Design Paper on Interviewello:
AI Mock Interview Web App

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Abstract—In today's fast-paced job market, effective interview preparation has become a cornerstone of career advancement. Interviewello is a sophisticated web application that leverages artificial intelligence to recreate realistic interview scenarios while providing tailored feedback. Built on technologies such as Next.js and React, with Clerk handling authentication and Drizzle ORM managing data interactions, the system offers users a fluid and secure experience. Powered by Gemini AI, Interviewello crafts role-specific questions and performs live evaluations of user responses, considering factors like clarity, tone, confidence, and relevance. The platform supports both technical and behavioral formats and records session histories to help track user growth. Its integrated Analyzer uses NLP and machine learning algorithms to suggest improvements and optimize resume content for job compatibility. Designed for both individuals and organizations, Interviewello offers a scalable, adaptable solution to interview training. It delivers an immersive preparation journey, enabling users to hone their communication skills and increase their success rates in competitive recruitment landscapes.

Keywords—AI Interview Simulation; Personalized Feedback Engine; Resume Optimization Tool; Job Interview Training; Confidence and Communication Assessment; Gemini AI Integration; Real-Time Answer Evaluation; Behavioral and Technical Interviews; Emotion Recognition Analysis; Scalable Web-Based Application.

"The implementation and evaluation results of the proposed system have been submitted to our institution for academic publication. This paper focuses solely on the design, architecture, and conceptual framework of the system."

I. INTRODUCTION

As technology reshapes the job application process, being well-prepared for interviews remains crucial for securing employment opportunities. Despite the widespread availability of educational content, many job seekers continue to struggle with spontaneous communication, interview anxiety, and adapting to evolving interview patterns. To bridge this gap, *Interviewello* emerges as a next-generation solution an AI-integrated mock interview platform that offers realistic practice sessions with instant, customized feedback.

By utilizing Gemini AI, the system dynamically generates questions based on job roles and domains—technical or behavioural—ensuring relevance and variety. It evaluates responses in real time, assessing clarity, correctness, tone, and delivery, helping candidates improve in key areas. Built using a modern full-stack approach including React, Next.js, Drizzle ORM, and Clerk, Interviewello promises a seamless user interface, robust security, and responsive design.

In addition to individual users, Interviewello serves educational institutions and corporate recruiters by offering structured AI-led interview training. The inclusion of features such as a Resume and Performance Dashboard makes it a holistic solution. As recruitment methods continue to evolve, Interviewello equips users with the practical skills required to thrive in professional environments.

II. LITERATURE SURVEY

The application of Artificial Intelligence (AI) in interview preparation has seen rapid advancements, as researchers strive to overcome the shortcomings of traditional mock interview techniques. The reviewed literature highlights emerging methodologies, technological frameworks, and the practical challenges in developing AI-based mock interview systems.

2.1 Skillup Bot: AI-Powered Interview Practice Tool
Shashank Rai and Alisha Miranda (2024) developed a platform that uses Natural Language Processing to simulate realistic interview interactions. Their model adjusts questions according to industry standards and job roles. Despite its strengths, the system requires broader customization and deeper personalization.

2.2 Predictive AI Interview Evaluator
Mrs. P.S. Swetha and G. Amruth (2024) tackled the issue of subjective evaluations through predictive analytics. Their approach enabled automated assessments with better consistency. However, their system lacked multi-modal feedback and real-time interaction, limiting its depth.

2.3 AI-Driven Interview Preparation Assistant
Girish Patil and Kiran Waghmare (2022) introduced a feedback-centric platform using AI models to eliminate bias and deliver insightful evaluation. The researchers suggested integration with job portals for better accessibility and user engagement.

2.4 Q&AI – Conversational Mock Interview Bot
G. Ramachandra Rao and Bijjamula (2024) proposed a system that adapts question sets based on prior performance. This AI-based tool ensures variation across mock sessions, providing users with rich and iterative practice experiences.

2.5 Generative AI Based Interview Simulation

Dr. Surendra Mahajan, Prof. Nilesh Sonawane (2024) emphasized the importance of voice analytics in interview preparation. Their AI bot assesses tone, pitch, and pacing, which are critical for improving communication skills. The system aims to boost user confidence, especially among students and first-time job seekers.

III. PROPOSED SYSTEM

Interviewello redefines conventional interview preparation methods by presenting a dynamic AI-powered interview simulator. The platform integrates technologies like machine learning, NLP, and facial emotion detection to analyse user responses in real-time and provide comprehensive feedback.

