ready manuscript
8. Prepare final presentation and poster
9. Conduct an outreach event for the community

### **Project Schedule**

1/25/08 – 2/1/08: Review progress from previous semesters. Organize schedule for semester. Revise and resubmit IRB.

2/1/08-2/8/08: Review and revise IRB documents for submission on February 8<sup>th</sup>. Further develop our testing procedure.

2/8/08 – 2/15/08: Prepare materials for testing. Begin optimizing the performance of the prototype. Begin running mock clinical trials.

2/15/08-2/22/08: Finalization of testing procedure to begin mock trials. Work on Midsemester presentation

2/22/08-2/29/08: Prepared java testing program and compiled everyone's parts of the midsemester presentation

2/29/08-3/7/08: Conducted community outreach project. Presented our work at the midsemester presentation.

3/7/08-3/16/08: Revised program for testing, Recorded word pair samples for testing. Created test cards for CCT.

3/16/08-3/28/08: Ran through the whole testing procedure. Made necessary corrections to test cards and data-logging.

3/30/08-4/8/08: Further improved signal processing algorithms. Debugged testing program. Tested system on Mitch.

### **Summary of Team Accomplishments:**

1. Changed our Labview code so that the signal averaging is improved
2. Created new sets of CCT test cards for testing.
3. Revised testing program for playing two sounds at once
4. Set up and tested system on Mitch

### **Statement of Team Goals for Upcoming Week:**

1. Improve system audio/tactile synchronization before testing

2. Make final logistical preparations for subject testing (keys, schedule...)
3. Rehearse protocol incorporating Mitch's suggestions

**Team Difficulties:**

1. Synchronization of audio to device, but will remedy in weekly meeting

**Activities and Individual Accomplishments:**

Group meetings: 4 hours

Advisor Meeting: 1.5 hours

Ryan- 2 hrs: Improved signal averaging in Labview real-time system. Set up the testing system and tested on Mitch.

Jack- 2 hrs: Created data sheets for client responses. Mock testing (von Frey) on Mitch.

Jimmy – 2 hrs: Created new test cards for testing. Incorporated audio into testing program.

Becky – 2 hrs: Organized logistics of testing and setup. Prepared outreach report.

Matt – 2 hrs: Filtered single and dual tones for testing and uncompressed files. Edited testing procedure

**Total hours for this week: 15.5 hrs**

**Cumulative hours to date: 129.5 hrs**