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Senior Design

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Capstone Assessment

For our senior project we plan to use or collective experiences with software and hardware to create a product for the restaurant industry that will significantly reduce the time, energy, and money needed to make sure all ingredients are stocked as needed. This project consists of a hardware component that works like a digital eye that would read the order tickets as they print in the kitchen. Based on what this information, a software that we write will record what ingredients are used and in what quantities. The software will use some AI concepts to decipher certain types of words/messages that show up on the tickets because there is always the change a server/manager puts a note/something extra on the ticket before sending it to the kitchen. This means a simple list of all dishes sold by the restaurant would not be enough to go off for this program, it must over time lean what those notes mean and make the correct decision on what to order based on them. This project touches on multiple disciplines and would be a good practice in applying much of what we have learned here at UC.

My college career has ultimately been preparing me for something like this, a real practical project that applies all that I have learned. I have learned how to build a robust program that can perform complex tasks. I have not had much experience throughout my college career, but I feel this project is a good introduction to some useful AI concepts. I have also learned multiple high-level programming languages as well as machine code which will likely prove useful for this project. I hope to use most of the classes I have taken to complete this project. Everything back to Engineering Fundamentals will have some application to this project.

My coop experiences also helped prepare me for this project because they provided me the experience needed to work through large projects with long timelines and how to collaborate with other developers to create a deliverable. My first coop as TA in Chongqing, China exposed me to classes outside my major that are useful such as a micro controllers class and other EE classes. This will help with the hardware portion of the project. My other coop at HVAC Technologies helped teach me how to work with large project with many moving pieces and files. I was also able to use GitHub a lot to collaborate with others. This will help with the software development portion of the project.

My motivation for this project is multifaceted. Firstly, I really enjoy the food industry, I think it’s fascination how efficiently successful restaurants must run and I want to help contribute to that efficiency with this project. I also this project will be good practice in working both with hardware and software. I think this is an important skill set because it opens the door for so many more projects I could work on in the future. The initial design for this project consists of a 3D printed housing for the hardware components which will likely be a raspberry pi and some other components to make a digital eye. This component will fit over the ticket printer to facilitate reading the tickets which will be interpreted by the program our group develops.

We expect to have a functioning prototype by the end of this project. There may be some issues with the accuracy of the AI portion of the software but that will be determined by how many test cases we are able to put the software through. This also would require acquiring a receipt/ticket printer, similar to the ones used in restaurants so that may present a challenge. The main way we will self-evaluate is by using a task management system such as Asana to create goals and assign tasks. We will know we are finished when all the necessary tasks we have created have been completed and we have a working prototype for our product.