

Progress Report #6: EEG Biofeedback System

BME 400

October 12, 2006 – October 19, 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

- Make active electrodes and begin testing
- Finalize circuit design. The design will include a ground electrode placed on the ear to help filter out noise produced by facial muscle movement.
- Continue lit research and reading old journals
- Meet with Elizabeth Felton mid week to discuss EEG's and electrodes.

Summary of Team Accomplishments

- Met with Elizabeth Felton on 10/19 and discussed options for active electrodes. She offered us many suggestions on what we can do for our electrodes. Specifically, she said that we should stick with one type of metal electrode, as using multiple types of metals will cause interference. In addition, she offered suggestions on how we can reduce interference and noise. She even provided us with some passive electrodes to test, as well as some electrode gel and syringes.
- Started mid-semester presentation and split up the work on the slides
- Continued literature searches, specifically on the limitations of our gain at the electrode level.
- Andrew continued to look at what companies we could potentially buy parts from.

This Week's Goals

- Rebuild last year's circuit and test
- Use Elizabeth's sample electrodes and use them for active electrode fabrication
- Continue lit research
- Work on mid-semester presentation
- Try Prof. Tompkin's suggestion of connecting the VCO to the unfiltered signal to get an idea of how the VCO will behave (and if it is possible to get a "virtual filter" with the brain). This would require getting a VCO from the ECE parts shop.

Difficulties

none

Activities

Team Member	Activities	Time
Cullen Rotroff	Monday meeting (1.5), Tuesday advisor meeting (.50), Thursday meeting with E. Felton (1.0), independent research/brainstorming(2.0)	5.00
Prakash Rao	Monday meeting (1.5), Tuesday advisor meeting (.50), Thursday meeting with E. Felton (1.0), independent research/brainstorming (2.0)	5.00
Andrew Eley	Tuesday advisor meeting (.50), Thursday meeting with E. Felton (1.0), independent research/brainstorming (5.0)	6.50
Joe Hippensteel	Monday meeting (1.5), Tuesday advisor meeting (.50), Thursday meeting with E. Felton (1.0), independent research/brainstorming (2.0)	5.00
Total		21.50

Expenses

Product	Quantity	supplier	price

