EE/CprE/SE 492 WEEKLY REPORT 3

2/22/2020 - 3/1/2020

Group 3

Smart Digital Stethoscope

Dr. Khokhar

Team:

- *Erik Becker: Chief Hardware Engineer*
- *Joseph Dobosenski: Scribe*
- *Margaret Heaslip: Report Manager*
- *Andrew Holman: Chief Software Engineer*
- *Megan Kasabian: Meeting Facilitator*
- *Jordan Spidle: Test Engineer*

Weekly Summary:

        This week we continued development on the individual components of the project. For the software we worked on understanding the BLE software stack and how it works on the microcontroller. We also re-evaluated the specifications of the BLE 4.2 protocol to make sure that it was capable of transmitting the amount of data we will need. We also started work on the machine learning algorithm. Specifically we improved how we get the audio samples to give us a large set and we started selecting for specific illnesses rather than a binary healthy or unhealthy. For hardware, three microphones were ordered through ETG. They should arrive the week of 3/1. The filter circuit was built and tested, however, some odd behaviors were seen. A meeting with a professor was scheduled to discuss these behaviors.

Past Week Accomplishments:
- Erik Becker:
    - Tested filter circuit. Found some issues with the behavior.
    - Ordered three microphones for testing.
    - Scheduled a meeting with Tuttle to discuss the filter design.
- Joe Dobosenski & Margaret Heaslip:
    - Created hello world program that utilized the bluetooth functionality of the board
    - Researched the specs of BLE 4.2 to make sure it is capable of fulfilling the requirements for the project
- Andrew Holman:
    - Generally improve machine learning algorithm
    - Add selection of specific conditions
- Megan Kasabian:
    - Finished microphone research and found 3 different microphones to order and test.

- ○ Met with Erik in the TLA and built the filter and tested it.
- Jordan Spidle:
  - ○ Contacted Recording Engineer for possible microphones to use
  - ○ Continued research for microphones

Pending issues

- During filter testing, some odd behaviors were observed. The circuit will need to be revised, with advice from G Tuttle, and the circuit will be retested.

Individual contributions

NAME	Hours this week	HOURS cumulative
Andrew Holman	5	25
Megan Kasabian	4	9
Erik Becker	4	9
Jordan Spidle	1	5
Maggie Heaslip	4	8
Joe Dobosenski	6	21

Plans for the upcoming week

- Erik Becker:
    - Meet with Tuttle to discuss filter circuit issues. Retest filter circuit.
    - Familiarize myself with microphone datasheets and requirements for operation.
- Joe Dobosenski:
    - Create sample BLE program to run on the microcontroller to give us a starting place for further development
    - Continue evaluation of the BLE stack to make sure everything works as intended
- Margaret Heaslip:
    - Working with Joe to develop program for board
    - Coding so UI stuff for the website
    - Learn html/css
- Andrew Holman:
    - Implement additional samples into other ML algorithms
    - Create another ML algorithm with a lung sound database I found.
- Megan Kasabian:
    - Meet with Tuttle to discuss weird results from filter testing.
    - When microphones arrive, begin testing.
- Jordan Spidle:
    - Finalize microphone and start testing.

Summary of weekly advisor meeting:
    N/A