

AI Powered Interview Preparation System

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Abstract - In today's competitive job market, effective interview preparation is essential for career success. This paper presents CareerPilot, an AI-powered interview preparation system platform designed to assist candidates in enhancing their technical, communication, and analytical skills through intelligent automation and personalized feedback. The system integrates multiple modules, including AI Interview Coach, Resume Analyzer, Domain Knowledge Assessment, and an Interactive Code Editor, to provide a comprehensive preparation experience. Leveraging advanced Machine Learning (ML) techniques, the platform evaluates user responses, measures communication fluency, and offers targeted recommendations for improvement. Additionally, CareerPilot provides real-time analytics such as quiz performance, problem-solving progress, skill rating, and communication score tracking, enabling users to monitor their overall readiness. The user-friendly dashboard and cloud-based architecture ensure accessibility across devices, while continuous AI-driven adaptation personalizes the learning path for each user. This approach significantly enhances self-assessment, confidence, and employability by simulating realistic interview environments and providing data-driven insights into performance.

Keywords : Career Preparation Platform, AI-Based Resume Analyzer, Coding Practice Environment, Communication Skill Evaluation, Skill Assessment and Tracking, Automated Feedback System, Interactive Code Editor .

INTRODUCTION

CareerPilot is an intelligent web-based platform developed to assist users in preparing for job interviews and enhancing their professional skills. It integrates multiple career development tools into a single interface, allowing users to practice coding, analyze resumes, and improve communication abilities. The platform aims to provide a structured and engaging environment for users to monitor their progress and gain confidence in their interview preparation journey.

The system features modules such as an AI Interview Coach, Resume Analyzer, Code Editor, and Frontend Playground, each designed to target specific aspects of interview readiness. By leveraging artificial intelligence and data-driven insights, CareerPilot delivers personalized feedback and performance tracking.

Body of Paper

The proposed solution, CareerPilot, is an AI-powered career preparation platform designed to assist users in enhancing their interview readiness through intelligent tools and real-time feedback. The system aims to provide a unified interface where candidates can practice coding, analyze resumes, and improve communication skills efficiently. By combining artificial intelligence, analytics, and interactive modules, CareerPilot delivers a personalized and data-driven approach to interview preparation. The dashboard acts as the central hub, offering users a clear overview of their progress through metrics such as quizzes completed, resume score, problems solved, communication score, and skill rating. Each feature within the system is tailored to target a specific aspect of career development. The AI Interview Coach helps users practice and refine their communication and interview responses, while the Resume Analyzer evaluates resumes for content quality, structure, and keyword optimization. Additionally, the Code Editor and Frontend Playground modules allow users to strengthen their technical and programming skills through hands-on exercises. By integrating these diverse modules, CareerPilot provides a complete and engaging learning experience. The system encourages continuous practice through progress tracking, performance insights, and personalized recommendations. This not only helps candidates identify their strengths and weaknesses but also enhances their confidence and overall employability. The proposed system thus bridges the gap between technical learning and real-world interview performance, offering an intelligent, interactive, and user-friendly platform for comprehensive career preparation .

SYSTEM ARCHITECTURE :

The AI-powered interview preparation system uses a modern, scalable setup with React and TypeScript for the frontend, and Firebase Cloud Functions for the backend. Firestore securely stores user data and questions, while Firebase Auth manages authentication. The Gemini API powers the AI layer, offering personalized questions and feedback for an intelligent and adaptive interview experience.

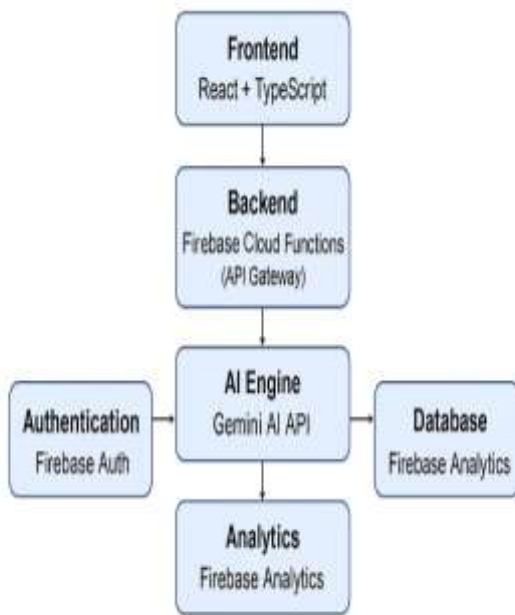


Fig - 1 : System Architecture

MAIN FEATURES

Domain Knowledge: Helps users master core concepts in IT, HR, and Finance with interactive flashcards and quizzes.

AI Interview Coach: Allows users to practice mock interviews and receive real-time AI feedback on communication and confidence.

Resume Analyzer: Evaluates and enhances the user's resume using AI-based suggestions to improve employability.

In-browser Code Editor: Provides a space to practice programming problems in Python and Java with AI hints and solutions.

Frontend Playground: Offers a live environment for building and testing web projects using HTML, CSS, and JavaScript.

Personalized Tracking: Displays user progress across all modules, motivating consistent engagement and improvement.

EXPERIMENTAL RESULTS

The experiment was conducted to evaluate the performance and functionality of the CareerPilot system an AI-powered platform designed to assist users in interview preparation system through quizzes, resume analysis, communication assessment, and coding practice.

CareerPilot is an AI-powered interview and career preparation platform designed to assist users in improving their technical, communication, and analytical skills. The homepage welcomes users and provides access to modules such as Domain Knowledge, AI Interview Coach, Resume Analyzer, Code Editor, and Frontend Playground.

User Engagement

The CareerPilot sign-up page provides a simple and interactive interface for new users to create an account. It encourages engagement by offering an easy registration process using email or Google sign-in. The clean layout, clear instructions, and secure access options enhance the user experience, motivating users to quickly join and explore personalized career opportunities.

Skill and Interest Matching

The Skill and Interest Matching feature helps users find careers that fit their abilities and passions. It uses AI to analyze skills and interests, then suggests suitable job roles and learning paths for better career growth.

Recommendation Accuracy

The Recommendation Accuracy feature ensures users get precise and relevant career suggestions using AI analysis, improving the reliability of guidance and helping them choose suitable career paths.

Time and Cost Efficiency

It is highly time and cost efficient as it provides instant AI-based feedback and career recommendations without the need for manual counselling. Users can access all modules such as interview practice, resume analysis, and skill assessment quickly and at no cost, making the platform faster and more affordable than traditional career guidance methods.

Overall Satisfaction

CareerPilot ensures high user satisfaction with its easy interface, accurate AI feedback, and personalized career guidance. Additionally, users experience a smoother and more engaging interface, leading to higher satisfaction levels.

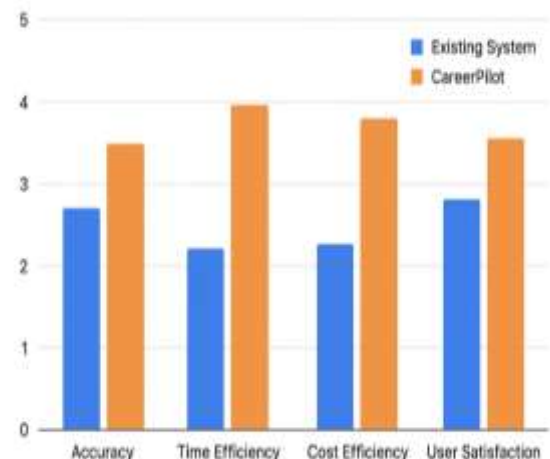


Fig-2 : Performance Comparison

These results indicate that CareerPilot outperforms the existing system in all key areas, demonstrating higher efficiency, accuracy, and user satisfaction. Its AI-powered modules deliver faster, smarter, and more personalized career guidance, making it a superior and reliable platform for interview preparation and skill development.

CONCLUSION

In conclusion, the AI-powered interview preparation system has proven to be an innovative and effective solution for enhancing the interview readiness of users through intelligent technology integration. By combining React and TypeScript for a responsive frontend, Firebase Cloud Functions for a scalable serverless backend, Firestore for real-time data management, and Firebase Authentication for secure user access, the system ensures smooth and reliable performance. The integration of the Gemini API adds intelligence to the platform by generating personalized interview questions, evaluating responses, and providing insightful feedback to help users improve continuously. Throughout development, the system demonstrated strong capabilities in data synchronization, user engagement, and AI-driven learning enhancement. Despite challenges such as fine-tuning AI responses and managing complex integrations, the final outcome successfully meets its objectives of providing an efficient, user-friendly, and intelligent interview practice environment. Overall, the project highlights the potential of AI and cloud technologies in transforming traditional learning methods into smart, adaptive, and accessible digital solutions for career preparation.

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