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Professor Annexstein

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Individual Capstone Assesment

The project my group has chosen is a rainfall measurement system that will be placed on UC’s campus. Although you can already look up the rainfall online, you can only get the data for Cincinnati as a whole, not a specific place. Knowing exactly how much rainfall our campus gets can be helpful to engineers and construction workers. They will be able to use the data to get a more accurate representation of how long our campus buildings will be safe before erosion becomes a safety issue. This more accurate rainfall data can also be useful if UC decides to collect and reuse rainfall. The Cincinnati Zoo has already saved billions of gallons of water by collecting rainfall, and our solution could help determine if UC could be a candidate to do something similar.

Our current plan for implementing this project includes a wide variety of technical skills. There is a hardware component, a web application, and a mobile application. The hardware portion will be made up of an Arduino board and ultrasonic sensors. I learned how to use sensors and work with circuits in my Engineering Foundations (ENED-1020) course freshman year. I also contributed to the design of a mobile application in my Software Engineering (EECE-3093C) class last year. Software Engineering also gave me experience working with a group of students to complete a large, semester-long project. I now know what to expect, and how to work more effectively with a team.

Most of the knowledge I have about my project comes from my co-op experience as a software engineer at Matson Money. The back-end of our application will most likely be written in C#. Since I worked on a lot of C# during co-op, I feel comfortable taking more responsibility on this portion of our solution. I also did a lot of front-end development at work (HTML, CSS, JavaScript), so I will be able to help with the front end of the web application. The only place I feel like I will not be a lot of help is on the front-end of our mobile application. I do not have experience with app development, but I am happy to learn more about it.

I am excited to work on this project because I have been interested in circuits for a while but have not had many opportunities to get hands on experience with them. I got an Arduino starter kit for my birthday a couple years ago but stopped experimenting when I started a small fire in my apartment. A couple of my group members are familiar with electronics, so I am excited to be able to learn from them in a supervised environment. As I mentioned before, I am also excited to learn about app development. My friends always ask me to make simple apps for them, but I have not had time to sit down and learn how in my free time. This project is a productive way for me to get experience with mobile development.

Our preliminary idea consists of some ultrasonic sensors, an Arduino board, and a container to hold the rain water. The Arduino board will be attached to the sensors and a Wi-Fi module that will transmit the data to the back-end portion of our project. Then, the data can be accessed by the front-end, and displayed nicely in a web app and a mobile app. The idea is for people to be able to access the data quickly and easily, in real time, from anywhere. We think that it will not only be convenient for students to be able to check the rainfall on campus, but also construction workers trying to determine the amount of erosion that our campus buildings are experiencing. Hopefully this will make UC a safer place for everyone on campus.