

My senior design project focuses on developing a Spotify analytics web app that provides users with detailed insights into their listening history and personalized music recommendations. From my perspective as a fifth-year Computer Science major at the University of Cincinnati, this project allows me to combine my knowledge of data analysis, machine learning, and web development to create a dynamic and user-friendly application. The app will have two primary components: one that visualizes the user's listening habits through charts, graphs, and infographics, and another that generates music recommendations using a combination of listening history, user surveys, and peer data. This project will push my skills in both technical implementation and aesthetic design, ensuring the final product is functional, informative, and engaging.

The Computer Science curriculum at UC has provided me with a solid foundation of technical skills necessary for this project. Courses such as Data Structures and Algorithms and Database Systems have equipped me with the ability to design efficient algorithms and manage large datasets, both of which are crucial for handling user data and ensuring the system performs optimally. Software Engineering has taught me the principles of software design, agile development, and the importance of teamwork, all of which will guide the development lifecycle of the project. In addition to these, Web Design has honed my front-end and back-end development skills, enabling me to design a functional and aesthetically pleasing user interface. These courses, collectively, have instilled in me both the technical know-how and a structured approach to problem-solving that I will apply to this project.

My co-op experiences have also been instrumental in shaping my approach to this project. During my co-op at CADTalk, I worked as a Junior Software Engineer, where I contributed to building a product that connected CADs to ERPs. This experience allowed me to refine my skills in C# and Visual Studio. At Corptax, where I held the position of Associate Software Engineer, I developed strong project management skills, including project and market research, and time estimations. Additionally, both positions provided me with soft skills such as teamwork, communication, and time management, which will be just as important as the technical skills in coordinating with my project team and ensuring that we meet deadlines and deliver a quality product.

I am deeply motivated to work on this project because I am passionate about both data-driven applications and music. The opportunity to combine these two interests in a project that enhances users' music experience is incredibly exciting to me. My preliminary approach involves breaking the project into two core modules: data visualization and music recommendation. For the visualization component, I will design wireframes that lay out how user data will be presented in charts and graphs. For the recommendation engine, I plan to experiment with collaborative filtering, content-based filtering, and survey data to determine which method yields the best recommendations. Throughout development, I will use agile methodology, conducting regular testing and iterations to improve functionality and user experience.

The expected outcome of this project is a sleek, intuitive web app that provides users with in-depth analytics on their listening habits and personalized music recommendations based on their history and preferences. Success for the project will be measured by how well the app integrates Spotify data, the quality and relevance of the recommendations, and user feedback on the app's usability and aesthetic appeal. To evaluate my contributions, I will track metrics such as system performance, accuracy of the recommendation engine, and the responsiveness of the user

interface. I will consider the project successful if the app provides an engaging and insightful experience, is visually appealing, and meets the performance standards established at the beginning of the development process. Achieving these goals will signal that I've done a good job and have successfully contributed to the project.