EE 491 WEEKLY REPORT 8 ***Date: 10/25/16- 11/1/16***

Group number: 19
Project title: ***Portable Nutrient Data Collection System - Phase II***
Client &/Advisor: Dr. Qiao & Dr. Qeu

Team Members/Role:
Ben Theisen - Group Leader
Michael Rupert - Webmaster
Zakk Belloma - Key Concept Holder
Ben Engebrecht - Communication Leader
Logan Boas - Communication Leader #2
Ryan Young - Key Concept Holder #2

o Weekly Summary

This past week was spent working on the design document, serial communication from the spectrometer, and further development of the app with bluetooth communication. The design document has been split into parts so that each sub group can write about their part. The serial communication has proven to be more challenging than expected. Further testing is required and the group has diverted more attention to that aspect of the project. The app has continued progress, beginning to set up pages of the app for the local database, and control of the spectrometer. Also, bluetooth communication is still in progress.

o Past week accomplishments

- Decided on Firebase as the App's database service. With all of our data synced to the cloud, a desktop based webview will also be possible with bigger graphs, etc.
- Updated app to support Bluetooth module communication between the Raspberry Pi and the Android device, this will allow for control of the spectrometer through the app.
- Progressing on getting the android app to pair to the HC-06 module.
- Designed an interface between spectrometer and PC for testing purposes,ested serial code on Raspberry Pi
- Verified previous design for voltage booster and started designing an improved model that provides a better output voltage and faster charging than before.
- Put together breakout board. Tested breakout board with spectrometer.

o Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Michael Rupert	Researched Firebase as a database for all data. Created a Firebase project and invited the members of the group. Tested API calls.	4	30
Ben Theisen	Began Design Document. Created screen sketches revolving around the database of the app and the spectrometer control screen. Began to implement local database for the app.	5	32
Zakk Belloma	Attempted to implement bluetooth pairing to HC-06 to get communication to the app. Also attempting to fix crashing on phones that are not up to Android 6.0	5	30
Ben Engebrecht	Assembled breadboard, read design documents to design interface, attempted to read data from spectrometer	6	30
Logan Boas	Found different circuit designs and the need parts for the voltage booster. Also researched more into possibly faster charging step up converter.	5	29
Ryan Young	Tested RS232 communication on spectrometer. helped prepare breakout board for the spectrometer	6	35

o Comments and extended discussion

- We tried to get serial communication working with the breakout board to give us some initial data to work with. Unfortunately we ran into some power supply problems where the spectrometer was not receiving power when the serial ports were connected. We plan on doing further investigation into the problem as we move forward.

o Plan for coming week

- Meet with advisor on Thursday -All
- Finish Design Document - All
- Further experimentation with bluetooth and android app -Zakk, Ben T
- Continue researching master - slave relationship in bluetooth - Zakk, Ben T
- Research firebase, a cloud based database. Works offline and when able, uploads data to the cloud. - Ben T
- Work on developing a system for extracting data from the spectrometer and analyzing it - Ben E, Ryan
- Order the needed parts for the step up voltage converter once design is finalized - Logan B
- Talk to the spectrometer. Achieve sending and receiving data over RS232 serial - Michael R

o What we learned this week

- ❖ Firebase will work perfectly for our purpose, and the web interface will be very nice to use. - Michael, Ben T
- ❖ The spectrometer is very picky about voltages. Our initial idea for data acquisition from the spectrometer was to implement the rs232 protocol, but the serial to USB converter that we used to attempt to read data prevented the spectrometer from turning on when it was connected. This signals a power issue, so we will try again next week when we have our faculty meeting with a different converter-Ben E, Ryan
- ❖ We learned that the charging time for the step up converter to receive the needed voltage can take an excessive amount of time, depending on the circuit design. - Logan

o Summary of weekly advisor meeting (if applicable/optional)

Did not meet with our advisor. Will resume meetings next week on 11/3/2016.