Using Gemini AI, Interviewello generates questions that align with a candidate's resume, job function, and chosen field. To process responses, it employs hybrid deep learning models (LSTM and CNN) for analysing speech tone, content structure, and facial expressions, offering an all-around evaluation.
React.js and Next.js form the foundation of the user interface, ensuring fluid navigation, while Clerk handles authentication and Drizzle ORM manages backend data efficiently. Users can revisit interview sessions, review insights, and track their improvements over time. This complete ecosystem provides structured, smart training to help users build interview confidence and competence.

IV. PROBLEM STATEMENT

Job interviews often present a psychological barrier for candidates, resulting in suboptimal performance due to stress, communication gaps, and inadequate practice. Conventional approaches—like peer interviews or standardized question banks—fail to mirror the dynamic and high-pressure conditions of actual interviews. Moreover, access to professional coaching is frequently limited by cost and availability.
With employers increasingly seeking role-specific communication and behavioral aptitude, the demand for adaptable and intelligent interview preparation tools is greater than ever. Many existing systems fall short in delivering personalized, objective insights that users can act upon. Interviewello addresses these limitations by offering an immersive, AI-powered platform that tailors its simulations to different industries and roles. Its intelligent feedback mechanisms—covering both verbal delivery and content—enable scalable and impactful interview coaching, making it a valuable tool for modern job seekers

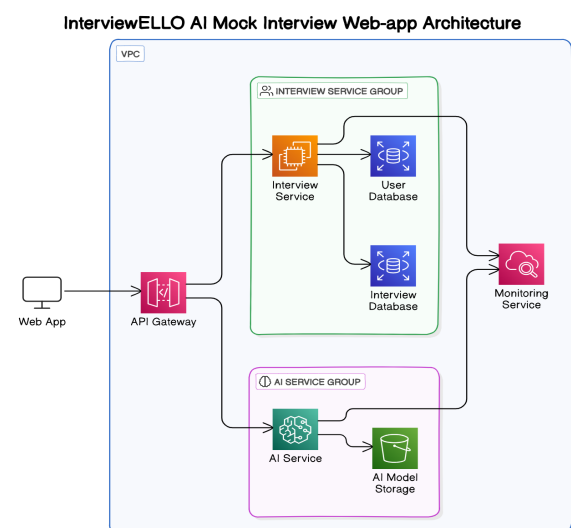## V. SYSTEM ARCHITECTURE

Fig-1: System Architecture Diagram
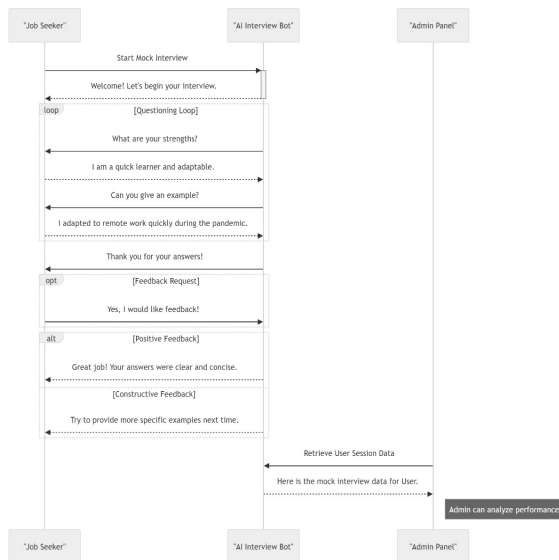
VI.   SEQUENTIAL DIAGRAM

Fig-2: Sequential Diagram

VII.   SOFTWARE REQUIREMENTS

- Operating System: Windows, Linux, or MacOS

- Web Browser: Chrome or any modern browser.

- Back-end Framework: NextJs.

- Database: PostgreSQL.

- Development Tools: VSCode (for development)

VIII.   HARDWARE REQUIREMENTS

- User Device: Minimum 2GB RAM, Mic and Camera.

- Server: Minimum 8GB RAM, 4 CPU cores, SSD

IX.   ALGORITHM

Step 1: Authentication & Role Configuration

- User securely logs in or registers
- Selects domain (e.g., IT, HR) and preferred interview mode (Text/Voice/Video)

Step 2: Smart Question Initialization

- Loads relevant question bank based on domain
- AI selects or generates a suitable first question
- Question is delivered via text or audio

Step 3: Capturing Responses

- In voice mode: Records and transcribes user input using speech-to-text
- In video mode: Activates camera for facial expression analysis

Step 4: AI-Powered Response Analysis

- Evaluates grammar, relevance, and keywords using NLP
- Assesses tone, sentiment, and clarity using deep learning models

