

“AI-Powered Mock Interview Platform”

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Abstract - Due to a lack of easily accessible practice, many students find it difficult to prepare for job interviews. We created an AI-Powered Mock Interview Platform to address this issue by simulating an actual interview. The system creates dynamic questions with Google Gemini AI and gives users immediate feedback on their responses. Users have the option to reply as voice input, text input, and their progress is monitored over time. This project shows how to use a useful and efficient tool to help job seekers become more confident and enhance their interview skills.

Keywords: Voice Input, Interview Skills, Google Gemini AI, AI-Powered Mock Interview.

1. Introduction

It can be scary to walk into your first job interview after graduating from college. The unpredictable nature of interview questions shakes the confidence of many students, even those with strong technical skills. It's common wisdom to "practice more," but it can be difficult to find a knowledgeable, accessible partner who can offer helpful criticism.

This is confirmed by our own research: in a survey of 100 final-year Computer Science and Information Technology students, about 85% reported feeling not-prepared for technical interviews, despite excellent academic standing. This pointed to a clear gap: the advice to "practice more" simply wasn't working, due to a lack of available, knowledgeable partners. We concluded that a scalable, AI-powered platform was the ideal solution—a system that can go beyond static question banks to dynamic, 24/7 practice sessions. It promises not only availability but also personalized, unbiased feedback—this is the very risk-free environment students need to experiment, learn, and build the confidence necessary for professional success.

Here's where contemporary technology can truly help. Our project investigates the application of artificial intelligence to the development of a practice environment that is both intelligent and supportive. In order to make excellent interview preparation available to everyone, we have created a web-based platform that serves as a

personal interview coach. It can generate variety of questions based on specific job roles and offer instant feedback.

Google's Gemini AI is used in our "AI-Powered Mock Interview Platform" to replicate conversational, realistic interviews. Developed with Firebase for safe data handling and React for a seamless user experience, the system lets users practice texting or speaking, get personalized feedback, and monitor their progress over time. This essay will describe how we developed the system and how it helps students close the knowledge gap between academics and professional success by providing a useful, scalable tool.

Furthermore, having the ability to confidently and clearly communicate one's skills is just as important in a competitive job market as actually having those skills. By establishing a risk-free environment where students can experiment, make mistakes, and learn from them without any pressure, our platform directly meets this need. Through the democratization of access to individualized interview coaching, this project seeks to level the playing field and give all students the resources they need to launch their careers with confidence, regardless of their network or background.

2. Literature Survey

"AI-powered mock interview preparation" by G. R. Rao et al. (IJMTST, 2025) Through this work, the foundational viability of using AI for generating questions and giving feedback was established, showing that such systems could be scaled up for widespread use among students.

"Conversate: Supporting Reflective Learning in Interview Practice Through Interactive Simulation and Dialogic Feedback" by T. Daryanto et al. (ACM HCI, 2025). Their research into the area of dialogic feedback illustrated the principle that interactive, multi-turn conversations with an AI lead to deeper learning and self-analysis.

"Virtual Interviewers, Real Results: Exploring AI-Driven Mock Technical Interviews" by E. Gomez et al. (arXiv, 2025) observed that speech and text multimodalities are more engaging and realistic in interview simulations,

confirming our decision to incorporate voice-based interaction into the platform.

Elevating Performance through AI-driven Mock Interviews: A Review" by P. R. Patil and S. R. Gaikwad, IJRASET, 2024, itself noted that non-verbal cues and soft skills are integral to performance, thus leading us toward our objective of evaluating communication skills as much as technical knowledge.

Artificial Intelligence Powered Mock Interview Generator" by S. Kumar and R. Mishra appeared in IRJET, 2025. This provided a domain-adaptive question generation method using the Gemini API that directly provided the technical basis for our choice of AI model.

Hi. I'm Molly, Your Virtual Interviewer!"-Understanding the Effect of Race and Gender in AI-Driven Virtual Interview Experience by S. Biswas et al., AAAI 2024 This critical work demonstrated that candidate performance may be influenced by the perceived identity of an AI interviewer.

