

Tactile Auditory Sensory Substitution - Progress Report 13

4/28/07 – 5/3/07

Project Title: Sensory Substitution Device for Hearing Impairment

Team Members:

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Client:

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Problem Statement:

The goal is to design and develop an auditory substitution device that through the use of vibro- or electro-tactile stimulation can substitute for regional frequency hearing loss. We will continue the work from last semester, mainly focusing on integrating vibro-transducers into the system in order to prepare the system for laboratory trials.

Statement of team goals:

1. Create problem statement
2. Create first draft of PDS

3. Begin to research and develop design ideas
4. Continue the design project
 - a) Research all possible background information.
 - b) Research existing and design alternatives
 - c) Brainstorm for all possible solutions
 - d) Meet with experts to gain ideas about possible solutions
 - e) Develop possible design solutions
5. Choose final three design solutions
6. Develop final three solutions
7. Create Power point presentation
8. Finish mid semester report, PDS
9. Discuss possible final design alternative
10. Finalize Design
11. Build and test prototype
12. Present final design & poster

Project Schedule

1/26 – 2/2	Choose project, assign roles, meet with client
2/3 – 2/9	Draft first version of PDS, preliminary design ideas to improve prototype
2/10 – 2/16	Continue research and write PDS
2/17 – 2/23	Decide on design alternatives, brainstorm ideas
3/23 – 3/2	Work on design
3/3 – 3/9	Work on presentation and report, mid-semester oral presentations
3/10 – 3/16	Write and hand in written report, PDS, and notebooks
3/17 – 3/31	Work on design
4/1 – 4/8	Spring Break and continue to work on design
4/9 – 4/25	Work on Design, plan tests for the prototype
4/26 – 5/4	Work on final poster, presentation and report. Test the prototype and present to client. Give final poster presentation

Last week's goals

1. Finalize the construction of the circuit on the breadboard so that the vibrating motors will work correctly.
2. If there is time, look into soldering/packaging the new circuit.
3. Modify and complete the prototype for the enclosure of the four motors.
4. Prepare for the final presentation.

Summary of Team Accomplishments:

1. Finalized the four channel circuit with the monostable multivibrators.
2. Created and finalized the padding and housing for the circuit.
3. Created the poster.
4. Gathered supplies from Radioshack to attempt to solder the circuit.
5. Recorded input and tested the circuit.
6. Prepared for final presentation.

7. Organized the prototype and prepared it for demonstration

Statement of Team Goals for Upcoming Week:

1. Give final presentation to advisors and judges.
2. Work on final report.
3. Present the prototype to clients.

Team Difficulties:

1. We worked on soldering the circuit on a board, but we soon found out that it was not feasible to do so with our circuit having so many integrated circuits and passive components. We will instead, have a printed circuit board specially fabricated for our needs next semester.

Activities and Individual Accomplishments:

Sunday Meeting (3 hours) – Worked on circuit, but ran into problems with the quad op amps available in the lab (JFETs).

Monday (2 hours)- Ryan and Jimmy went to Radioshack to get all the parts needed for soldering the circuit

Tuesday night meeting (4 hours) – working on circuit, Jack created and stitched the covering for the housing, Becky worked on the poster. Performed some testing

Wednesday Meeting (4 hours) – Finalizing circuit, poster, housing, testing.

Thursday Meeting (3 hours) – Practice presentation.

Jimmy – 6.0 hr – Resolving problems with the circuit. Created a finalized circuit schematic. Laid out board in preparation for soldering.

Matt – 6.0 hr – Worked on circuit, created audio tests for the circuit. Bought microphone for the project.

Ryan – 8.0 hr – Bought new quad op amps, diodes, LEDs and resistors. Resolved the issue of using op amps from the lab. Went to Radioshack to gather parts. Organizing the circuit for presentation

Jack – 8.0 hr – Created the casing for the ear piece from fabric and thread. Finalized location of motors in the padding. Soldered wires to motor and circuit. Organized the circuit.

Becky – 7.0 hr – Was responsible for most of the poster- layout and text. Worked on the housing of the motors.

Total hours for this week: 47.0 hrs

Cumulative hours to date: 235.5 hrs

ID	Task Name	Start	Finish	Duration	2007								
					Feb	Mar	Apr	May					
1	Research alternative Transducers	2/16/2007	2/23/2007	1.2w	■								
2	Research correlation between frequency and phonemes	2/16/2007	3/2/2007	2.2w	■								
3	Research technical implementation of transducers	3/16/2007	3/30/2007	2.2w		■							
4	Research input and output of audio waveform	3/2/2007	3/9/2007	1.2w		■							
5	Brainstorm configurations for system	2/16/2007	3/16/2007	4.2w	■	■							
6	Prepare mid semester presentation	3/2/2007	3/9/2007	1.2w		■							
7	Compile mid-semester report	3/2/2007	3/16/2007	2.2w		■							
8	Spring Break	3/30/2007	4/6/2007	1.2w			■						
9	Obtain transducers	3/16/2007	3/23/2007	1.2w		■							
10	Implement transducers	3/23/2007	3/30/2007	1.2w			■						
11	Implement transducers (cont'd)	4/6/2007	4/13/2007	1.2w				■					
12	Filter signal for frequencies of interest	4/6/2007	4/20/2007	2.2w				■					
13	Test and perfect frequency to vibration correlation	4/20/2007	5/9/2007	2.8w					■				
14	Prepare for final presentation	4/27/2007	5/9/2007	1.8w					■				
15	Compile final report	4/27/2007	5/11/2007	2.2w						■			
16	Progress Reports	2/16/2007	5/11/2007	12.2w							■		
17	Update Website	2/16/2007	5/11/2007	12.2w								■	

**Gantt chart for semester