

EE/CprE/SE 491 WEEKLY REPORT XY

2/16/20-3/1/20

Group number: 26

Project title: From Bodily Sensors to Cloud and Back

Client &/Advisor: Goce Trajcevski

Team Members/Role:

Justin Worley: Cloud Engineer

John Kivley: Electrical Engineer

Richa Patel: Database Engineer

Isaac Zahau: Front-end/UI

Michael Lauderback: Embedded Systems Engineer

○ Weekly Summary

We have made significant progress in testing our pulse sensor and bluetooth communication chips(ESP 32) and designing the master control unit that will retrieve the data from our sensors.

Working on the high-level design architecture gave us a better way to approach how user data can be presented to the client. Bluetooth will be used to display live data onto an Android device so we will prioritize the Android app first and web-app second.

○ Past week accomplishments

- Justin Worley: Created an AWS account for the team to use. Started to look into setting up the web server. Started to look into security within AWS.
- John Kivley: Ordered the pulse sensor and the ESP 32 development to test if it will be able to create wireless

communication between our sensors and the master control unit that we are designing with our selected microcontroller. We found out that the pulse sensor was not ideal due to one main reason and further testing is to be required on the ESP 32.

- Richa Patel: Did more research on AWS and Amazon DynamoDB.
- Isaac Zahau: Started setting up dev environment for the Android app. Did some research on setting up Bluetooth, query devices, device connection and data transfer in Android Studio. Started working on a test app to test the bluetooth functionalities. Also booked rooms for meeting each week.
- Michael Lauderback: Researched schematic design and datasheets for the ESP board and STM32 processor. Researched different schematic/pcb design software. Configured headless raspberry pi for basic testing. Also helped John test the pulse sensor.

○ **Pending issues** (*If applicable: Were there any unexpected complications? Please elaborate.*)

- Justin Worley: Worked on...
- John Kivley: The pulse sensor gets very clean readings operating on 3.3V and 5V, however, if the user moves their hand, a lot of noise is created in the pulse readings.
- Richa Patel: None
- Isaac Zahau: None
- Michael Lauderback: I accidentally shorted two voltage gpio pins on my pi which broke it, so I have to get a new one.

- **Individual contributions**

NAME	INDIVIDUAL CONTRIBUTIONS	HOURS THIS WEEK	HOURS Cumulative
Justin Worley		6	12
John Kivley	Tested the pulse sensor and the ESP 32 devkit in the Coover labs with oscilloscope readings and arduino test programs.	7.5	13
Richa Patel	Did research on AWS and Amazon DynamoDB	5	10
Isaac Zahau	Did research on Bluetooth functionality and started a project in Android Studio	5	10
Michael Lauderback	Sch/pcb software research, MCU schematic design research, configured headless pi for testing.	10	14

- **Comments and extended discussion**

Regarding the pulse sensor, we may stick with the current pulse sensor and get it working properly, and if we have time near the end of our project we can improve our pulse readings with a new sensor, or find a way to filter the signal through software or hardware.

- **Plans for the upcoming week**

- Justin Worley: Work on setting up the AWS environment. Look into the best ways to host a web server on AWS. Work on how backend and frontend will communicate. Get a better understanding of how AWS works overall.

- John Kivley: Continue testing the ESP 32 and establish server to client communication via BLE. Then research how to communicate between multiple ESP chips via BLE.
- Richa Patel: I will continue doing research on AWS and Amazon DynamoDB and work with Justin and Issac if needed.
- Isaac Zahau: I will continue working on the test app, testing out various functionalities of the bluetooth adapter as well as looking into data transfer using wired connection. I will also start to look into connecting the app to the backend server.
- Michael Lauderback: I will continue to work with John to test new components as they come in. I will begin designing the MCU schematic as well as test boards so devices like the microcontroller can be module instead of soldered in place.

- **Summary of weekly advisor meeting**

We were unable to meet with our advisor due to scheduling conflicts. We are in the process of communicating a time that works best for our advisor/client.