



An AI-Based Intelligent Job Search and Recommendation Platform

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Abstract: The increasing number of online job portals has made it challenging for job seekers to find suitable opportunities and manage the job application process efficiently. Searching across multiple platforms, preparing resumes, and tracking application progress often require significant time and effort. This project presents an AI-Powered Job Search Platform that simplifies the job search experience by integrating intelligent job search, resume analysis, job recommendations, and application tracking into a single platform. The system enables users to search for relevant job opportunities based on their skills, qualifications, and experience. Users can upload their resumes to receive an ATS score along with suggestions for improving resume quality and enhancing their chances of selection. Based on the user's profile, the platform recommends suitable job opportunities that closely match their skills and career interests. It also includes a job tracking feature that allows users to monitor the status of their applications, making it easier to organize the recruitment process. In addition, an AI-powered chatbot assists users by answering queries related to jobs, resumes, and application details, providing a more interactive and user-friendly experience. The application is developed using Java, Spring Boot, Angular, REST APIs, Redis, and Artificial Intelligence technologies. The proposed system offers a simple, efficient, and intelligent solution that helps job seekers improve their resumes, discover relevant job opportunities, and manage their applications effectively through a single platform.

Keywords: Artificial Intelligence, Job Search Platform, Resume Analysis, ATS, Job Recommendation, AI Chatbot, Spring Boot, Angular.

I. INTRODUCTION

The **AI-Powered Job Search Platform** is a web-based application designed to simplify the job search process using Artificial Intelligence. The platform assists job seekers by providing intelligent job recommendations, resume analysis, ATS score evaluation, and personalized career guidance. Traditional job portals often rely on keyword-based searches, which may not accurately match user skills with relevant job opportunities. To overcome this limitation, the proposed system integrates AI technologies such as Retrieval-Augmented Generation (RAG), Large Language Models (LLMs), and vector embeddings for semantic understanding. Users can upload resumes, receive AI-generated improvement suggestions, identify skill gaps, and explore suitable job opportunities. The system also includes a job tracker and an AI chatbot to support career-related queries. Developed using Angular, Spring Boot, MySQL, Redis Vector Database, and Ollama, the platform provides an efficient and user-friendly solution for intelligent job searching and career development.

II. LITERATURE SURVEY

Recent advancements in Artificial Intelligence have significantly improved recruitment and job recommendation systems. Traditional job portals primarily use keyword matching, which often fails to capture the semantic relationship between resumes and job descriptions. Researchers have explored machine learning, natural language processing (NLP), and recommendation algorithms to enhance job matching accuracy. Recent

studies have adopted Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) to provide contextual understanding and personalized recommendations. Vector databases have also been introduced for semantic search using text embeddings. Several AI-based resume analyzers evaluate ATS compatibility and suggest improvements. Although these approaches improve recruitment efficiency, many existing systems lack integrated features such as AI-based resume analysis, job tracking, and interactive career assistance. The proposed system combines these capabilities into a single intelligent platform for an enhanced job search experience.

III. CHALLENGES

Developing the AI-Powered Job Search Platform involves several technical and practical challenges. One major challenge is extracting accurate information from resumes with different formats and structures. Generating meaningful job recommendations requires efficient semantic matching between resumes and job descriptions. Selecting suitable AI models while maintaining fast response times is another challenge. Managing vector embeddings, integrating the AI model with the web application, and ensuring scalable search performance require careful implementation. Maintaining secure user authentication and protecting personal information are also essential. Additionally, handling incomplete or inconsistent user data and delivering accurate AI-generated recommendations remain important challenges. The system must balance usability, performance, and reliability to provide an effective job search experience.

IV. PROPOSED METHODOLOGY

The proposed AI-Powered Job Search Platform begins with secure user authentication using Google Sign-In or email credentials. Users complete their profile and upload their resume, which is analyzed using Retrieval-Augmented Generation (RAG), vector embeddings, and the Qwen2.5 Large Language Model. The system performs ATS evaluation, skill gap analysis, and semantic job matching to generate personalized job recommendations. Users can search and apply for jobs, track application progress, and receive career guidance through the AI Career Assistant.

