Stage 4: Project Report

Direction Changes of Project

The final project shifted its focus to prioritize job recommendations and a location-based heatmap while eliminating the initially proposed cover letter generator and resume tailoring functionalities. Initially, the platform aimed to serve as a comprehensive job-seeking toolkit, offering features like ATS-friendly resume optimization and custom cover letter creation. However, the revised project concentrated on providing tailored job suggestions based on user data and visualizing job availability through a location-based heatmap. These changes streamlined the project to focus on actionable insights, enhancing its value as a targeted job market navigation tool.

Application Usefulness

The application successfully enabled users to navigate the job market with tailored job recommendations and an interactive heatmap. While it fell short of delivering resume tailoring and cover letter generation functionalities, the platform maintained its core usefulness by providing personalized and region-specific job insights, empowering users to identify and pursue relevant opportunities effectively.

Data Schema and Source Changes

The schema remained largely consistent with the original design. Among the three data sources initially proposed, only the “LinkedIn Job Postings from 2023 to 2024” dataset was utilized, as it provided sufficient information to build the database. This decision streamlined development and ensured the focus remained on delivering reliable and actionable features.

Changes to Original Design/Table Implementations

The final design introduced new tables—“UserJob” and “JobLocation”—in addition to the original entities to better normalize and manage data relationships. To enhance functionality, attributes such as “ResumeEmbedding” and “Similarity” were added to the User table for cosine similarity calculations, enabling personalized job recommendations. The Location table was updated with “Longitude” and “Latitude” attributes to integrate Google Maps API for the job heatmap feature. These adjustments optimized the database design, ensuring better performance and alignment with the application’s goals.

Changes in Functionalities

The resume tailoring and cover letter generator features were removed to streamline development and concentrate resources on the core functionalities of job recommendations and heatmap visualization. This allowed for a more refined user experience by emphasizing the most impactful features.

How Advanced Database Programs Complement

The advanced database programs played a crucial role in enhancing application efficiency. By saving and updating user and job information, the system minimized redundant data entry and provided real-time job recommendations. The robust database design enabled quick and efficient queries, improving the overall user experience and system performance.

Technical Challenges

One significant challenge was connecting the frontend and backend due to some team members' limited experience with the necessary technical skills. Future teams could benefit from structured workshops or resources covering full-stack application development, ensuring smoother integration and reducing technical bottlenecks.

Other Changes

The initial proposal envisioned a job search feature using a dropdown menu for job attributes. This was later replaced with search bars, providing users with greater flexibility and precision when searching for specific job attributes.

Future Work

Future improvements could include integrating the initially proposed resume tailoring and cover letter generator features. Additionally, incorporating live job posting data scraped from online sources would make the application more dynamic and valuable for users, keeping the recommendations up-to-date with the current job market.

Division of Labor

One team member took the lead in managing the project timeline and work distribution. Initially, the team divided responsibilities between frontend and backend development. Later, each member took ownership of specific features, handling both the frontend and backend aspects. This approach fostered collaboration and ensured accountability for individual contributions, leading to effective teamwork and timely delivery of the project.