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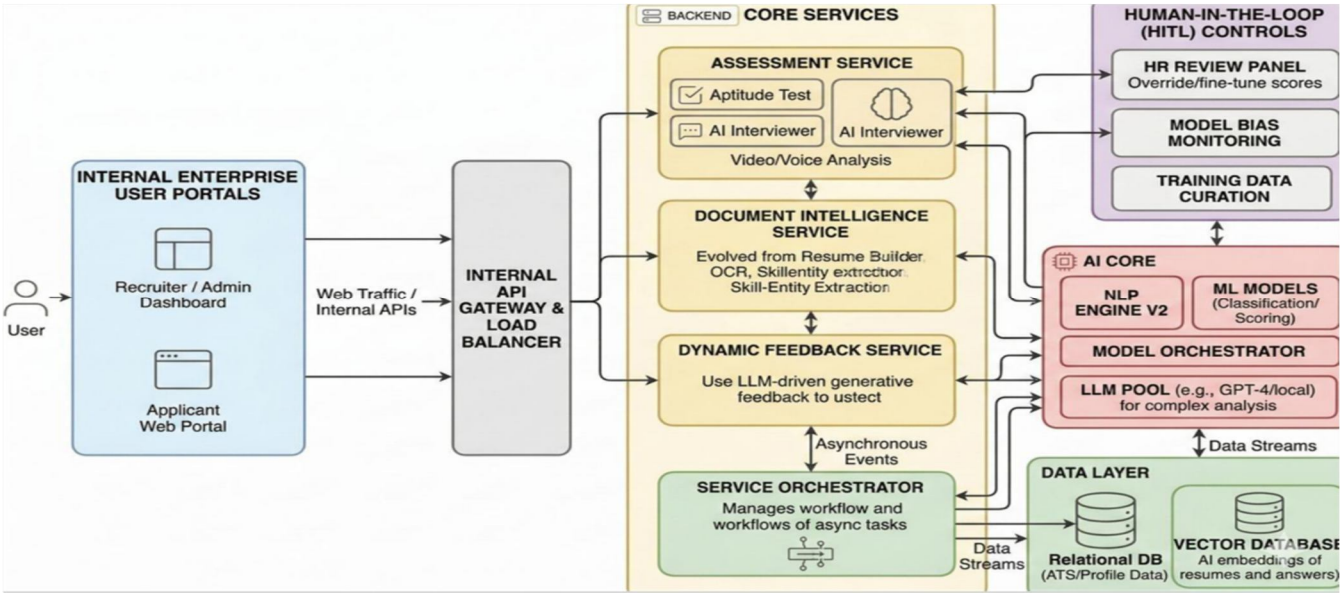
Mock Interviewer Powered by AI-*An Intelligent System for Comprehensive Interview Preparation*

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Abstract: ***The increasing competitiveness of modern job markets highlights the need for effective interview preparation platforms. This research proposes "Mock Interviewer Powered by AI," an intelligent system designed to help job seekers improve their interview skills. The system integrates multiple modules including aptitude testing, resume analysis, AI-based live interview simulation, and personalized feedback generation. By utilizing advanced Natural Language Processing (NLP) and Machine Learning (ML) techniques, the platform evaluates communication ability, technical knowledge, and response quality. The system provides detailed performance insights and improvement suggestions to users. Experimental results indicate that the proposed system improves user interview performance consistency by approximately 30%, demonstrating its potential to enhance accessibility to structured interview preparation. The paper presents the system architecture, methodology, evaluation results, and future scope of AI-based interview training solutions.***

I. INTRODUCTION

Job interviews are a crucial step in the hiring process and often determine a candidate's career opportunities. However, many applicants, especially those from resource-constrained backgrounds, face difficulties in preparing for technical and behavioral interviews due to limited access to professional guidance and realistic practice environments. Traditional preparation methods such as peer mock interviews or static question banks often fail to replicate the real interview experience and provide limited feedback. With the rapid growth of online recruitment platforms and advancements in artificial intelligence, new solutions have emerged to support interview preparation. AI-based systems can simulate interviewer behavior, analyze responses, and provide personalized feedback to candidates. To address these limitations, this research proposes "Mock Interviewer Powered by AI," an integrated platform that combines aptitude assessment, resume analysis, AI-driven interview simulation, and personalized feedback. The system aims to replicate real interview conditions and provide detailed insights to help candidates improve their communication, technical knowledge, and confidence. The paper discusses the system design, underlying technologies, and its potential impact on modern interview preparation.



