

EE/CprE 492 Bi-Weekly Report

04/07/18 - 04/20/18

Sdmay18-22: Adaptive Wireless Wearable Neuro-Stimulator

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Team Members

Kevin Wang — Meeting Facilitator

Kevin Simons — Test Engineer

Matthew Stephenson — Report Manager

Patrick Walsh — Communications Manager

Brian Weber — Chief Engineer

Weekly Summary

Website

The website during these weeks was mostly focused on graphing our data, we were able to send data from PHP to javascript through json encoding and decoding. This means that we can now dynamically load data from our database based on any of the criteria specified in our form, and automatically create a line graph of all users. This was the last hurdle of the website, other work was done to finalize and clean up the rest of the code, in preparation for giving it to our client. This included work on the register device endpoint, which will save a new user in the database with user specific data, in order to upload data later, linked to the user.

Android App

The Bluetooth service was fully implemented into the background; connection state, and data handling all done in the background service. The application also displays real-time updates of the data gathered from the sensors. Data pushing service was updated to include temperature and accelerometer data to be pushed to the database.

Wearable

Using an example project we were able to draw data from the accelerometer. We started working on adapting the open source library to use for our own use. We were able to get full

range communication from the wearable to the android app to the database. We cleaned up the integrated code so as to make hand off easier. We also created a diagram of the breadboard + arduino using Fritzing. This will make hand-off to the client seamless. Worked on writing relevant parts of the report and poster.

Past Week Accomplishments

Website

- PHP connected to our graphing library to create dynamic graphs
- Register device endpoint can save a user into the database which the data will link to

Android App

- Data is now updated in real-time on the app from the wearable device
- Data uploader service now supports pushing of temperature and accelerometer data
- Full pipeline is implemented

Wearable

- Got example project working on accelerometer
- Got full communication pipeline working and tested
- Wrote relevant document parts for wearable
- Created diagram to aid client with reconstruction of wearable if ever needed

Pending Issues

- Uploading code to clients website, and giving him a list of code segments that will need to be changed in order to work on his site

Individual Contributions

| <u>Name</u> | <u>Contribution</u> | <u>Per Week Hours</u> | <u>Cumulative Hours</u> |
|-------------|--|-----------------------|-------------------------|
| Kevin Wang | Fully implemented the Bluetooth handling into background service; as data is read and parsed, it gets saved off into local database. Implemented the Android App's | 8 | 65 |

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| | <p>local database for storing off the data from Bluetooth. Met with Matt and Pat to make sure hardware->Android->database pipeline was working completely. Helped Brian and Matt solder components.</p> | | |
| Kevin Simons | <p>Website work continued this week, I got the graphing portion of the website to work, and successfully graphed a number of users' heart rate. This connection now supports any number of users, with a large amount of data, specified by our users through the form. I was also preparing to give the website code to our client, which involved marking any sections of the code that will need to change for his website, such as database credentials. There was also a lot of administrator work, preparing the final report and poster.</p> | 6 | 62 |
| Matthew Stephenson | <p>Worked to get full range communication from the wearable to the android app to the database met with Patrick and Kevin W. to accomplish this. Cleaned up the integrated code so as to make hand off easier. Created a diagram of the breadboard + arduino setup using Fritzing. Learned how to use Fritzing to make basic technical diagrams. This will make hand-off to the client easier. Worked on writing relevant parts of the report and poster.</p> | 7 | 72 |
| Patrick Walsh | <p>Updated data pages of app to update in real-time from the wearable device. Updated data pushing service to implement pushing of temperature and accelerometer data in addition to the heart rate data. Met with Kevin W. and Matt S. to test the fully implemented pipeline. Connected with client to go over end-of-semester details and project transfer.</p> | 7 | 72 |

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| Brian Weber | I worked on the accelerometer, worked on soldering it and calibrating it into basic values to be able to send to the app and be useful by the application. | 7 | 54 |
|-------------|--|---|----|

Plans for Upcoming Week

- Prepare code for client handoff
- Final preparations for final presentation (e.g. poster printing, proofread presentation)
- Write wearable layout document to go with the diagram
- Get accelerometer working and integrated

Summary of Advisor Meeting

4/13/18

Mainly another progress check of the project. Showed integration of data read from Bluetooth being saved into local storage on Android App. Also met with client and demonstrated project, as well as hand off deliverables.

4/20/18

Demonstrated to advisor full pipeline of components: from reading sensor data, to sending to Android App, and to the database. Demonstrated the real time update of data read over Bluetooth in the Android App. This was our final meeting with our advisor, so it was mainly last things such as checking we had our poster and final report.