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ESR

This semester I continued to focus on being an CS subteam member as well as partial member of the ECE communication and business subteams. The CS subteam went though significant restructuring of meetings to focus not only on accomplishing the goal of building the water monitoring system and improving technical skill, but also developing each member on the subteam in non-technical aspects.

EWH this semester continued to focus on building and developing the water quality monitoring system for the non-profit Forefront. The overall mission of this project was to work with a real client that would allow us to have significant and international impact, rather than submitting a static project to a competition that would not affect any real change. This water monitoring system allows Forefront to solidify the first phase of its four-phase process in achieve lasting sustainable change in underdeveloped communities. In particular for this project Forefront was targeting a village Pallapatla in India where they had recently built a well. Note, that all other phases of Forefront’s process build off clean water, hence, the water monitoring system enables Forefront to make process in their mission as well. The ECE sensors team designed and built the sensors that would collect data on the current water status. Sensors included temperature, turbidity, pH, usage, and conductivity (as measured by sodium, magnesium, and calcium ion levels). The ECE communications team used GSM to send sensor data to a server. As a fail-safe, the communications team also build a Bluetooth app that would receive data via Bluetooth from the PIC microcontroller, display the water quality metrics, and then send data to the server as well. The power team concentrated on supplying all the devices with the necessary amount of power as well as developing a sustainable source of power for the devices using solar power. The biology subteam handled all of the research for determining the most important water quality metrics to measure, as well as research alternatives to metrics Forefront wanted, but were unable to test outside a testing lab facility. Specifically, Forefront emphasized wanting water hardness as a metric, however this was extremely difficult to test without sending water samples to a laboratory. In response, the biology/mechanical subteam found that conductivity could indirectly measure water hardness, and that a conductivity measure could be implemented by determining the level of certain ions in the water. Further, the biology/ mechanical team created the housing that would store all of the devices. The business team working on creating a beautiful sponsorship packet, planning team socials, and additionally Theresa created the overall design for the web application. The CS subteam built the web application that would allow lay observers and investors to interact with the data, as well as let users see the impact of Forefront’s work (specifically, through displaying the water usage data). The web application consisted of dynamically loading data from the server, and then updating graphs that displayed the given water quality metrics.

As the team’s continued P-card holder, I went to monthly financial meetings, updated and maintained EWH’s budget, and purchased necessary materials to build the water quality monitoring device with the business team. As Rohit will be the new P-card holder, we have begun to shift responsibilities more to the core business team; I also act as a resource for any questions the business team may have about purchasing logistics. I remained on the communications team this semester in order to keep the work more distributed so that Sonia would not feel overwhelmed with work as a freshman. Because I was mainly a part of the CS subteam and meeting times conflicted, I could only partially go to communication meetings. On the communication team I help Sonia develop the Bluetooth app as well as come up with the overall design of the app. On the CS subteam, I severed as the feature lead for the graphs. I was in charge of the overall water quality graph, revamping the individual graphs with Annie using d3.js, coordinating the graphs to change with time selection and water quality, and overall be the “go-to” for any problems/questions relating to the graphs. The graphs were implemented in a mixture of dc.js and d3.js. I’m most proud of being able to work collaboratively as a subteam with each other as well as with the rest of the team to build a functioning web application that Forefront approved of. The web application required input from every subteam and it taught me a lot about the benefits of fluid team communication, organization, the overall design process when creating an application, and balancing the needs of the client and the user. In the last few weeks when the CS team was finishing up the water quality dashboard, Peaky decided to shift half of the meetings to focus on training members on leadership. This gave all CS subteam members valuable insight on best practices for leading an organization as well as let us discuss our current perspectives on leadership. Peaky focused on teaching both non-technical and technical skills which allowed us to develop a more comprehensive skill set. Also creating and assigning “feature lead” roles allowed for a more organize breakdown of the tasks and additionally allowing team members to take more initiative in completing the project.

I still need to improve on being more assertive especially during team discussions. This year, serving as a feature lead helped me improve in being more decisive and confident in making design choices for the team. I also hope to improve my ability to more quickly understand the user’s needs in a product. For example, at the beginning of the semester, Peaky was immediately able to see that water usage was a necessary metric to in order to quantify Forefont’s impact in Pallapatla. Next year, as I will be focusing my attention on the CS team, I hope to keep improving my areas of weakness to better help EWH overall.

For next semester, EWH should continue to shift its focus to developing each member rather than solely be aimed at meeting deadlines for the project. While project organization is important to achieve EWH’s goal to make meaningful, global impact, developing our team members will drive engagement and initiative. In the process this will keep project milestones in order, as team members will be more inclined to put their full effort into the chosen project as they see the individual impact of their work. Further, team members will see how their personal contributions play a major role in the completion the project, which will help to retain members.

Overall, I’ve really enjoyed being a part of EWH and am happy to see how dedicated and supportive the team is of each other. My technical and personal development this semester has motivated me to keep EWH an organization focused on learning, member growth, and creating a meaningful and lasting impact in the world.