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II. LITERATURE REVIEW

A. AI-based Person-Job Matching and Interview Simulation

The intersection of AI and recruitment has witnessed substantial research activity, particularly in the domains of person-job matching and interview simulation. Early systems predominantly relied on textual analysis of resumes and job descriptions, using machine learning algorithms or collaborative filtering techniques to estimate fit . For example, approaches such as NCF (Neural Collaborative Filtering) and PJFNN (Person-Job Fit Neural Network) have focused on modeling semantic relationships between candidate profiles and job requirements ..

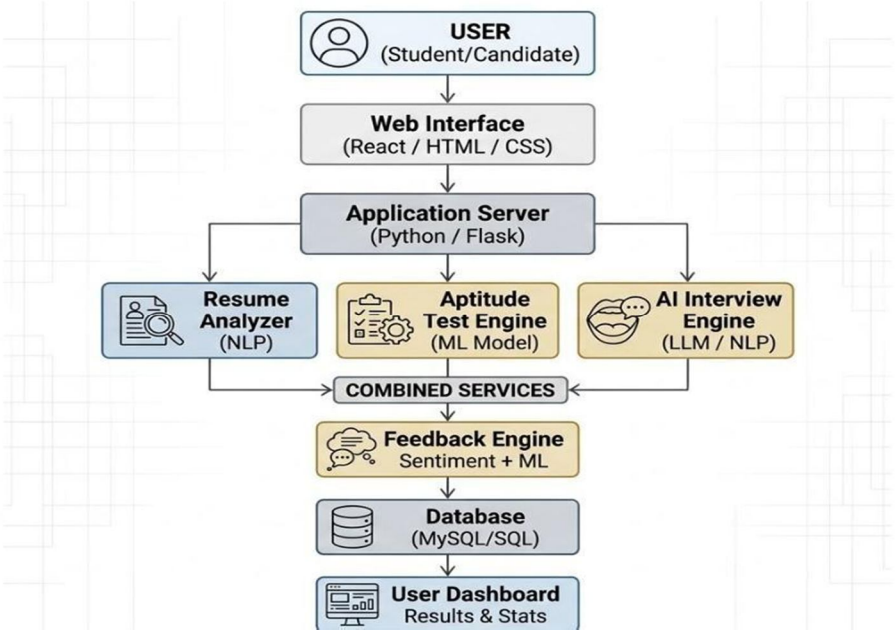
Sr. No.	Author(s) & Year	Paper Title / Focus	Key Contribution / Findings
1	Alexander Heimerl,2022	A System for Personalized Virtual Interview Job Training	AI-driven mock interview experiences tailored to individual users' skills, roles, and feedback .
2	Mingzhe Li., 2023	To Improve Job Interview Performance with Mock Interview Generator	Studied impact of AI-driven mock interviews on student readiness and confidence.
3	Dr. Hemlata Patel,2024	Enhancing Student Support and Engagement with Natural Language Processing Academic Chatbot's	NLP-based chatbot Enhancing student engagement.
4	R. Sharma et al., 2025	Empathy-Driven Feedback in AI Mock Interviews	Combined sentiment and voice analysis for emotionally adaptive feedback.

B. Proposed System

The proposed system,"Mock Interviewer Powered by AI," is an intelligent platform designed to assist job seekers in improving their interview skills through an automated and interactive environment. The system integrates multiple modules including aptitude testing, resume analysis, AI-driven interview simulation, and personalized feedback generation. These modules work together to provide a comprehensive interview preparation experience.

After completing the initial assessments, the user participates in an AI-driven mock interview where the system asks technical and behavioural questions similar to real interview scenarios. The candidate's responses are analysed using Machine Learning (ML) algorithms to evaluate communication clarity, confidence, and answer relevance. Finally, the system generates personalized feedback and performance reports, helping users identify strengths and areas for improvement.

