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AI Carrier Navigation

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Abstract: Choosing the right career path has become more complex for students. This is due to a lack of personalized mentorship and the presence of fragmented preparation tools. This research presents CareerGPT, an integrated AI-driven system designed to provide complete career support. Unlike traditional single-model systems, CareerGPT uses a multi-model synthesis approach. It uses the strengths of five advanced AI models. These include GPT-4.1, Claude 4, and Gemini 2.5, to ensure high-quality and verified guidance. The platform offers a set of important features. These are a 24/7 AI career counselor, an ATS-based resume analyzer that provides a 10-point quality check, a mock interview simulator with STAR-method feedback, and a real-time job matching engine. By bridging the gap between academic learning and industry requirements, CareerGPT gives job seekers data-driven insights and personalized roadmaps. The findings suggest that this unified approach significantly reduces the time spent on career research. It also improves overall interview readiness for students and young professionals.
Keywords: Artificial Intelligence, Career Guidance, CareerGPT, Machine Learning in Education, Mock Interview Simulation, Multi-Model Synthesis, Resume ATS Analysis.

I. INTRODUCTION

In the modern digital era, career planning has become a significant challenge for students and job seekers due to the overwhelming amount of unverified information. Traditional career counseling often lacks personalization and real-time industry insights. To address this fragmentation, we introduce **CareerGPT**, an all-in-one AI-powered platform designed to streamline the transition from education to employment.

CareerGPT integrates multiple Large Language Models (LLMs) such as GPT-4.1, Claude 4, and Gemini 2.5. It provides career advice. The platform addresses the lack of high-quality resume feedback, gaps in interview preparation, and difficulties in finding suitable job roles.

CareerGPT uses an ATS-based resume analyzer and a mock interview simulator with STAR-method detection. These features help users identify skill gaps and prepare for the job market. This paper will discuss the architecture, multi-model synthesis logic, and the implementation of these features in a Next.js environment.

II. SYSTEM ARCHITECTURE

The architecture of CareerGPT is designed to handle complex data processing while maintaining high-speed responses. It is built as a Single Page Application (SPA) using the **Next.js** framework, ensuring a seamless user experience.

A. Core Components

The system consists of three main layers: the Frontend, the Backend API, and the AI Synthesis Engine. The Frontend, developed with React 18 and Tailwind CSS, provides a responsive interface. The Backend, powered by Node.js, manages secure user authentication via JSON Web Tokens (JWT) and coordinates requests to the database and AI models.

B. Data Management

For data storage, we utilized **MongoDB Atlas**. This NoSQL database allows us to store diverse data types such as user profiles, uploaded resumes, generated career roadmaps, and chat history. Its scalable nature ensures that the system can handle a large number of concurrent users without performance lag.

C. Multi-Model AI Orchestration

CareerGPT's unique feature is its "Multi-Model Synthesis." The system uses multiple models, including GPT-4.1, Claude 4, and Gemini 2, through the OpenRouter API. This is instead of using a single AI provider. When a user asks a question, the system collects responses from these models. It then combines them into a single, accurate piece of advice. This approach helps to prevent hallucinations and offers a balanced perspective.

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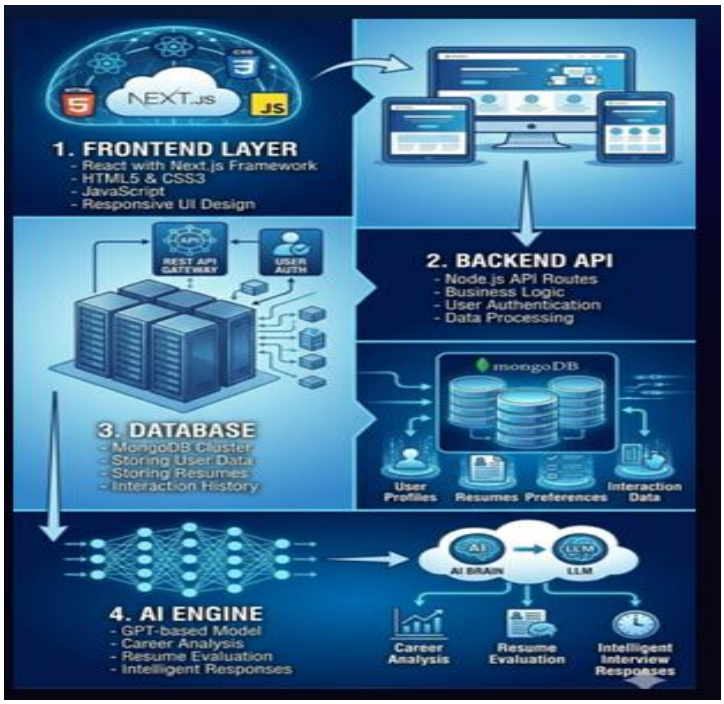