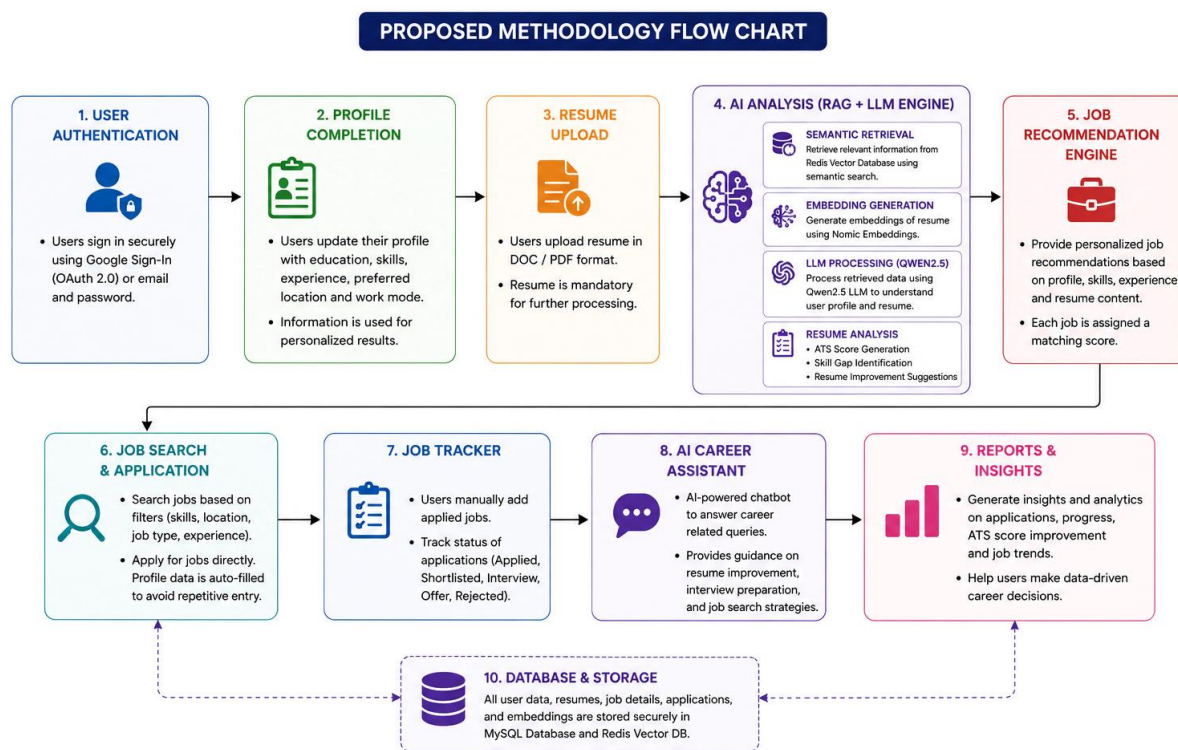


Figure 1: Flow chart of the proposed methodology

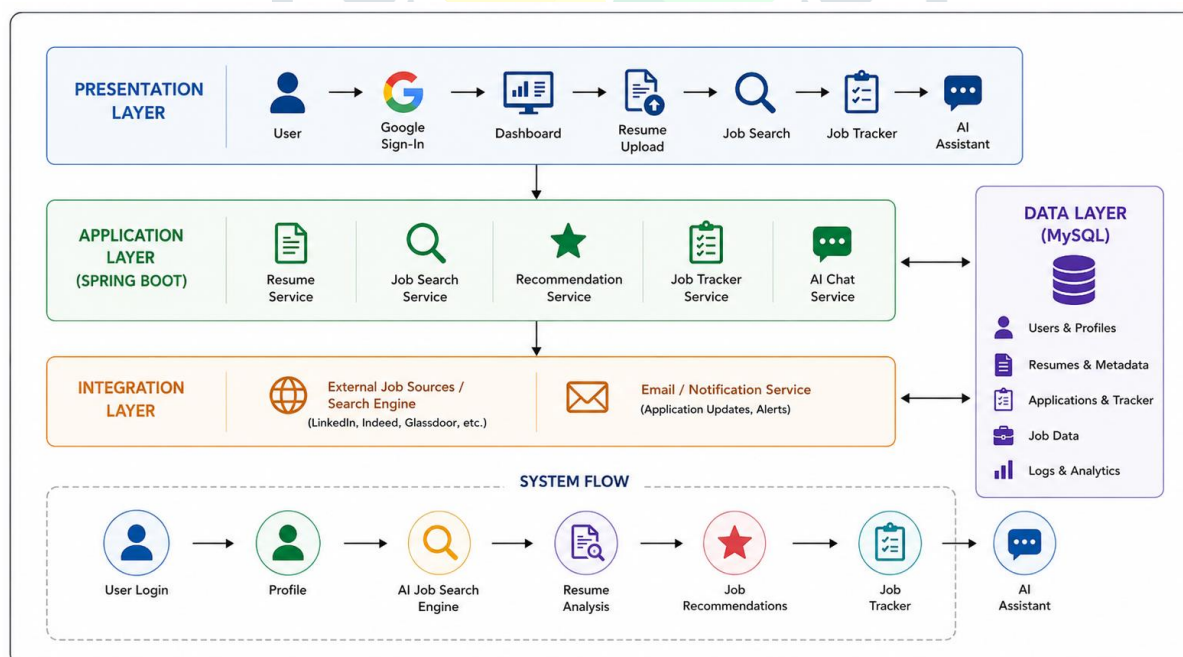
V. ALGORITHMS AND TECHNIQUES

The proposed system integrates Artificial Intelligence, semantic search, and modern web technologies to provide intelligent career assistance.

- **Large Language Model (LLM):** The Qwen2.5 Large Language Model analyzes resumes, generates ATS scores, identifies skill gaps, suggests resume improvements, and provides personalized career guidance through natural language understanding.
- **Retrieval-Augmented Generation (RAG):** RAG combines semantic retrieval with AI-generated responses. Relevant resume information is retrieved from the Redis Vector Database and supplied to the language model to improve response accuracy.
- **Vector Embeddings:** The Nomic Embed Text model converts resumes and job descriptions into vector representations, enabling semantic similarity search for accurate job recommendations.
- **Spring Boot Framework:** Spring Boot serves as the backend framework, managing REST APIs, authentication, AI integration, resume processing, and database communication.
- **Angular Framework:** Angular provides a responsive user interface for profile management, resume analysis, job search, recommendations, job tracking, and AI chatbot interactions.
- **MySQL Database:** MySQL securely stores user profiles, authentication details, resumes, application history, and job tracking information.

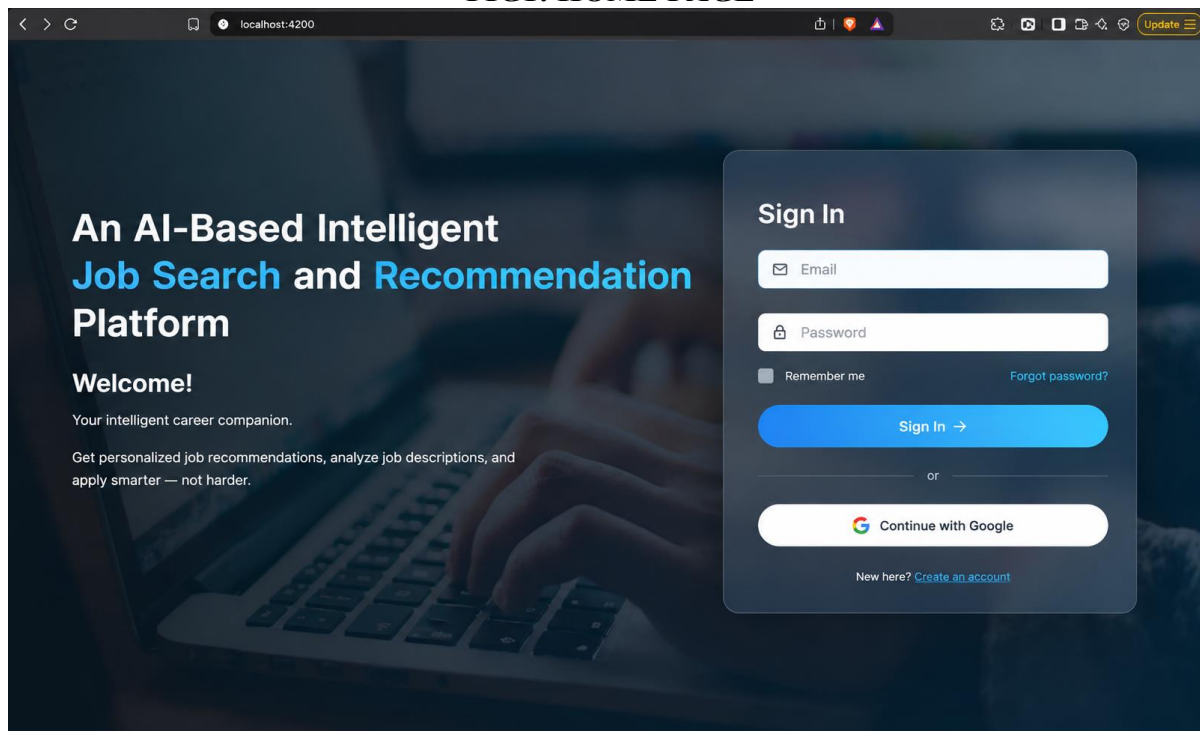
VI. ARCHITECTURE

The proposed AI-Powered Job Search Platform follows a three-tier architecture consisting of the Presentation Layer, Application Layer, and Data Layer. The Presentation Layer, developed using Angular, HTML, CSS, and TypeScript, provides an interactive interface for users. The Application Layer, implemented with Spring Boot, manages user authentication, resume processing, AI-powered job search, recommendations, job tracking, and chatbot services while integrating with external AI and job search services. The Data Layer utilizes MySQL to securely store user profiles, resumes, application history, and job-related information. This architecture ensures scalability, maintainability, and efficient communication between system components.



