

Progress Report #11: EEG Biofeedback System

BME 400

November 16, 2006 – November 30, 2006

Client: Daniel Muller, MD, PhD

Team Members: Cullen Rotroff (Leader/Communicator)
 Prakash Rao (Leader/Communicator)
 Joe Hippensteel (BSAC)
 Andrew Eley (BWIG)

Problem Statement

The goal of our project is to design and build an inexpensive, portable electroencephalogram (EEG - brain wave monitor) that teaches meditation practitioners to achieve optimal meditation by indicating the presence of EEG alpha and theta waves. This shall be achieved through a relatively inexpensive, minimally distracting, and potentially portable device intended for commercial use.

Last Week's Goals

- Complete all aspects of final design finalized before break
- After break, assemble board and final electrodes
- Also, assemble headband with detachable electrodes
- Finish shielding and casing for wires and bioamplifier
- If needed, order any other pertinent parts (amplifier chips, etc.).
- Reconsider the situation with the budget (if there is a situation)
- Start planning for the paper/poster

Summary of Team Accomplishments

- The final circuit design has been completed thanks to some crazy hard work by Andrew. The order has been placed and we should be receiving the board early next week.
- The headband design has been completed and all necessary purchases have been made. The design will have a static wire connection from bio amplifier to the head band. The actual electrodes will be detachable from the rest of the device with easy disconnection for cleaning purposes. The actual assembly should take place Friday afternoon after our team meeting.
- A budget analysis has been made up. It includes a production cost estimate for various units of production ranging from 1 (~\$110.00) to 10,000 units (~ \$60.00). These budgets still need to be readjusted for final quotes for mass production of the PCB as well as a few minor adjustments made to the final circuit design.
- The poster and paper assignments will be delegated on Friday afternoon and worked on through the weekend. Arrangements for affordable printing have already been made.

This Week's Goals

- Complete poster and print by Thursday night.
- Begin final paper work
- Assemble and solder final circuit board.
- Assemble electrodes.
- Apply EMF shielding to all major components
- Assemble final headband
- Put all components together
- Update the Cost analysis
- Asses the ergonomics and aesthetics of the device and map out any necessary future work in these areas for next semester
- Test device and plan any future work for next semester's work in device performance
- Rehearse presentation for next Friday
- Allow Andrew to take a well deserved nap....a really long nap.

Difficulties

none

Activities

Team Member	Activities	Time
Cullen Rotroff	Friday meeting (1.5), Team meeting Monday (1.5), Budget analysis (3 hours), shielding and signal transfer research (2 hr), op amp research (1hr), Headband and overall assembly design and parts shopping (3.5 hrs)	12.5
Prakash Rao	Friday meeting (1.5), team meeting Monday (1.5) Final circuit design (4 hrs), PCB planning (2)	9.00
Andrew Eley	Friday meeting (1.5), Monday team meeting (1.5), Final circuit design- Andrew took on the hefty task of designing the PCB. Because the design was done on software he had at his work, none of us could help him, it lead to a disastrous amount of work for Andrew (35.00)	38
Joe Hippensteel	Friday meeting (1.5), Team meeting Monday (1.5), Shielding and signal transfer research (2 hr), op amp research (2.5 hr), Headband and overall assembly design and parts shopping (3.5)	11.00
Total		70.50

Expenses

Product	Quantity	supplier	price
PCB	1		48.00
Headband supplies	Will get full report update as of tomorrow		~20.00

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