

EE/CprE 492 Bi-Weekly Report

02/09/18 - 02/23/18

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:

We are now at the point where our filters for user form input are fully controlling the data that we pull from the database. We can specify any user information that we are storing in order to select a subsection of our users and then from those users poll all of their data for specific metrics. This data is then loaded into the page and currently displayed in a table.

Android App:

These past two weeks we have been working on getting the Bluetooth and network functionality working. We are currently unable to make a connection to the web server properly, but are able to create JSON object requests and start the process of connection. We also added new functionality in the login screen to create a GET request and send it off to the server. There is then logic to display a message saying “invalid username or password” if the conditions are not met to log into the app. We are currently working on creating a background process for Bluetooth so that it will passively take data in from the wearable. At the end of this week, we were able to list the devices available to pair and understand better what needs to be done to create the background process.

Wearable:

These past two weeks we have been able to get a lot of progress on the wearable. We have the ability to do basic communication from an Android device to the bluetooth module on the wearable. Additionally we started to look at using the heart rate sensor and were able to

make a lot of progress with that. We are now able to get accurate readings, filtering out the noise in the data and translating the analog values to accurate heart rate measurements.

Past Week Accomplishments

Website:

The form inputs are complete and we are successfully loading in fully filtered data into the page. This is the base deliverable for the form, and now allows us to focus on connecting the phone to the website to get correct logons and database writes.

Android App:

Can generate GET requests and add them to a queue to query the web server. A new message has been added that only becomes visible when improper login credentials are used and the login button has been pushed. The pair device, button in the settings screen now allows the user to list the available Bluetooth devices.

Wearable:

We were able to make the bluetooth device visible on an Android device. We were also able to transmit basic data to the wearable from the Android device. Additionally, the basic driver code for the heart rate sensor has been developed. We are now able to get accurate heart rate measurements from the wearable.

Pending Issues

- Connecting the phone to the database/website
- Finding a javascript graphing library for the website data
- Connect wearable bluetooth to phone
- Add ability to send a pulse on the vibration motor

Individual Contributions

<u>Name</u>	<u>Contribution</u>	<u>Per Week Hours</u>	<u>Cumulative Hours</u>
Kevin Wang	Worked on getting Bluetooth working as	3	18

	background service in application, getting application to be able to pair and connect with a device.		
Kevin Simons	Finished the website form filters to allow polling of custom filtered data. Started researching javascript graphing libraries and initial talks with Patrick about how we are going to connect the phone to the website in order to transfer data between the two.	3	22
Matthew Stephenson	Worked on debugging why the accelerometer was not working (still unsure). Got the heart rate sensor to work writing the driver code to filter out noisy data. Started looking into power the vibration motor.	6	28
Patrick Walsh	Switched from using the HttpURLConnection object to using the Volley library. Implemented functionality to generate a GET request in the login activity and check to see if the current dummy login conditions are met. Added a new text view displayed to the user when login fails. Added more implementation to the database singleton.	9	32
Brian Weber	Used bluetooth to connect the arduino to a nexus 7 tablet. Using the tablet I was able to turn a led on and off. Looked into sending information from the bluetooth device to the tablet.	4	19

Plans for Upcoming Week

- Get the phone and website/database communicating so we can reliably store user logons and transfer the user data off of the phone.
- Find some potential javascript graphing libraries and try to test some of them to see if they will work
- Get vibration motor working
- Get Bluetooth from wearable to pair with phone
- Fix the errors with the connection to the web server

Summary of Advisor Meeting

2/16/18

Meeting had talks about hardware in terms of how to read and interpret the data received from sensors. Mostly another progress check, otherwise. Some talks about moving Bluetooth to background service in Android app, as well as connections to database in app.

2/23/18

Discussion how device and application interaction, advisor gave suggestions on what may work best for frequency of data sent from device to application. Some troubles with connection to database from Android application were also discussed and suggestions given to sort these issues out.