

EE/CprE/SE 491 WEEKLY REPORT #5

10/3/2019 – 10/10/2019

Group number: sdmay20-24

Project title: Wearable Cardiac Monitor

Client &/Advisor: Huang Cheng

Team Members/Role:

Andrew O'Brien - Software

Peyton Sher - Software

Ruiyu Sun - Hardware

Scott Beard - Hardware

Samantha Kimball - Communications

Vincent Lazzaro - Communications

Weekly Summary:

Sam and Vincent were able to get data out of the test circuit (just a regular voltage divider with a potentiometer) and those data points were able to send to an Arduino app that was found in the app store.

Past Week Accomplishments:

Andrew O'Brien: I am working on establishing a bluetooth connection between the device and the arduino. This takes a little work but shouldn't be awful.

Peyton Sher: Set up the graphing system we will be using to display the real time heart rate. After looking into it, it seems that graph view will work for what we are trying to do. I need to play with it a little more to update in real time.

Ruiyu Sun: Search for possible solutions of reducing power consumption or effective design. Found an improved version of chip that can use on our board.

Scott Beard: Research on noise reduction techniques: gel, common-mode measurements

Samantha Kimball: Vincent and I worked on getting the bluetooth module to send data to an app we found (Arduino bluetooth controller). This app is acting as a placeholder until we can get the app from Andrew and Peyton. Once that's done, we will be able to get the data to look the way we want in the app.

Vincent Lazzaro: Sam and I worked on connecting the bluetooth device to a phone. We found an app that can display the data we are sending out to the phone. We also tried to improve our code to be able to send out data in packages to limit power consumption of the bluetooth device.

Pending issues:

Andrew O'Brien: Bluetooth is always slightly tricky. Its getting better.

Peyton Sher: I need to talk to vincent and sam to see what data is coming in from the bluetooth, as well as talk to Andrew to figure out how to get that data, as he is setting up the bluetooth to the app.

Ruiyu Sun: PCB redesign with new chip. Try to decrease the size of board. Noise cancellation.

Scott Beard: Get ECG gel, PCB redesign

Samantha Kimball: We are wanting to package our data to send out the maximum data at a time but we aren't sure how to get the data properly packaged. Another thing is how often we want to send the data to the application; we are thinking to send it continuously when the app is open and store data when the app is closed. This will lead into the problem of switching between continuous and storing of the data.

Vincent Lazzaro: We were having issues packaging data to be sent to the phone. Another issue I think we will come across is if we need to be able to switch from continuously sending data while the app is open to being able to send data in packages in burst of some time frame. Keeping reliable connection between the phone and the device and keeping the device secure to know that it is connected to the same device/correct device to protect the users information.

Individual contributions:

Name	Contribution	Weekly Hours	Cumulative Hours
Andrew O'Brien	Bluetooth and App Dev	8	38
Peyton Sher	App dev	8	33
Ruiyu Sun	New possible chip	7	34
Scott Beard	Noise cancellation	7	33
Samantha Kimball	Helping with the Arduino code to get data to send, research into Arduino coding, design document, weekly report work	8	36
Vincent Lazzaro	Coding and looking into Arduino code to figure out a way to do what we want	10	40

Plans for the upcoming week:

Andrew O'Brien: Im working on setting up the FIREBASE and login credentials as well as bluetooth

Peyton Sher: Get the app mapping on the activity in real time, as well as work on the design document that is due soon.

Ruiyu Sun: Start to redesign the print circuit board. Find solutions for noise cancellation.

Scott Beard: Buy ECG gel, test for noise reduction if it arrives quickly. Start PCB redesign with Ruiyu

Samantha Kimball: We will hopefully be meeting up with the rest of the group to start building the prototype. I'm hoping to be able to get the data stored into packages but I'll need to do some more research into Arduino code in order to get that working properly.

Vincent Lazzaro: Sam and I plan on trying to start meeting up with the rest of our group to start to bring all of our parts together and to work with our code some more to optimize our communication with the phone.

Summary of weekly advisor meeting:

On 10/28/19, we met with our advisor to update them on our progress. Scott and Ruiyu have the ECG electrodes working but only when the person is sitting still. They are working on getting them to read when there is movement involved. Andrew has put up a blank Android app to get that started and Peyton is working on getting the Arduino programmed. Vincent and Sam got the bluetooth module connected to a test circuit to make sure it could be connected via bluetooth. They are working on getting some code together to get it to communicate with the application.