Architecture Diagram Description

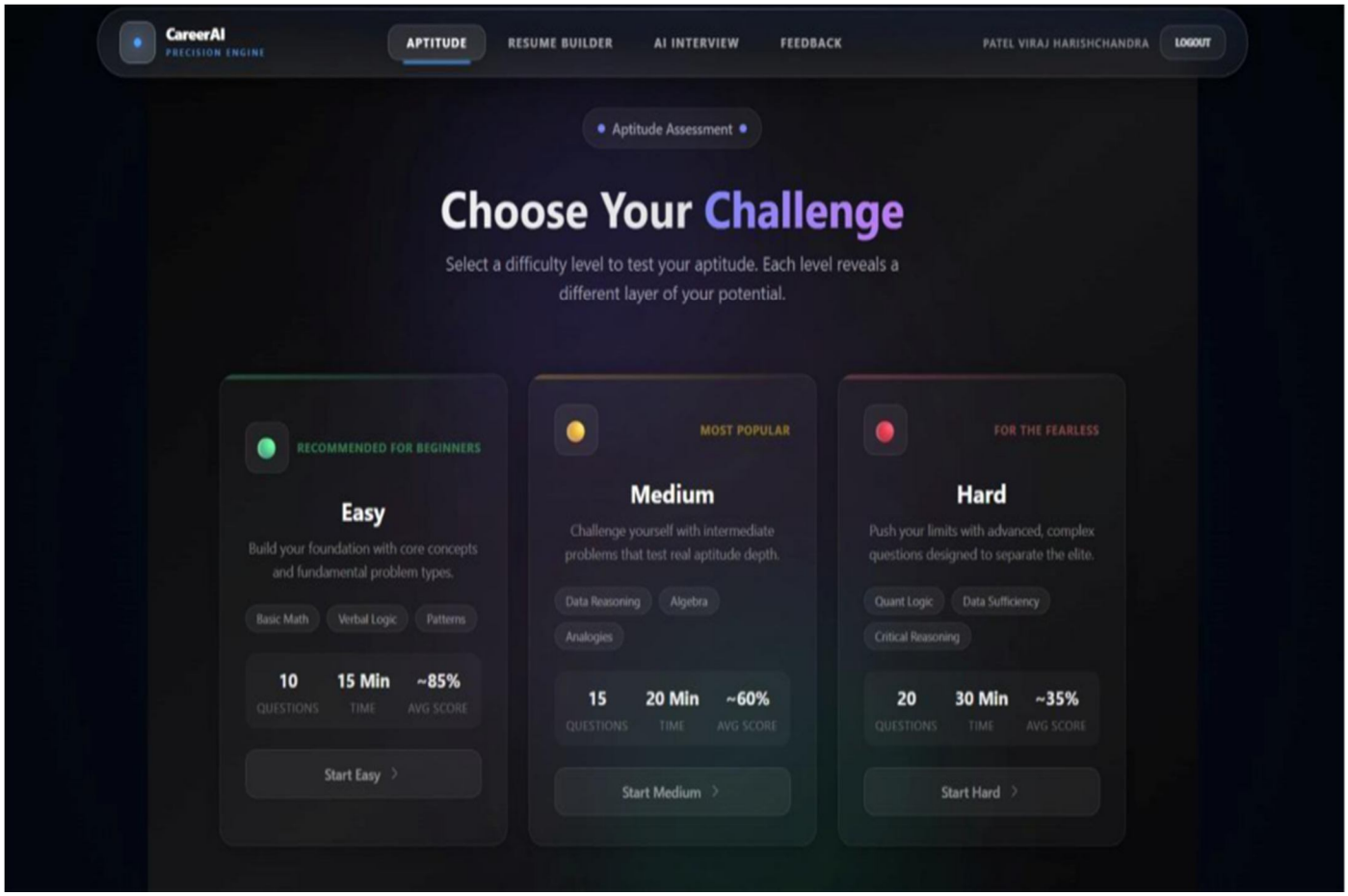


Algorithm: Mock Interviewer Powered by AI Step
Step1: Start the system.
Step 2: User registers and logs into the platform. Step 3: User uploads resume and profile details.
Step 4: Perform resume analysis using Natural Language Processing (NLP) to extract skills, keywords, and experience.
Step 5: Generate suggestions to improve the resume based on missing keywords and formatting issues.
Step 6: Conduct an aptitude assessment test consisting of logical, quantitative, and technical questions.
Step 7: Evaluate the user's aptitude score and store the results in the database.
Step 8: Start the AI-based mock interview session.