3. System Architecture:

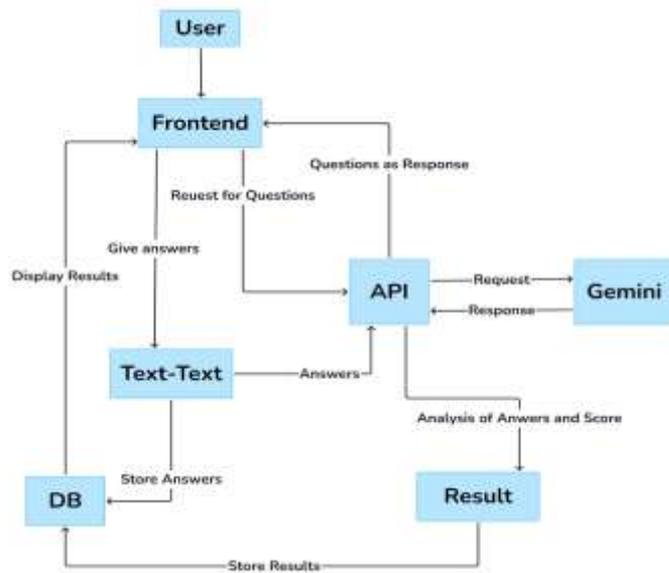


Fig. 1: Architecture Diagram

The AI-Powered Mock Interview Platform is based on a structured client-server architecture comprised of four interconnected layers: the User Frontend, written in React, manages all user interactions and provides the entire interview experience; the Backend API layer acts as a communication bridge for all system components by handling data flow and relaying requests; the AI Processing layer leverages Google Gemini's capabilities

for context-sensitive interview question generation and thorough evaluation of answers; and the Firebase Firestore database ensures data persistence by securely storing all sessions and historical user data.

User authentication is securely carried out through Firebase Authentication services for protected access to the platform. The supporting frontend interface provides multiple modes of input, capturing user responses through both text entry and voice input. During an interview session, the system dynamically makes API calls to Gemini AI for generating personalized questions based on the chosen job role and user profile. Every user response is thoroughly analyzed by Gemini AI for technical correctness, communicational effectiveness, and relevance of the answer.

The advanced evaluation algorithms will give in-depth assessment outcomes and performance scores using the AI engine. Interviews, questions and answers, and feedback are neatly saved to the database so that the progress can be tracked. The frontend interface provides the user with real-time feedback and full performance metrics. Data pass on in a sequence of user data entry, through various processing phases, to eventual storage and then eventually provide feedback.

Firestore security rules are powerful in providing the architecture with security wherein data are managed and are secured. The system components interact effectively with standardized REST API calls, therefore, facilitate effectively the data. The platform has full history of the sessions and the user can always revisit to review the past performances to practice what they have been weak in. Voice responses run on the Web Speech API where the speech is converted into text to be interpreted by AI. The combination of these components creates a customized, interactive model of a mock interview that modifies to various user profiles and resume content.

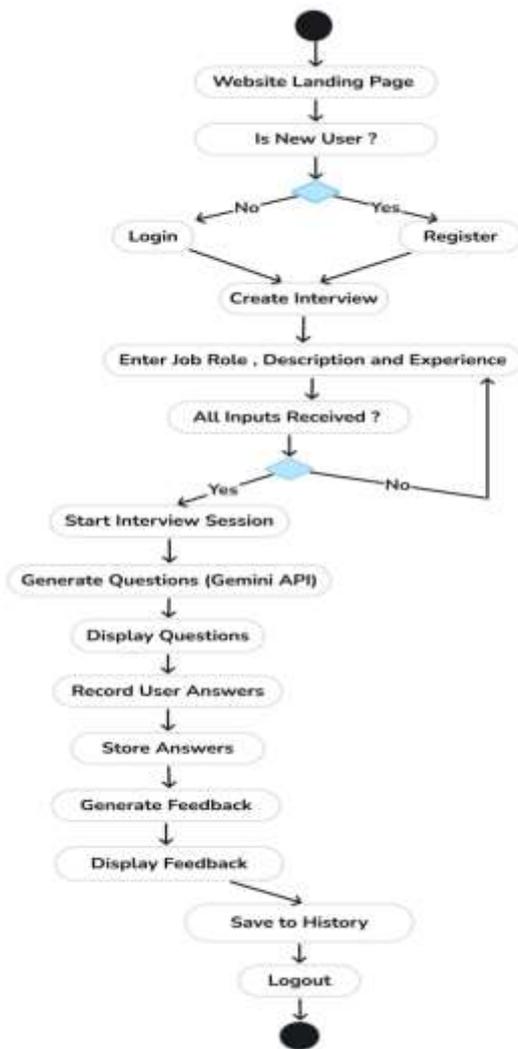


Fig. 2: Activity Diagram

4. Future Scope

The future of the AI-Powered Mock Interview System holds tremendous potential for transforming the way students and job seekers prepare for professional interviews. As artificial intelligence continues to evolve, the system can be significantly enhanced to deliver more personalized, adaptive, and human-like interview experiences.

In upcoming versions, the integration of advanced multimodal AI—combining voice, facial expression, and body language analysis—can provide deeper insights into candidates’ emotional intelligence, confidence, and communication skills. The inclusion of machine learning–driven adaptive difficulty algorithms could allow the system to tailor question complexity dynamically, based on each user’s performance and progress. Furthermore, leveraging Generative AI models

like Gemini and GPT for real-time dialogue generation can make interview conversations more natural and contextually aware.

To extend accessibility, the platform could implement multilingual support for regional and global users, enabling seamless interview preparation across diverse linguistic backgrounds. Video-based simulations with AI-driven feedback on tone, posture, and facial cues could further bridge the gap between virtual and real interview environments. