Assignment 3 - Individual Capstone Assessment

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My senior design project involves developing an Android application that helps users identify dishes and potential allergens based on user input, dish images, and restaurant menu data. The application will query recipe websites like Allrecipes and Food Network to determine the most likely recipe for a dish, providing valuable insight into its ingredients and any associated allergens. Written in Java, the app includes a robust backend database to store recipes and manage data, as well as an intuitive frontend that allows users to easily input information and receive allergy-related feedback. This project merges my academic interest in mobile development, data extraction, and user-centered design.

My collective college experiences have equipped me with both technical and non-technical skills that will directly guide the development of my senior design project. In EECE 3093C: Software Engineering, I learned how to structure a software project from design through testing, which will help me manage the Android app's development process. The data management techniques I acquired in CS 2028C: Data Structures will be crucial for building the app's database and ensuring efficient data retrieval, while CS4071: Design & Analysis of Algorithms has prepared me to optimize the performance of the app's data extraction and querying functions. Beyond technical skills, my experiences in group projects have taught me the importance of communication and collaboration, which will be vital as I work with my team to coordinate tasks and ensure the project stays on track.

My co-op experiences have also equipped me with valuable technical and non-technical skills. At Cummins Inc. as a Logistics Co-op, I developed proficiency in business intelligence tools like Qlik and PowerBI, which deepened my data

analysis capabilities. These skills will be useful in tracking the app's performance and user engagement. My role required collaboration and continuous improvement, which I will apply to ensure that the app evolves based on feedback. At SVTECH Company as a Data Engineer Intern, I gained hands-on experience writing SQL scripts and building data pipelines. This will help in constructing the backend of the application, particularly in managing and querying large recipe databases. Both positions also strengthened my communication and teamwork abilities, which will be vital in coordinating effectively with my senior design team.

I am highly motivated to participate in this project because it aligns with my strong interest in Data Science, a field I've been passionate about throughout my academic journey. This project will not only give me the opportunity to apply what I've learned but also allow me to develop a practical, real-world solution, strengthening my resume and showcasing my ability to build a full-fledged Android application. The combination of data extraction, analysis, and mobile development excites me as it covers various aspects of my studies, particularly in the areas of software engineering and algorithm design. Moreover, this project will allow me to further explore my interest in integrating data science with computer vision, while working on something that has a direct positive impact for users.

My preliminary approach to designing the solution will involve carefully considering potential problems the application could solve, particularly within the domains of data science and computer vision. I'll begin by identifying clear goals and determining how to implement functionalities like dish identification, allergy detection, and external recipe querying. Time and budget constraints will play a significant role in deciding the complexity of the solution, ensuring we can deliver a functional, user-friendly application within the set parameters. The expected result is a fully functional Android application, complete with a well-structured UI and backend. To self-evaluate my contributions, I will rely on quality checks and user testing to ensure the program runs smoothly, meeting both performance and accuracy requirements.