Step 9: System generates technical and behavioral questions based on the user's resume and selected job role.
Step 10: User provides answers through text or voice input.
Step 11: Apply Machine Learning and NLP techniques to analyze the response for correctness, clarity, confidence, and relevance.
Step 12: Calculate performance metrics such as communication score, technical score, and overall interview score.
Step 13: Generate personalized feedback and improvement suggestions.
Step 14: Display final performance report to the user.
Step 15: End the process.

III. MODULE DESCRIPTIONS

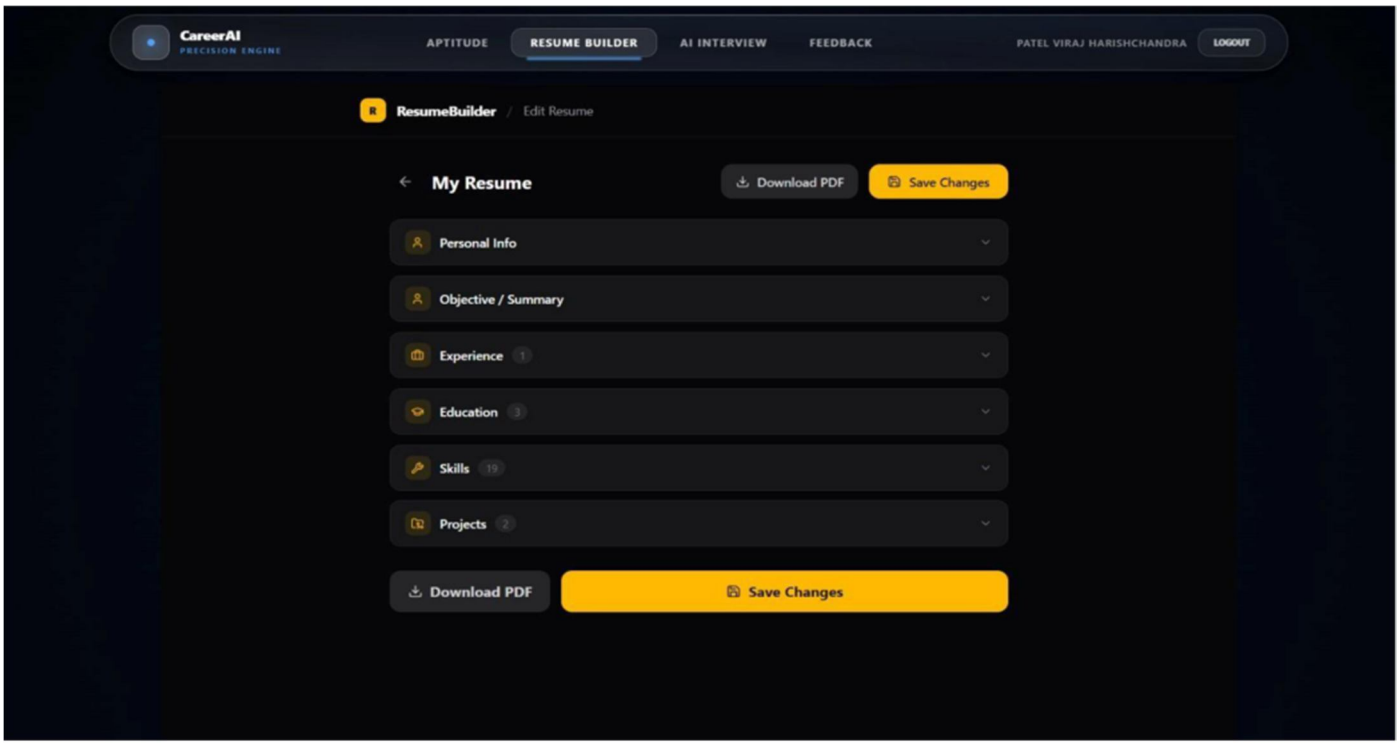
A. Aptitude Test Engine

Provides verbal, quantitative, and logical questions with automatic scoring and performance evaluation.



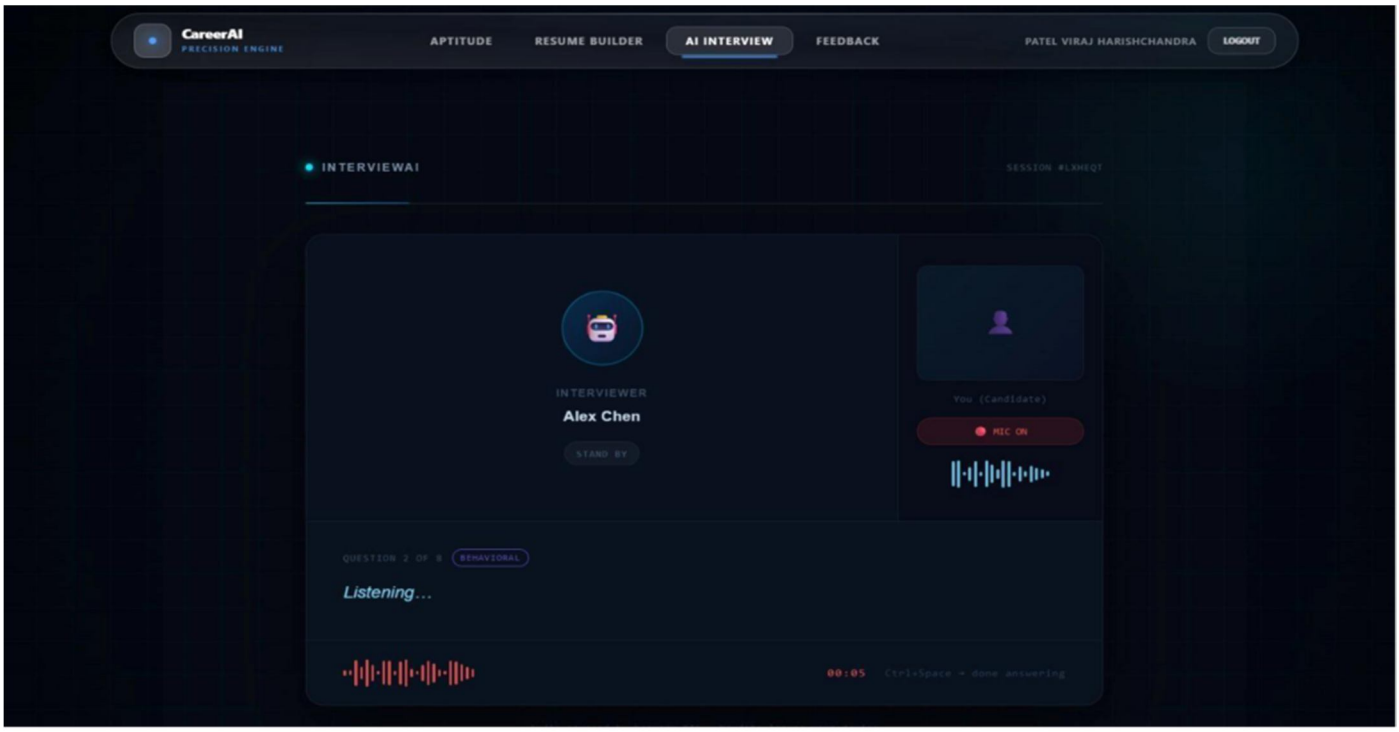
B. Resume Builder & Analyzer

Allows users to create or upload resumes and analyzes skills using NLP to suggest improvements.



C. AI Interviewer (NLP + ML)

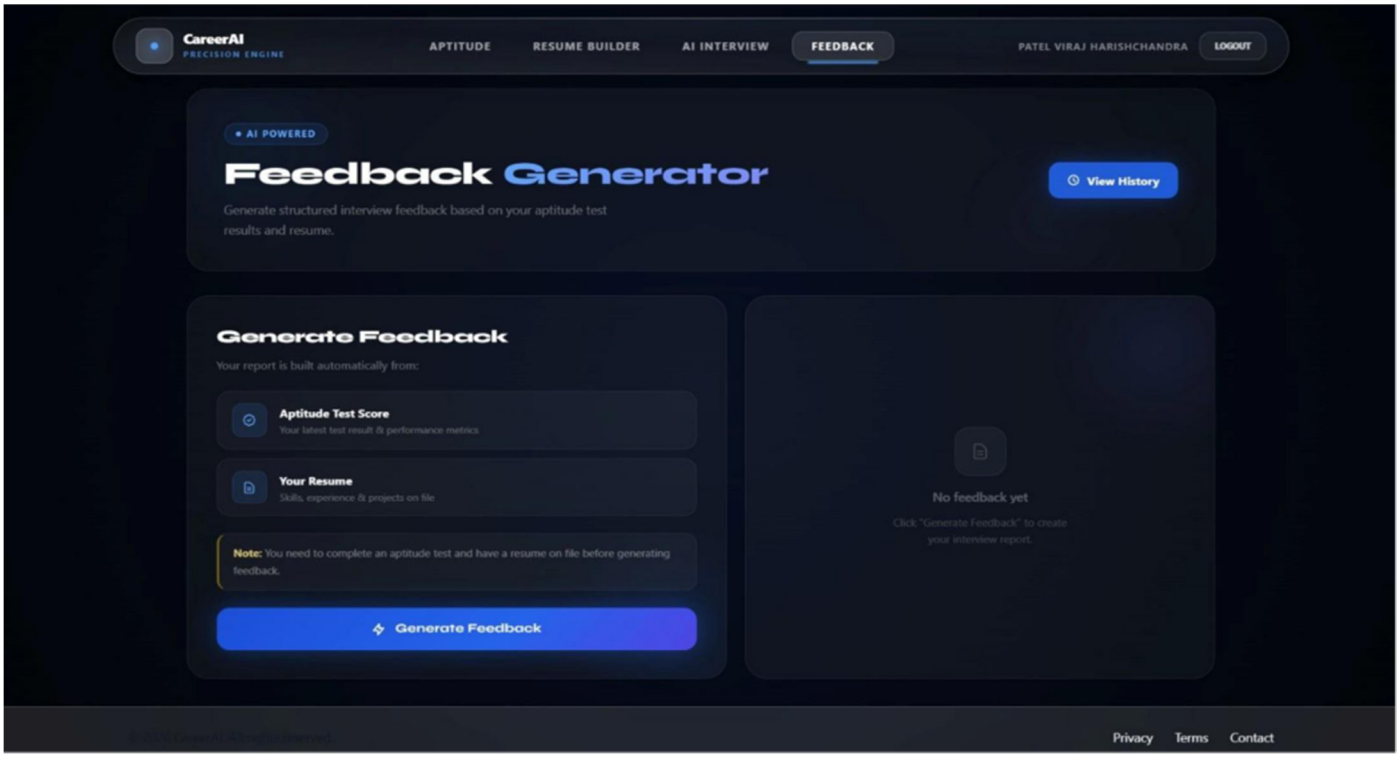
Simulates real interviews by asking technical and behavioral questions and analyzing user responses.