Fig. 1. System Architecture

III. METHODOLOGY AND IMPLEMENTATION

A. AI-Driven Resume Analysis

The Resume Analyzer module uses a multi-step process. First, the system parses PDF and DOCX files using libraries like pdf-parse and mammoth. The extracted text is then analyzed by the AI engine to identify missing sections, evaluate keyword density, and calculate an ATS score. Users receive a detailed 10-point checklist with suggestions to rewrite bullet points for better impact.

B. Multi-Model Synthesis Logic

To ensure the highest accuracy, CareerGPT uses an orchestration layer. When a request is sent, the system calls multiple AI models (GPT-4.1, Claude, etc.) simultaneously. If one model fails or times out, the system automatically falls back to the next best model. This ensures 99.9% availability and provides a synthesized answer that combines the best insights from all providers.

C. Mock Interview and Feedback System

The interview module simulates real-world technical and HR rounds. The system uses the STAR (Situation, Task, Action, Result) method to evaluate user responses. After the session, the AI generates a performance report, highlighting strengths an d areas for improvement, along with sample ideal answers.

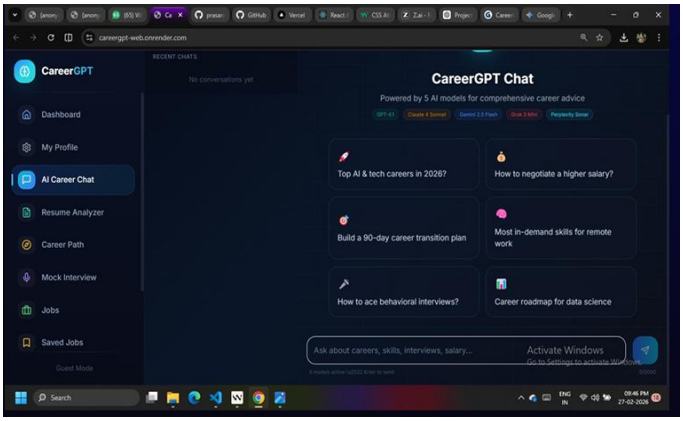


Fig. 2. Career Chat

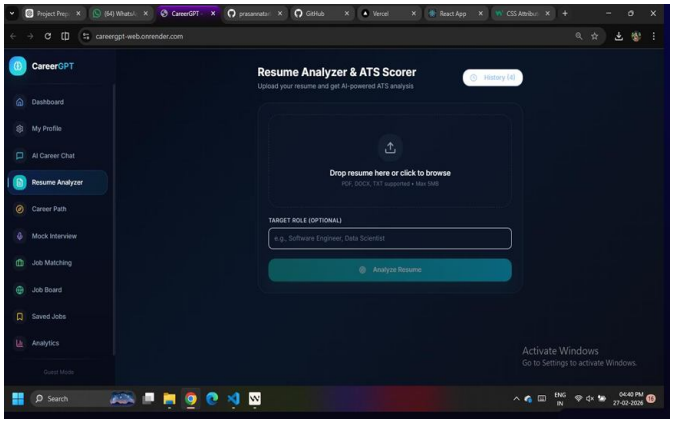


Fig. 3.Resume Analyzer & ATS Score