VII. OUTPUTS

FIG1: HOME PAGE



The Home Page enables secure user authentication using email-password credentials or Google Sign-In. It acts as the gateway to the AI-Powered Job Search Platform.

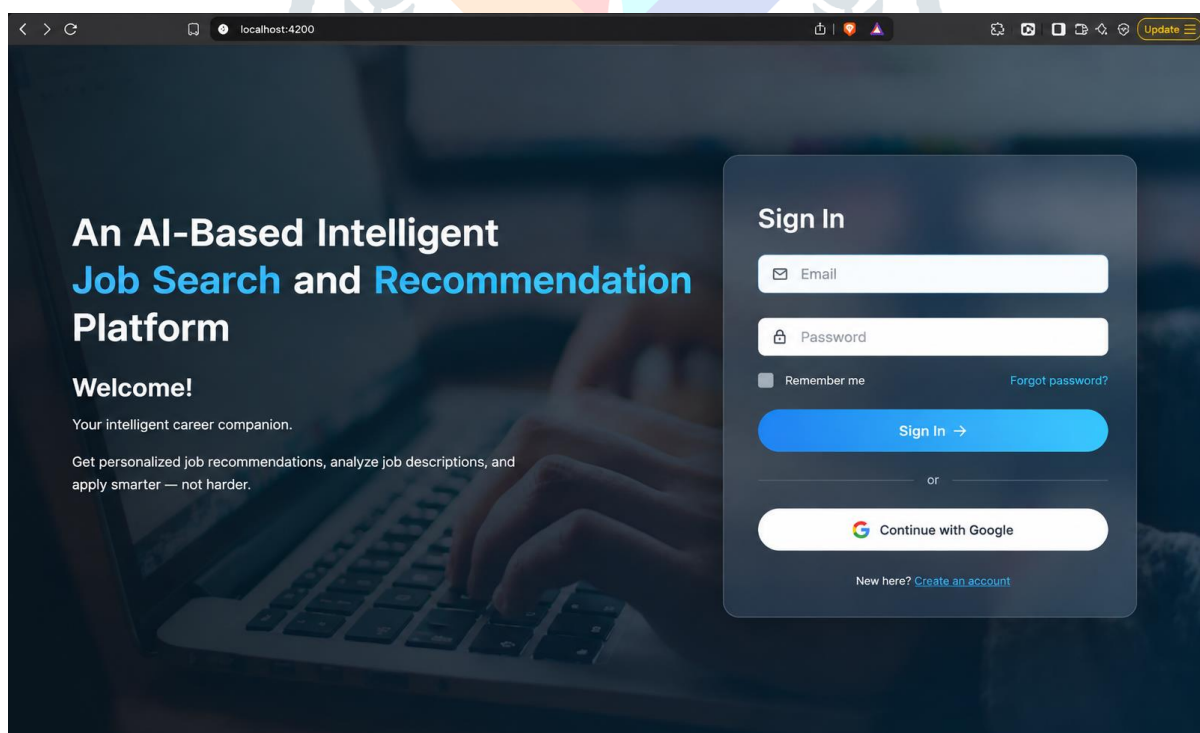


FIG2: REGISTRATION PAGE

The Registration Page enables new users to create an account using an email address and password or Google Sign-In. It provides a simple, responsive interface for secure account creation and easy access to the platform.

