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Our senior design project is going to be focused on two fields, mainly AI and database management, that we think can enhance our growth and highlight us in a professional setting. The project will focus on an AI-powered inventory management system that will combine the concepts that we have managed to learn about deep learning and database management. The AI model will help identify specific details from an image and update the database while giving the user information on a web-based application. From an academic perspective, I would be using most of the concepts that I've learned till now from linear algebra and Python to database management and deep learning. This project will be used to showcase all those skills from my undergraduate degree while going into a field heavily influenced by AI and all that it entails in the current environment.

With the courses that we have had as computer science students, I feel like we have the necessary skills for such a project. The introductory classes that we had in linear algebra and discrete mathematics have helped lay the foundation for what we are going to do in this project. Along with classes like intro to programming with Python, software development, and database management, these have helped develop the knowledge of databases and how important they are, as well as how to properly utilize them. And lastly, classes like machine learning and deep learning have instilled in us how amazing LLMs can be and all the complexity that goes with creating them. All these courses, along with classes that focus on writing and documentation, have paved the way for this project.

The valuable co-op experiences that I've gained have also given me some skills for this project. I have worked as a project management intern at EMCOR Facilities Services, where I learned how to systematically and efficiently categorize and distribute a problem to solve it. I believe that this is highly beneficial to this senior design project, which has a lot of moving parts and so many things need to be done concurrently. I have also worked as a research intern at UDRI, where I performed many different simulations using Python and all the packages that come with it. I got introduced to machine learning and how it is being used in research, and how we can move AI learning forward.

The motivation for this project for all of us is that in an environment where AI is pushing forward and becoming smarter and smarter, we want to combine our interests in databases and deep learning concepts to contribute to this environment and potentially help us out in our professional careers as well. This project has significant upside and scalability, as it automates inventory management with image recognition using AI, and if this were successful, human error would decrease, and it would pave the way for even more operational efficiency. Our approach is basically to train an LLM to recognize images in a medical field and have the LLM store that information in a fully automated database while giving in-depth and correct information about the subject in the image to the human.

I am sincerely looking forward to this project and showcasing it to the world. We will know when it is done when, at least for this senior design project, the LLM automatically updates the database while giving the user the right information. I intend to self-evaluate my contributions by doing the best that I can in the tasks that I'm given and having measurable goals for each step. This project might be ambitious, but I know that we'll do our best to give all the knowledge and experience that we have been given and apply it.