## sdmay18-22: Adaptive Wireless Wearable Neuro-Stimulator

Week 4 Report September 24 - September 30

#### **Team Members**

Kevin Wang — Meeting Facilitator Kevin Simons — Test Engineer Matthew Stephenson — Report Manager Patrick Walsh — Communications Manager Brian Weber — Chief Engineer

### **Summary of Progress this Report**

This week we refined our design plan and added a more specific block diagram and a gantt chart. We created a more specific block diagram so that we were better able to understand what we needed for each piece of the project. While creating this diagram we were able to figure out things that we needed to talk to our client about so that we are able to create what the client wants. The block diagram also gives us documentation of our project design so the client has a visual to refer to. The creation of a gantt chart allows us to better segment our time and plan in advance for what we need to do.

After the creation of our more specific block diagram and deciding what we wanted to figure out what we wanted to work on first, we started researching components to use. During the research we figured out that the electrical engineering portion was a point of weakness for us. We met with our faculty adviser to discuss our problems and he told us that we needed to talk to our client so we can let him know that we need to simplify the hardware portion of our project.

After meeting with our faculty adviser, we realized that we are not going to be able to create the wearable in the way that the client wants. We do not necessarily have the skill sets to properly design and fabricate a PCB to fit the specialized needs of our client. We will, however, be able create a simpler version using breadboards and an evaluation board as a proof of concept.

### **Pending Issues**

- Feasibility of creating a custom PCB
- Creating a breadboard/evaluation board proof of concept
- Final decisions on parts
- Make calculations on power consumption for all parts
- Design overall circuit
- Clarification of specifications with client
- Make formal graphs of analyzed data

### Plans for Upcoming Reporting Period

In the coming week, we are going to be meeting with our client to give him a good update of our design plan and the newest developments in the project. We will be letting the client know about new limitations that we have come to realize through our research and meeting with our faculty adviser. As the client asked for a device as a deliverable, we will be talking to him about changing the requirement to a proof of concept in the form of a breadboard circuit fed into an evaluation board. Provided the client agrees that a proof of concept with a breadboard and evaluation board, we will be starting on the design of the circuit so that we can begin to test all of the necessary sensors. Along with the design of the circuit, we must calculate the power consumption of the all components.

# **Individual Contributions**

Team Member	Contribution	Weekly Hours	Total Hours
Kevin Wang	Looked into components that could possibly used in design. Some preparation for lightning talk. Attended meeting with faculty adviser which was discussion on plans moving forward with prototype implementation.	4	13.5
Kevin Simons	Figured out how to read a portion of the data given to us by the client. I've been working on creating a visual for that portion, there are still some binary and Matlab files that I am not sure what they mean, so I made a note to talk to our client in the next meeting. Otherwise, I spent some time researching components that we could use in a final product, as well as creating some of the slides for our next lightning talk next week.	5.5	19
Matthew Stephenson	Attended multiple meetings talking about what needed to be done and how to do it. Additionally, I looked into different components for the device, calculated power consumption of some of the devices, looked into making flexible printed circuit boards as well as 3D printing and designing a housing for an anklet. Additionally, I experimented briefly with CAD.	8	21.75
Patrick Walsh	Passed on forms to be signed to faculty adviser, added various updates to formatting of website, assisted in creation of gantt chart for team, worked on portion of lightning talks presentation, set up meeting with faculty advisor, researched possible parts for project, requested meeting with client	6	19
Brian Weber	Attended meetings, help create gantt chart for team, researched parts for project. Attended meeting with faculty advisor about prototype manufacturing	4	12.5