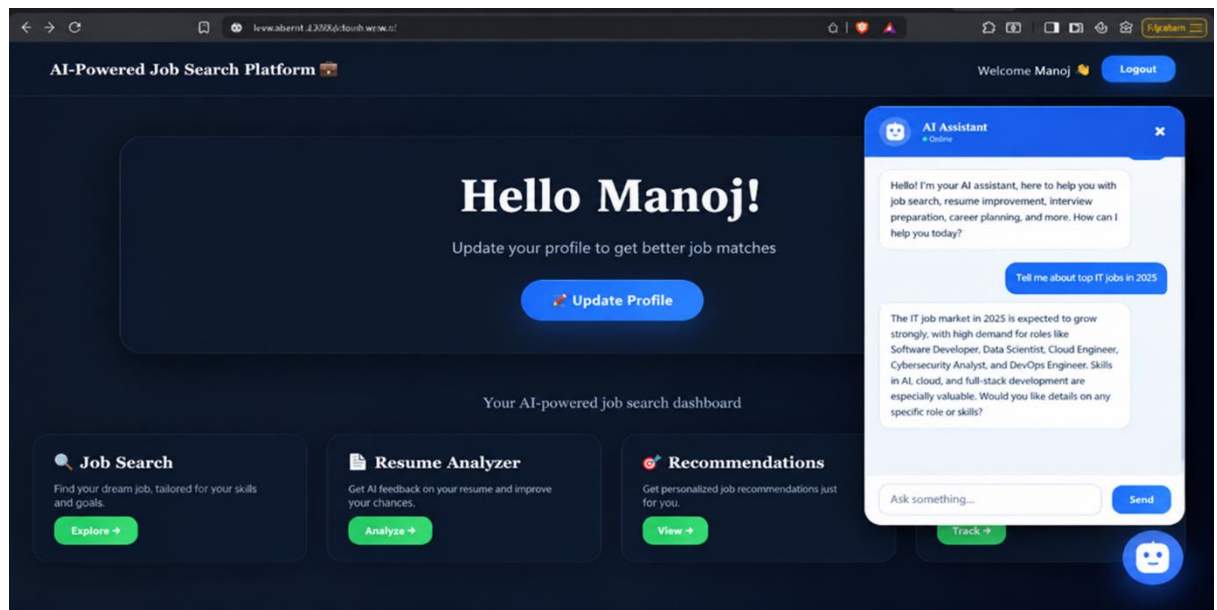


FIG3: DASHBOARD

The Dashboard serves as the central workspace, providing quick access to the User Profile, AI Job Search, Resume Analyzer, Job Recommendations, Job Tracker, and AI Career Assistant. It enables seamless navigation and secure session management.

