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CS5001

For my senior design project, I will be creating a web-based AI chatbot that will provide medical information based on end-user queries. With the growing rise of artificial intelligence set to transform how we do business, I believe that having a deeper understanding of how AI functions and provides information will be extremely important in setting myself apart from others in the job market. Most chatbots currently on the market provide disclaimers when providing medical advice as they can generate partial or incorrect information. My goal is to give users a sleek website that is user-friendly, simple to navigate, and provides additional sources of information alongside the main chatbot component. Past experiences in web design and backend development have prepared me for this project and will help me in tackling the challenges that I may face with artificial intelligence. I hope to create something that will not only be innovative but truly help people.

My academic experience at the University of Cincinnati will play a large role in the success of our project. Courses such as Programing Languages (CS 3003) and Database Design/Development (CS 4071) have given me experience with programming websites and connecting them with a SQL database for information storing and retrieval. Database Theory (CS 5151) combined with Information Security and Assurance (IT 2030C) has further strengthened my database knowledge while providing me with a greater understanding of security principles that will help ensure our project is secure from outside threats. More recently in my academic career, taking Software Testing and Quality Assurance (EECE 5132) has helped expand my understanding of test cases and test automation which will help with ensuring our AI chatbot produces consistent results. Finally, AI Principles and Applications (CS 4033) has provided me with a general understanding of artificial intelligence that has formed a strong foundation for additional learning that will need to take place as our project comes along.

Outside of my academic career, my experiences with the U.C. Co-Op program have provided invaluable workplace knowledge across a variety of technical support fields such as healthcare, emergency response, and financial institutions. Giving me a firm understanding of the value of customer service and common pitfalls that software and applications can have which inconvenience or confuse end users. My first Co-Op opportunity was at the Hamilton County Communications Center as an IT Help Desk Intern. This role helped me establish customer service skills and task management/prioritization skills that will help our project stay on track and hopefully minimize user issues. My second Co-Op was at Encore Technologies as a Level 1 Service Desk Analyst; in this position I provided over the phone and remote desktop support to hospitals and banks. This experience honed my ability to think critically on the fly and still take detailed notes documenting tickets and other information that occurred on each call. These skills will help make sure our chatbot is documented thoroughly and assist with resolving surprise issues that may pop up. My third Co-Op, which was also at Encore Technologies, was as a Quality Analyst. In this role I reviewed 100+ calls a week, making sure each call met specific quality standards and documenting what could or should be improved upon. This position helped grow my attention to detail. My fourth and final Co-Op was as a Workspace Engineer at Encore Technologies. In this role I created a variety of task automations to improve the efficiency of the service desk. Part of these automations included integration with multiple application interfaces through API calls. These skills will come in handy when integrating the chatbot component with the web interface.

My motivation for this project is primarily based around learning more about artificial intelligence. As I mentioned earlier, AI is rapidly growing, and multiple industries are adapting AI in various ways to increase workforce productivity and increase profits. Having a deeper understanding of how artificial intelligence can be implemented and getting hands on experience testing, fixing, and maintaining a custom AI chatbot will be an incredible experience that I can bring back to Encore Technologies and use to improve how AI is implemented there. Another big motivator is being able to innovate and create something that will have a positive influence on students and other end users to improve their mental health or help educate them on other medical issues they may be facing. Mental health is a major issue across the United States with many people either not recognizing that they may need help or too scared/self-conscience to reach out to medical professionals. Instead of turning to a general chatbot they may provide inaccurate or incomplete information, I hope we can provide them with a better alternative.

The preliminary project approach we will be taking for our project will be focused on segmenting out each stage of the project and laying out what tasks will be needed to have a successfully working chatbot. The most important first step will be finding valid data to use for our chatbot to ensure all responses it generates are accurate and reliable. Next, we will begin development of the chatbot and create a web-based interface for user querying. Expected results will be a working chatbot that provides knowledge responses that are consistently accurate. We will know when we are finished once we have a user-friendly design that is intuitive to use that offers quick useful responses that users will be able to trust and want to use again.