CprE/EE/SE 491-- sddec20-23

Underwater Algae Bloom detection
Semester 2 week 3
9/13-9/25
Client: Santosh Pandey
Faculty Advisor: Santosh Pandey

Team:

Anastasia Golter -Housing Team
Nicholas Stasi - Sensor Team
Emily Kinne - Sensor Team
Zachary DeMaris - Housing Team
Jack Seiter - Communication Team
Andrew Koenen - Sensor Team

Overall Summary:

This week has been split between continuing construction on the physical pieces of the unit and preparing for the PIRM meeting to update our status. Things such as setting up the PCB, and starting to test waterproof spray for the boards were completed and a more detailed break down will be given in the individual section below

Individual Contributions:

These are the descriptions for individual contributions for the two weeks of this reporting period: 8/30-9/12

Anastasia Golter: Over the last two weeks I have worked with Emily to test a waterproofing spray on some of the components on breakout boards. We sprayed the parts and have been waiting for them to dry before we can test them. We also worked on the presentation for our PIRM and attended our PIRM meeting. I have purchased tubing to house wires underwater but we are waiting to discuss as a team to decide what lengths we will need to assemble the structure.

Bi-weekly total: 6 hours

Nicholas Stasi: This week I worked with Emily and Andy to get our PCB's soldered and started testing them. We were able to get 3 boards working and communicating correctly with a raspberry pi and the data seemed correct. I also worked with Jack to get the cellular communication working with our sim card. Jack and I were able to get cellular working and were able to ping a raspberry pi.

Bi-weekly total: 14 hours

Emily Kinne: I worked with Nick and Andy to solder and test our PCBs that arrived. We worked at the lab using solder paste and the ovens to assemble all of the surface mount components. Afterward we tested the boards with a raspberry pi to ensure that data was being outputted accurately. The light sensor and accelerometer worked and we have 3 working PCBs (minus temperature sensor). I also waterproofed 2 breakout boards with Chloe using the waterproof spray in the lab. We still need to test them in the water.

Bi-weekly total: 8 hours

Zachary DeMaris:

Over the past two weeks I have been visiting home depot to look at tubing and connectors. I also sealed the PVC piping together using pvc primer and cement. I also have continued researching different connectors for the tubing. There are two connections. Finding a way to connect to the platform and also how to connect to the sensor boards in the water. We have decided to do initially testing with waterproof spray and a plastic wrapping.

Bi-weekly total: 8 hours

Jack Seiter: Over the last two weeks I have continued to work on using the FONA 808 to get cellular access

working from the pi. I continued to use the Heyes command set to attempt to get it working myself. Working with Nick we continued to attempt this and discovered that 2G was accessible within Coover and it was not a signal problem. Nick then suggested using ppp. Using the ppp tutorial and modifying it to work properly I was able to use the FONA 808 like a normal land line modem and dial up, achieving obtaining an IP and pinging an ip from an otherwise unconnected pi.

Bi-weekly total: 16 hours

Andrew Koenen: These last two weeks have been focused on soldering and testing for me, Nick, and Emily. We got all of the parts sorted away and then when the boards came in we covered them in solder paste and attached the surface mount parts. I then took them to the oven and got them permanently attached to the boards. After they cooled off we tested them to make sure that the sensors were working properly with the code created in the last bi weekly section. One we had three boards tested successfully we started working on the wiring layout, but still needed to finish the design.

Bi-weekly total: 9 hours

Pending Issues:

We still need to finish testing the waterproof spray and make sure it will work for the boards and if not we will have to look into other housing methods.

Plans:

Pertaining to the boards, Emily, Nick, and Andrew will continue to finish the wiring setup for multiple sensors so that it is ready for the housing. Along with this we will test the waterproof spray to see if it is a valid alternative to a rigid case.

Jack will continue working on the cellular chip to try to achieve non IP connectivity and get the 2G service working

Pertaining to the housing, Zach and Chloe will be starting to test the waterproofing of the housing and begin to create the legs of the device.