

## Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P08050	Remote EEG Monitoring	Assistive Devices/ Bioengineering	Biomedical Monitoring
Start Term	Team Guide	Project Sponsor	Doc. Revision
20071	Dr. Daniel Philips	Dr. Fei Hu	1.2

### Project Description

#### **Project Background:**

Biotechnology is a rapidly growing field in both interest and importance in modern times; interfacing with human biological processes is advantageous to many applications, especially the medical community. Along these lines, analyzing and utilizing the human brain would yield great strides in technology and, consequently, one's standard of living. Consequently, there is a high demand for a simple EEG system including but not limited to patient monitoring. The EEG sensor is further simplified through the use of a reliable wireless communication system with a base computer, which will run software to present real-time data.

#### **Problem Statement:**

The goal is to implement a simple, low-power wireless EEG sensor with feedback and data analysis.

#### **Objectives/Scope:**

1. Multiple channel analog EEG amplification board
2. Low-cost, low-power design for wireless transceiver circuit, electrodes and EEG board
3. Wireless communication software architecture
4. Software for display and analysis of EEG data
5. Design and build sensor/electrode network
6. Physical implementation of entire system

#### **Deliverables:**

- Wireless communication software with data real-time display
- Low-power EEG acquisition board with wireless digital transceiver

#### **Expected Project Benefits:**

- Convenient remote access to EEG signals
- Real time monitoring capability
- Operation over reliable mesh network

#### **Core Team Members:**

- Daniel Pontillo
- Ankit Bhutani
- Jonathan Finamore
- John Frye
- Zach McGarvey

### Strategy & Approach

#### **Assumptions & Constraints:**

1. **Assumption:** hardware can be designed such that it will operate for long periods (at least 24 hours continuous use) of time on battery power
2. **Assumption:** real time signal processing capabilities
3. **Assumption:** reliable wireless transfer of EEG signals
4. **Constraint:** limited time window and funding
5. **Constraint:** integration of two diverse, complex technologies
6. **Constraint:** reliability of EEG signals considering mobile subject

#### **Issues & Risks:**

- Getting parts on time
- Low power consumption of device
- Safety of device
- Integration of analog system with wireless capability and digital processing