

Sleep Lab Monitor - Progress Report 13

4/25/09-3/1/09

Project Title:

A combined Thermistor, Pressure, and CO₂ device for use in the Sleep Laboratory

Team Members:

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Problem Statement:

There are three measurements taken from each breath during polysomnography. The following devices are used: a thermistor to detect temperature difference between inhaled and exhaled air, pressure sensors that show a flattening pressure profile during upper airway narrowing, and CO₂ sampling tubes to sense End Tidal CO₂. These three measurements are taken from two different devices placed under the child's nose, with two prongs going into each nostril. This method can be inaccurate if a nostril was to become obstructed, and each device may not sample from both nostrils as well as the mouth. Moreover, the current apparatus may be uncomfortable for the child as well as insecure on the child's face. This could cause a disruption of sleep and a possibility of the devices becoming unfastened during the night. To solve these problems, the goal is to design and develop a prototype that combines these three measuring devices into one apparatus that samples from both of the nostrils as well as the mouth, and attaches to the child in both a durable and comfortable fashion.

Reinstatement of Team Goals from Last Week:

1. Discuss and finalize the WARF form
2. Work on final presentation and poster on Sunday, April 25th
3. Begin working on final paper

Summary of Team Accomplishments:

1. Finalized WARF form
 - a. Decided we will take a chance and submit our idea
2. Work on final presentation and poster Sunday April 25th
 - a. Finished poster for Friday presentation
 - b. Split up the sections between each member
 - c. Submitted poster to college library on Tuesday, April 28th
3. Began working on final paper
 - a. Doing a tier system, where each person starts a section and progressively gets sent on to each member
4. Met on Wednesday, April 29th to do some final evaluation of prototype
 - a. Set up our prototype with our existing prototype
 - b. Added features to our LabVIEW program to simultaneously plots time vs. voltage for both prototypes

Statement of Team Goals for Upcoming Week:

1. Finish final paper and outreach assignment
2. Attend final client meeting on Monday, May 4th

Project Schedule

1/23/09-1/30/09: First client meeting, background research for modifying current prototype
1/31/09 – 2/6/09: Perform background research
2/7/09 – 2/13/09: Background research, modification alternatives
2/14/09 – 2/20/09: Continue to brainstorm for modification ideas, test current prototype
2/21/09 – 2/27/09: Work on design and choose design modification alternatives
2/28/09 – 3/6/09: Complete Mid Semester Presentations
3/7/09 – 3/27/09: Develop modifications and build new prototype
3/28/09 – 4/24/09: Test modified prototype
4/25/09 – 5/1/09: Complete and give Final Presentation, submit notebooks and paper

Team Difficulties:

Expenses:

Honeywell 112-103FAJ-B01 Thermistor: \$43.56

Activities and Individual Accomplishments:

Team Meeting-2 hours: Worked on final presentation and poster

Nicole – 6 hours: Finished section of paper on the prototype and breath test results, worked on final poster presentation

Jason – 4 hours: worked on final presentation and poster, performed final evaluation of prototype

Lindsey – 6 hours: Worked on final poster presentation, finished section of final paper on temperature test results and combined with Nicole's section, performed final evaluation of prototype

Robyn – 4 hours: worked on final poster presentation, performed final evaluation of prototype

Total hours for this week: 22

Cumulative hours to date: 231.5

Sleep Lab Monitor Gantt Chart Spring 2009												Completed:			
												In Progress/Planned:			
	1/23	1/30	2/6	2/13	2/20	2/27	3/6	3/13	3/20	3/27	4/3	4/10	4/17	4/24	5/1
Background research	█	█	█	█											
Test Current Prototype					█										
Client Meetings	█		█		█	█				█			█		
Meetings with Professors/Tech															
Brainstorm design		█	█	█											
Design Modification alternatives/mat				█	█										
Midsemester presentation					█	█	█								
Finalize design ideas							█								
Ordering materials							█	█	█						
Construct modified prototype								█	█	█					
Test modified prototype & Materials									█	█	█	█			
Plan final poster presentation													█	█	
Write final paper												█	█	█	
Final advisor meeting															█