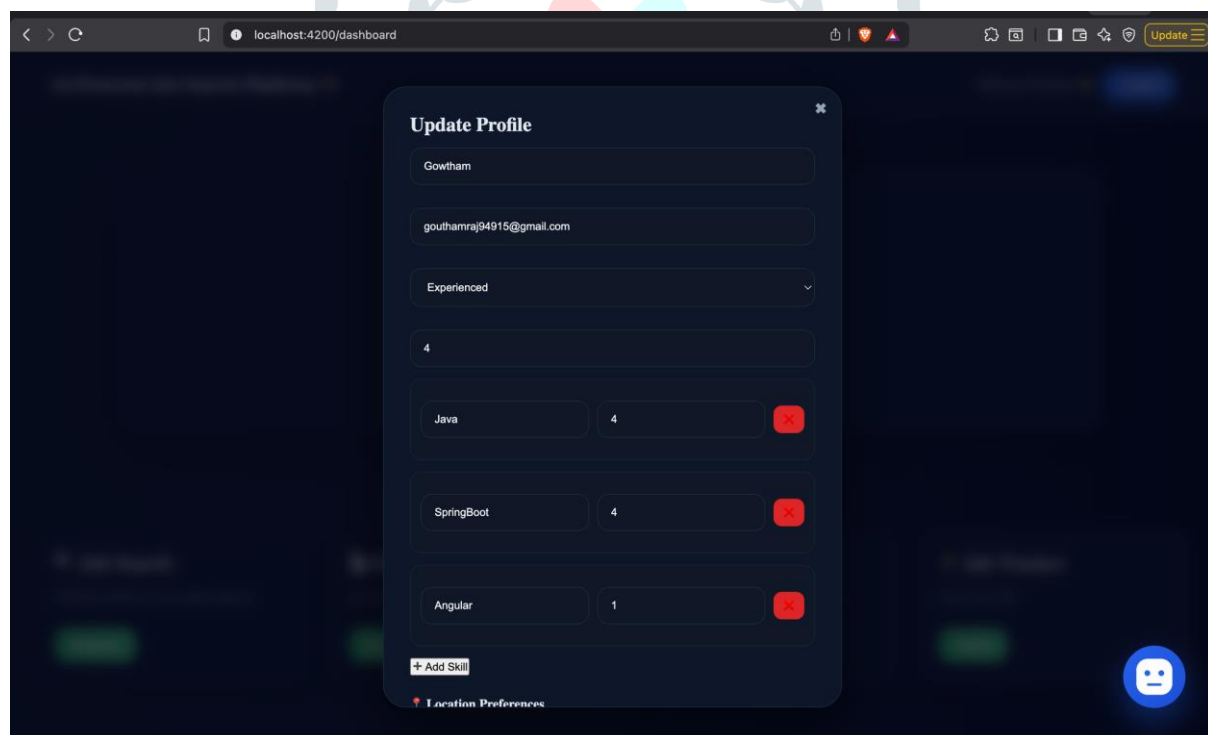
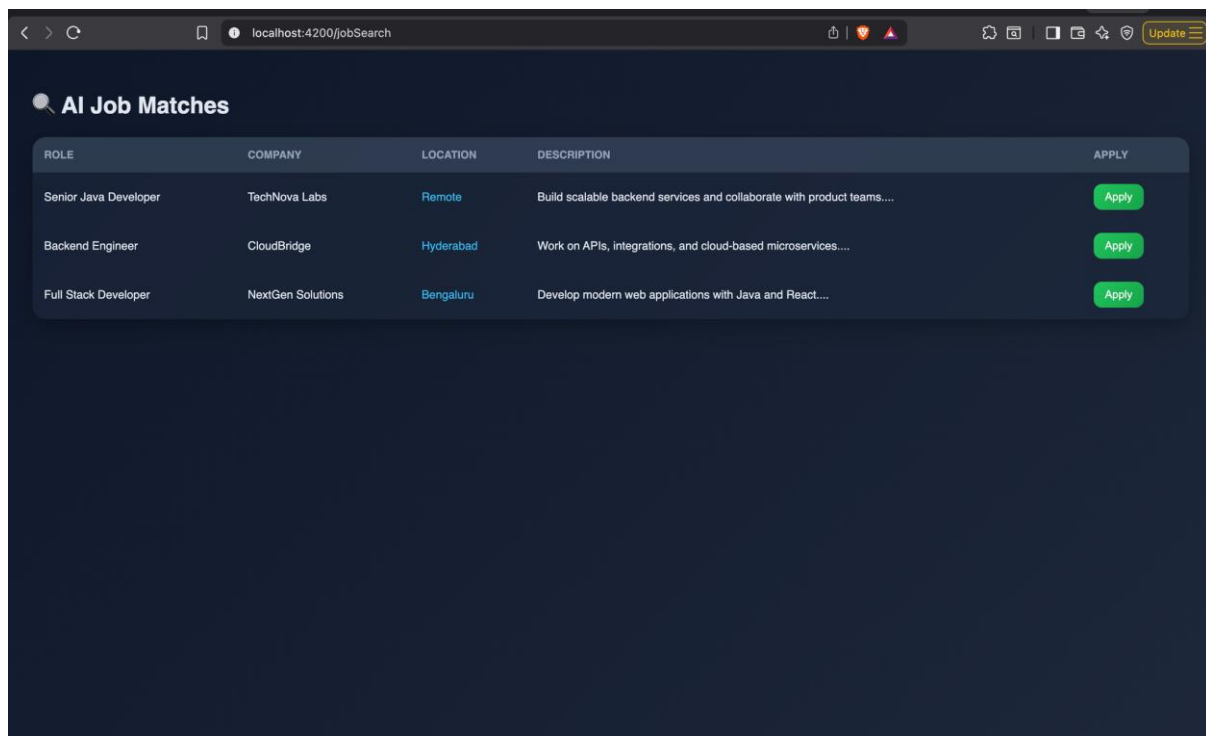
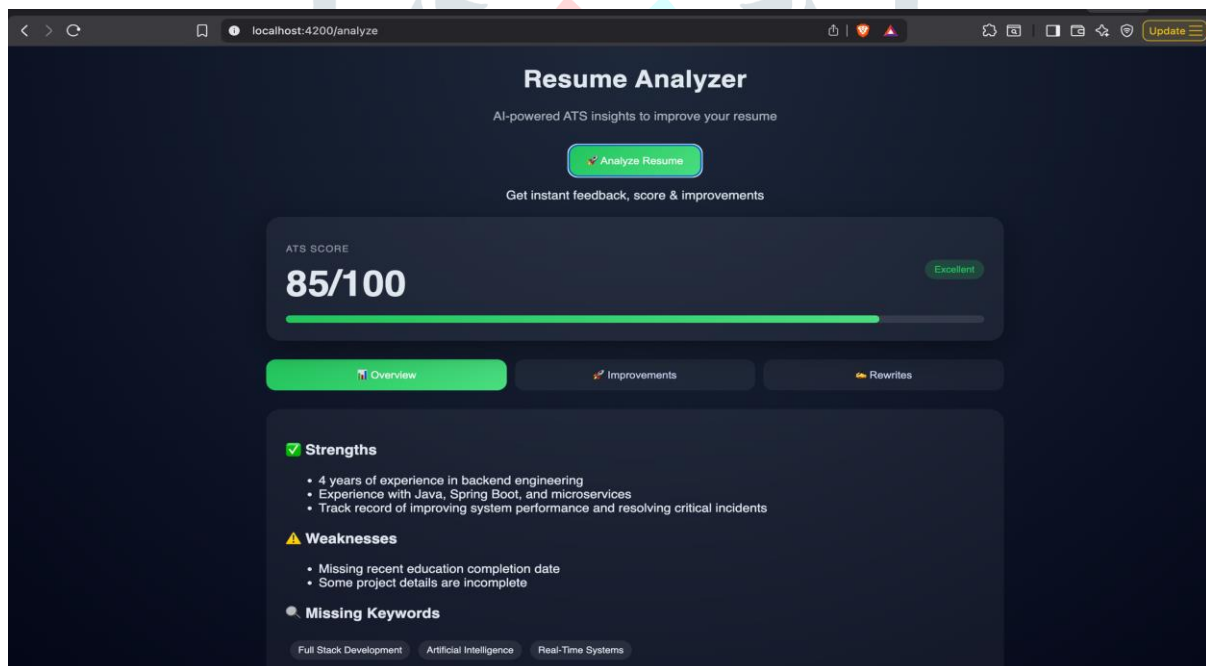