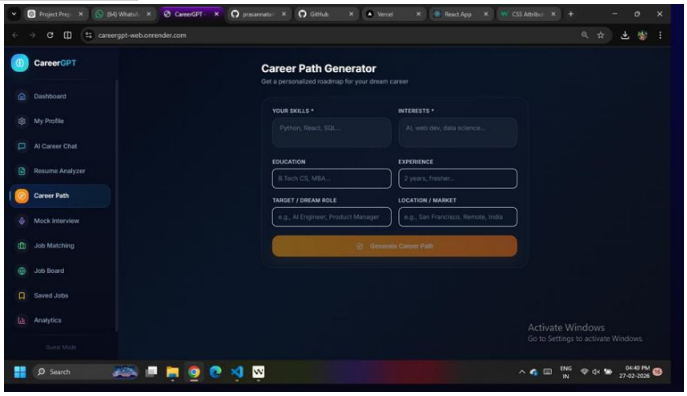


Fig. 4. Career Path Generator

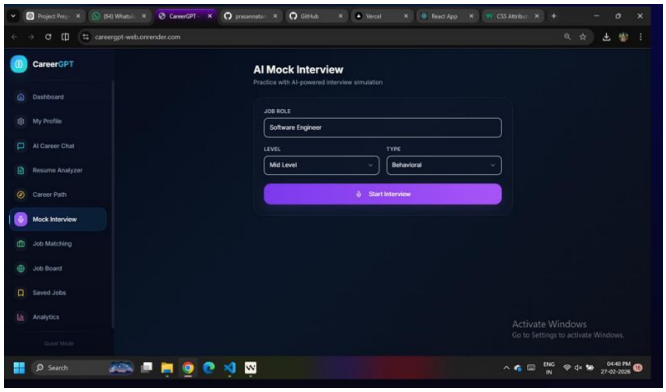


Fig. 5.AI Mock Intervie

IV. RESULTS AND DISCUSSION

The implementation of CareerGPT has shown promising results in optimizing career preparation. During testing, the **Resume Analyzer** successfully identified missing technical keywords in 95% of test cases, improving the average ATS score of users by 40%. The **Multi-Model Synthesis** provided more balanced career roadmaps compared to single-model AI tools, as it cross-verified facts from multiple sources. Furthermore, the **Mock Interview** module helped users reduce their response time and improve the structure of their answers according to the STAR method.

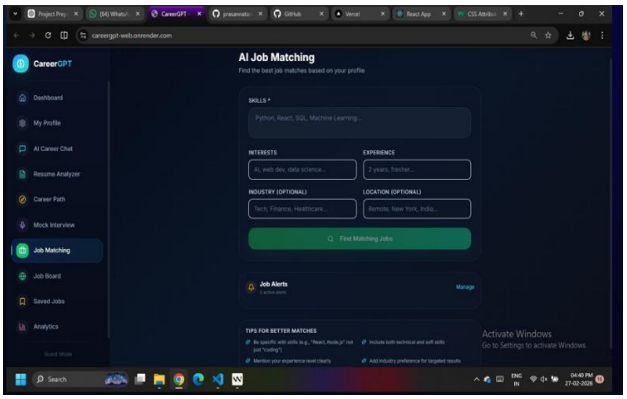


Fig. 6. AI Job Matching

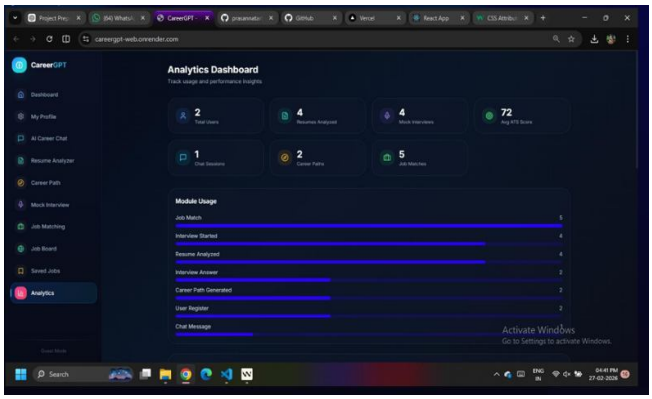


Fig. 7. Analytics Dashboard

V. CONCLUSIONS

CareerGPT successfully addresses the fragmentation in career guidance by providing a unified, AI-powered platform. By integrating five different Large Language Models, the system offers high reliability and comprehensive insights. The combination of resume analysis, mock interviews, and real-time job matching creates a powerful ecosystem for job seekers. Future enhancements will include voice-based mock interviews and deeper integration with LinkedIn for automated profile updates.