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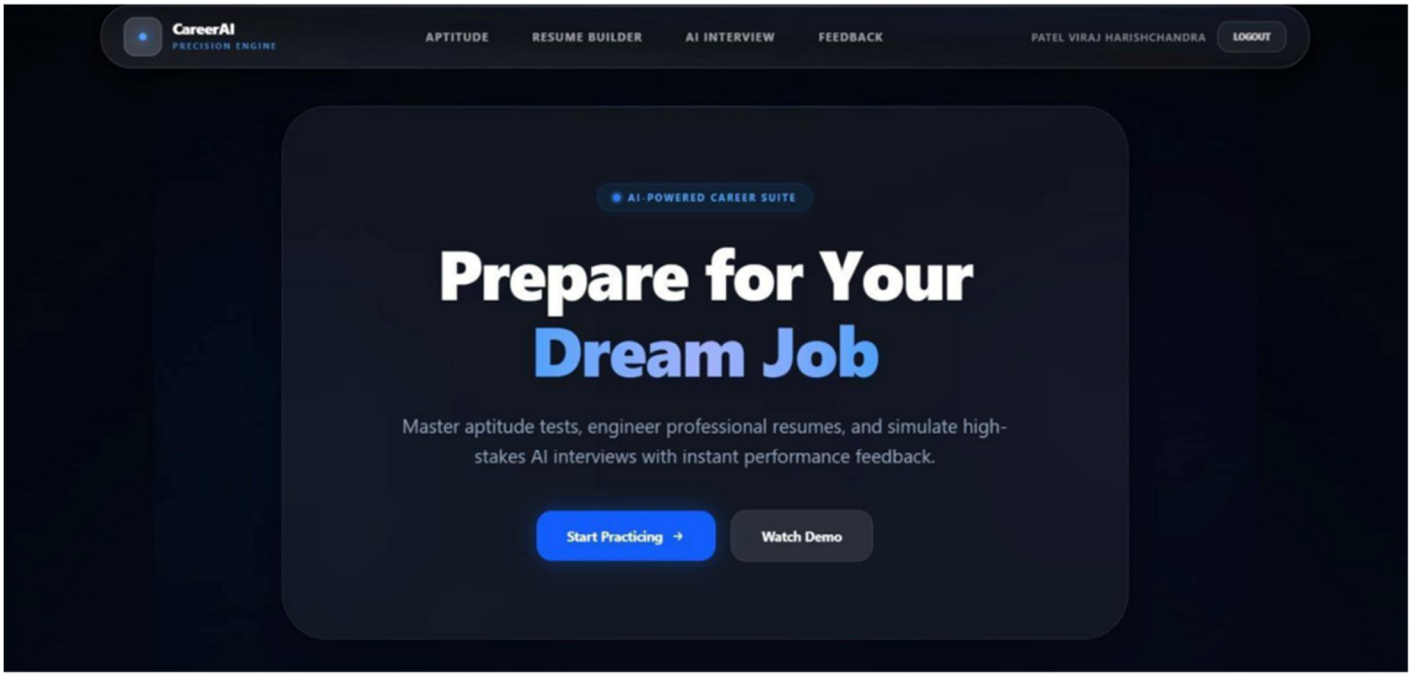
D. Feedback Generator

Generates personalized feedback based on aptitude test, resume analysis, and interview performance.



E. User Dashboard

The dashboard allows users to track their progress, view performance reports, schedule new interviews, and analyze strengths and weaknesses through graphical performance insights.



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Underlying Technologies

- Backend: Python (Flask/Django), TensorFlow/PyTorch.
- Frontend: React, HTML5, CSS3, JavaScript.
- AI Integration: OpenAI API for NLP and interview analysis.

IV. RESULTS AND DISCUSSION

Experimental evaluation was conducted using anonymized mock interview data and simulated datasets. The aptitude assessment model achieved an accuracy of 92% in predicting user performance levels, while the resume analysis module reached 89% accuracy in matching resumes with job descriptions.

The AI interviewer module, based on a fine-tuned BERT model, achieved 87% accuracy in classifying technical interview responses as correct, partially correct, or incorrect. In behavioral interviews, the sentiment analysis model obtained a 90% F1-score in evaluating confidence and communication clarity.

The feedback generation system was compared with evaluations from professional interviewers and achieved strong agreement (Cohen's Kappa = 0.82), demonstrating the reliability and effectiveness of the proposed system in improving interview preparation.

V. CONCLUSION AND FUTURE SCOPE

1) The "Mock Interviewer Powered by AI" system presents a robust, scalable solution for comprehensive interview preparation in the digital age. By combining aptitude testing, resume analysis, AI-driven live interviews, and multimodal feedback, the platform addresses critical gaps in traditional and existing AI-based preparation methods. The system's performance—demonstrated by high model accuracies and positive user outcomes—underscores its potential to democratize interview readiness, reduce preparation inequities, and enhance candidates' confidence and performance.