FIG4: USER PROFILE

The User Profile module stores personal and professional information, including skills, experience, preferred location, work mode, and resume. The uploaded resume is used for ATS evaluation, semantic job matching, and personalized job recommendations.

**FIG5: AI JOB SEARCH**

The AI Job Search module retrieves relevant job opportunities based on the user's profile and preferences. Users can explore openings and apply directly, with profile details used automatically.

**FIG6: AI RESUME ANALYZER**

The AI Resume Analyzer evaluates uploaded resumes, generates an ATS score, identifies strengths, weaknesses, and missing skills, and provides AI-powered suggestions and sentence rewrites to improve resume quality.

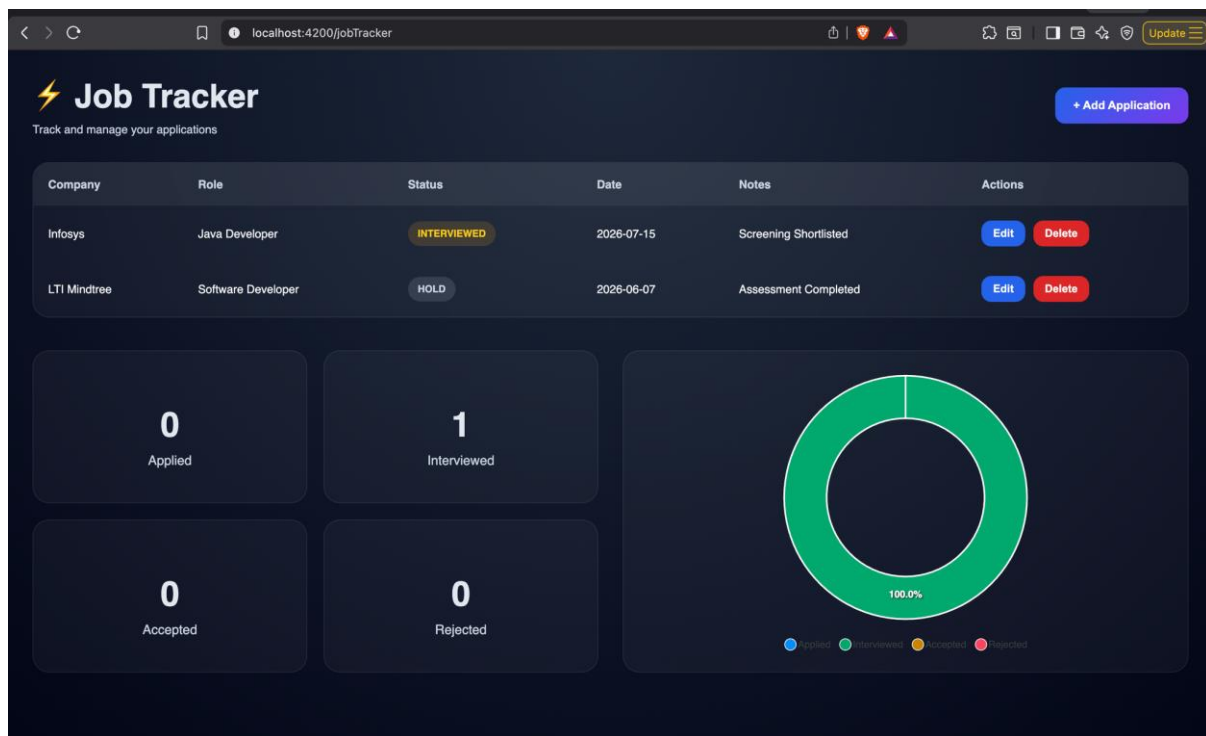


FIG7: JOB TRACKER

The Job Tracker enables users to record and monitor job applications through different recruitment stages. It provides a structured view of application history for efficient tracking.