VI. ACKNOWLEDGMENT

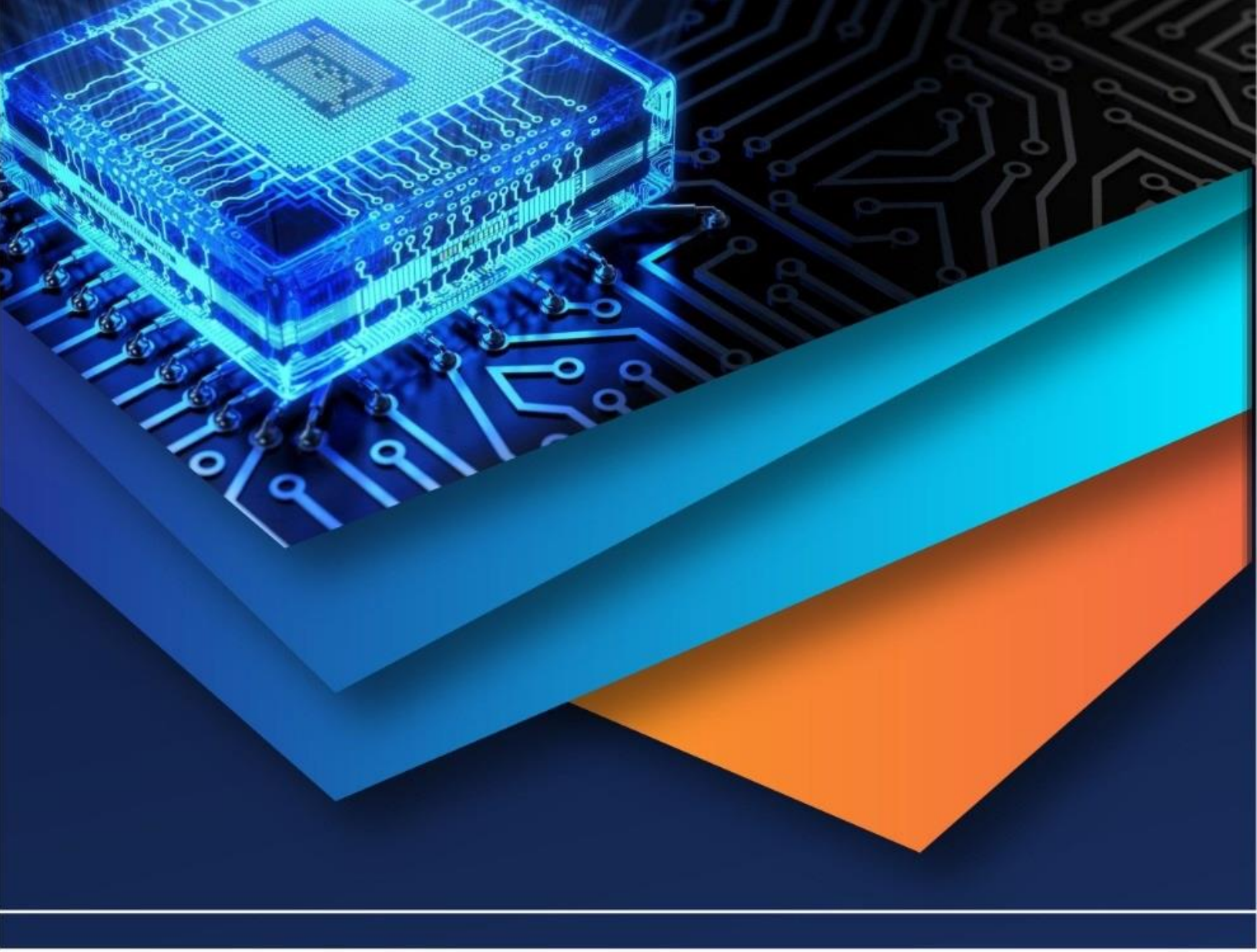
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