CprE/EE/SE 491-- sddec20-23

Underwater Algae Bloom detection
Semester 2 week 1
8/17-8/28
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:

During this span of two weeks, the team worked on creating a new board design, compiling a parts list to order, retrieval of the data, general communication setup to get back into the swing of things, and ideas for the housing of our device. The board design and parts list were successfully completed. The other tasks are still being completed and the progress will be talked about below in individual sections.

Individual Contributions:

These are the descriptions for individual contributions for the two weeks of this reporting period: 8/17-8/28

Anastasia Golter: The past two weeks, we met as a team to discuss our plan for the semester. We have not been able to meet with our client yet, but we are hoping he will come to the next meeting. I have been researching components and concepts for the structural side of our project with Zach. I have been looking into polyurethane for its waterproofing and adhesive properties.

Bi-weekly total: 6 hours

Nicholas Stasi: In the last 2 weeks I have been working with Andrew and Emily on a strategy for setting up chained I2C connections for our sensors. I researched the wire length restrictions that come with I2C and how we can set the baud rate to give us more length which will allow us to put sensors deeper down the “leg” of the structure. Andrew, Emily, and I also met up in the lab to finish a board design with all the sensors we plan to use in our final design. The boards have been sent to Lee to be ordered. We also made a list of all the parts we will need for the board and found some breakout boards for the sensors with surface-mount packages so we can get the I2C setup before our boards arrive.

Bi-weekly total: 6 hours

Emily Kinne: These last two weeks I have been working on the sensors with Nick and Andy. We created a new PCB design to include a new sensor that will detect light. This can be used with a filter to determine the amount of chlorophyll in the water. We also created a new parts list to order more components and sensors for the board so we can make a new prototype. This as well as the new PCB design are being ordered. I also looked into the addressing of the sensors for 12C communication.

Bi-weekly total: 5 hours

Zachary DeMaris: I have worked with Chloe and Andy on ideas for the structure of our floating sensor array. We also had initial meetings with the team to discuss what everyone will be doing to start the semester. I have found lots of examples of floating platforms that use PVC pipes for flotation. My biggest problem now is figuring out what kind of platform will sit on top of the PVC. My goal is this upcoming week is to decide on an initial parts order.

Bi-weekly total: 4 hours

Jack Seiter: I attended the initial meeting to roughly figure out what we were going to do for this semester. I reviewed the code I previously wrote to make sure it is still optimal according to my design philosophy. I then worked on getting the GSM 2 module communicating and was able to make it recognized as a valid terminal on a Linux computer with the proper serial to USB cable.

Bi-weekly total: 5 hours

Andrew Koenen: These last two weeks I have been working with Emily and Nick on finishing up a new board design that includes a light sensor to help test for chlorophyll levels and get the design sent off to be manufactured. We finished the design and it is currently waiting to be sent and printed. We also came up with a new parts list to order and prepare for the board. Beyond the boards, I have also been trying to help with figuring out a floatation device with Zach and how to attach the legs on my own time.

Bi-weekly total: 6 hours

Pending Issues:

We still need confirmation that the boards and parts have been ordered which should be completed within the next week. This will be a major blocking point for us as we need the parts to continue and so this is a top priority.

Plans:

Pertaining to the boards, Emily, Nick, and Andrew will be working on finalizing the configuration for I2C communication. This involves testing the protocol on a long stretch of wire(12ft) to confirm it will hold up. After parts arrive they will also begin creating the base code for the Pi to obtain and track all of the sensor information.

Jack will continue to work on the communication from the device over cellular to a base computer. This will be important once the sensors are up and running and can be worked on in parallel.

Chloe and Zach will continue to work on the device that will house and hold the sensors and main computing unit. Hopefully, some pieces of a prototype will be available by the next bi-weekly report.