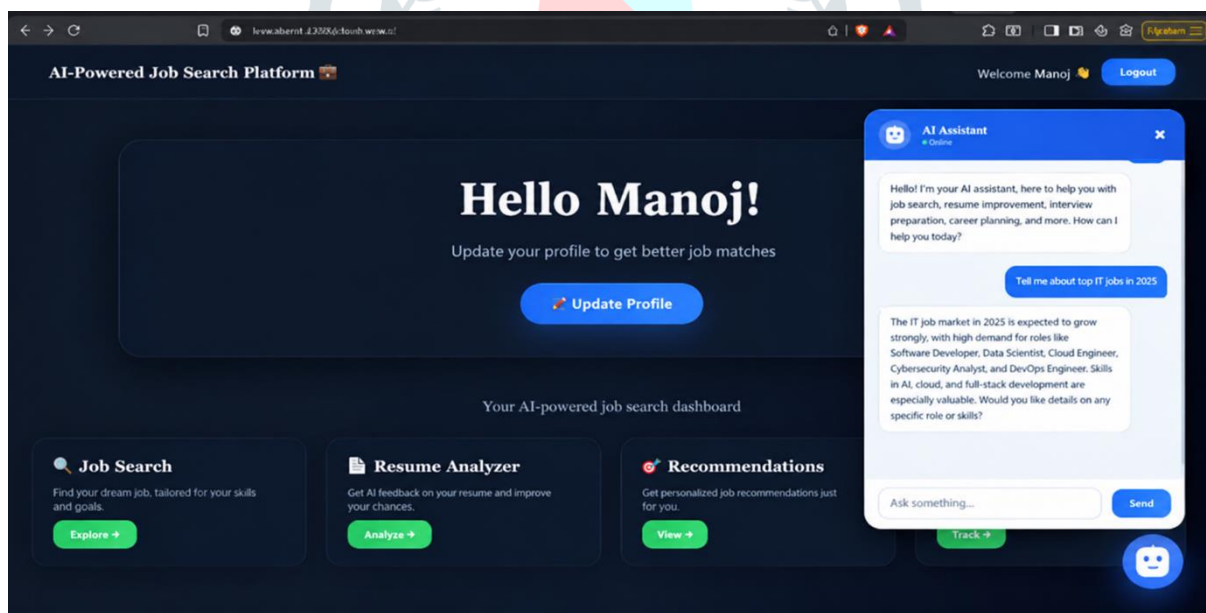


FIG8: AI CAREER ASSISTANT

The AI Career Assistant uses a Large Language Model to provide personalized guidance on resume improvement, interview preparation, career planning, and job search strategies.

VIII. CONCLUSION

The AI-Powered Job Search Platform provides an intelligent and user-friendly solution for modern job seekers by integrating Artificial Intelligence with the job search process. The platform enables secure user authentication, AI-based resume analysis, ATS score evaluation, personalized job recommendations, application tracking, and career assistance within a unified environment. By leveraging semantic search, Retrieval-Augmented Generation (RAG), vector embeddings, and Large Language Models, the system delivers context-aware recommendations that improve the overall job search experience. The platform simplifies resume optimization and helps users identify suitable career opportunities more efficiently. Its modular architecture

ensures scalability, maintainability, and seamless integration of AI services. Overall, the proposed system demonstrates the effective application of Artificial Intelligence in recruitment and career development, providing a strong foundation for future enhancements such as real-time job integration, automated interview preparation and real-time job integration, and advanced interview preparation features.

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G. Manoj Kumar is currently pursuing his final semester of M.TECH at Sanketika Vidya Parishad Engineering College, which is accredited with an 'A' grade by NAAC, affiliated to Andhra University, and approved by AICTE. With a keen interest in Machine Learning and Artificial Intelligence, he has undertaken his postgraduate project titled **“An AI-Based Intelligent Job Search and Recommendation Platform”**. The project has been successfully carried out under the guidance of G.Vijaya Lakshmi is a Ratified Assistant Professor, SVPEC.