James Campbell

Professor Annexstein

CS5001

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James’ Individual Capstone Assessment

For our senior design project, we chose a project to design a micro-climate weather detector to collect data about the area’s surroundings. Using this data, we can predict future weather patterns within this specific area as well. Since this data is all monitoring the microclimate of these areas, the data can be very specialized to allow for farmers to know which crops need extra attention and which are okay to leave alone. One of the most important uses for this project will be for the prediction of frost so farmers have a better idea of when they need to add extra protection for their crops.

My college curriculum has prepared me for this project in many ways. For the Electrical Engineers on our team, our main jobs are to select and determine which sensors will be best fit for the project, supplying power to the sensors, and working with the computer engineers to have the sensors’ data read by the microcontroller. The classes that specifically helped me with these tasks were EECE 2070 (Electronics I) and EECE 4038C (Embedded System Design). Both 2 classes directly helped me with the completion of this project.

My job experience has also prepared me for this project. I worked at both AK Steel in Middletown, Ohio as an Electrical engineer co-op and have also worked at Ford Motor Company in Sharonville, Ohio as a Controls engineer co-op. These two positions have given me many skills but more so working with Ford. With my time there, I learned a lot about how to read datasheets, which has been extremely beneficial for our project when selecting sensors. On top of this, working at Ford was a very team-dependent job and learning to work with others in a professional group was very beneficial.

I was motivated to take on this project because it seemed like a very interesting way to try and tackle a big real-world problem. I knew that there would be a lot of work that came along with this project, but it seemed like something that I was willing to put in the time and effort towards. Our preliminary approach to designing a solution was to break down all the steps needed to complete the task at hand, distribute those tasks to the others in the group, and then we started working. My main task was working on selecting sensors and testing them to see how we can best implement them into the prototype.

Our expected results for this semester are to have all the parts ready to begin testing and assembly by the end of this semester. I will self-evaluate my own contributions by double checking our status with our Gantt chart. If I or our team gets off track of our proposed timeline, then we will have to reevaluate the timeline and/or get caught back up to where we need to be. I define our own success at the point where our project can accurately measure all of the variables in its surroundings, and then successfully log that data to an application that our CS team members are working on. What would exceed our expectations is if we are able to have the application accurately predict the temperature.