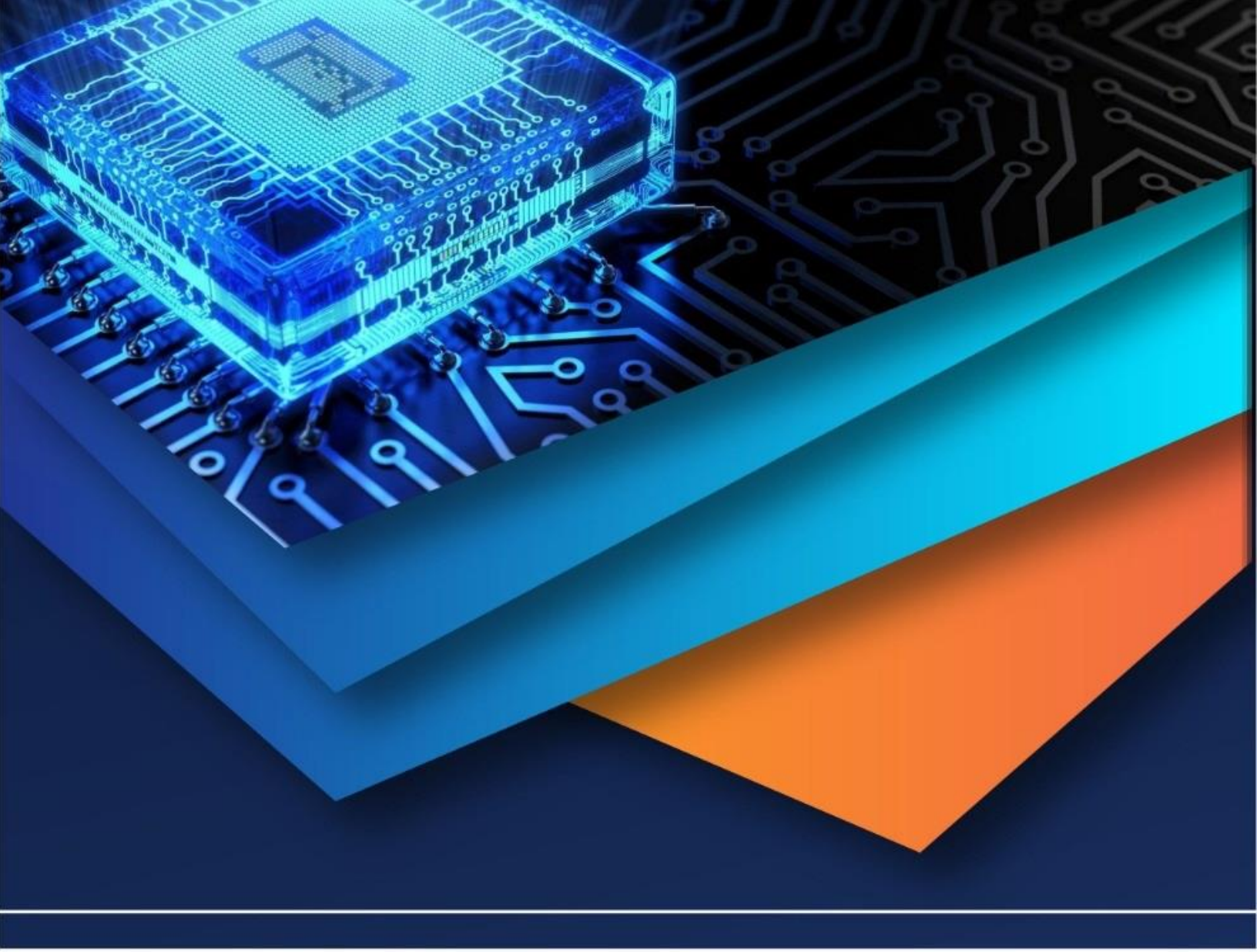
2) Future enhancements will focus on further personalizing the interview experience, integrating real-time video and audio analysis for nuanced feedback on tone and body language, expanding the question bank to include company-specific and domain- specialized scenarios, and refining the conversational flow through advanced dialogue management techniques. In addition, ongoing research will explore the ethical and privacy implications of AI-mediated assessment, ensuring transparency, fairness, and user agency.

3) By advancing the frontier of AI-enabled human resource technology, this work lays the foundation for more equitable and effective pathways to employment in an increasingly digital workforce.

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