Step 5: Delivering Real-Time Feedback

- Presents immediate feedback on speech quality and content
- Generates a follow-up or new question based on user's response

Step 6: Generating Performance Report

- After session completion, aggregates feedback
- Compiles detailed performance insights with improvement suggestions

Step 7: Session Wrap-Up

- Collects user feedback
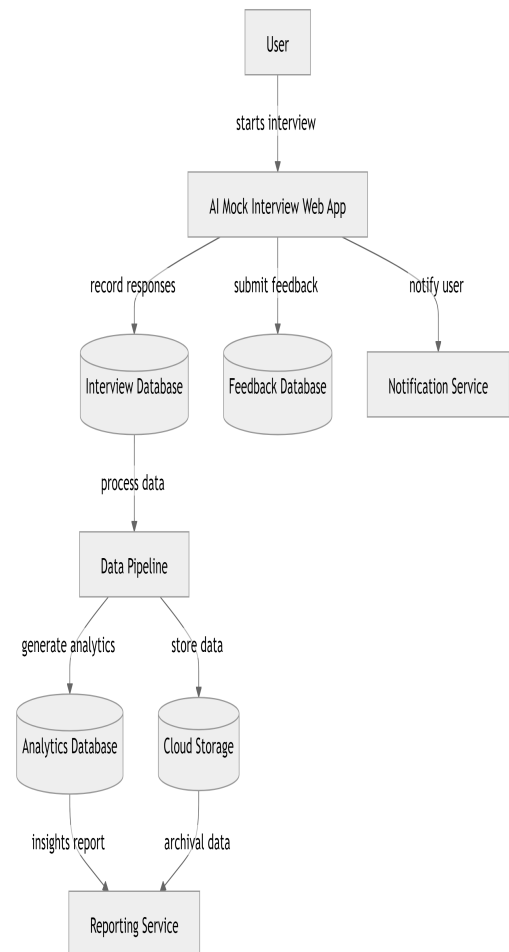- Redirects to dashboard or logs out

X.   DATA FLOW DIAGRAM

Fig-3: Data Flow Diagram
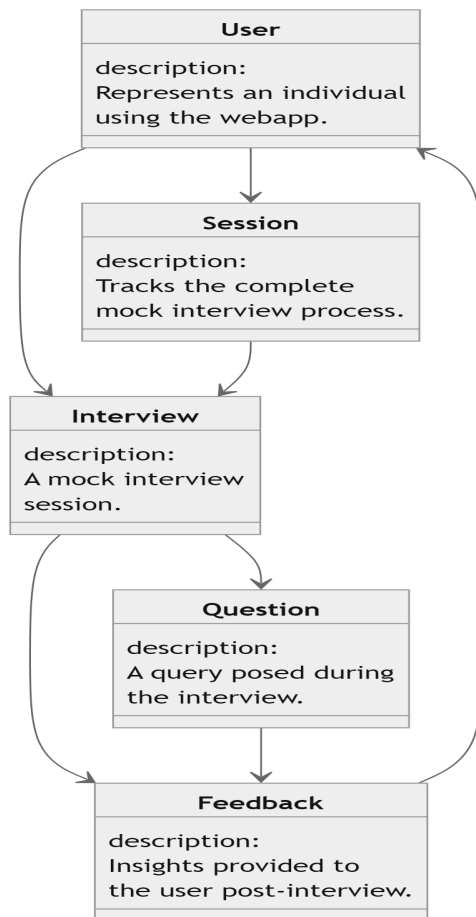
XI.   UML DIAGRAM

Fig-4: UML Diagram

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CONCLUSION

Interviewello represents a seamless blend of advanced AI technologies and strategic interview coaching, designed to help candidates elevate their skills with precision and confidence. By utilizing powerful deep learning algorithms for analysing audio-visual inputs and providing real-time feedback via Gemini AI, the platform delivers a rich and personalized mock interview experience.

With an evaluation accuracy rate of 86%, Interviewello's intelligent feedback system and adaptive learning capabilities position it as a vital innovation in contemporary hiring preparation. Its proficiency in replicating real-world interview scenarios—combined with the ability to assess both verbal articulation and non-verbal expression—ensures users receive constructive, actionable insights for continuous improvement.

As artificial intelligence becomes increasingly central to career readiness assessments, Interviewello leads the charge by transforming how individuals and organizations train for interviews. The integration of machine learning, natural language processing, and a robust, scalable architecture enables the platform to act not just as a digital tool, but as a strategic partner for professional development—empowering users to thrive in today's competitive employment landscape.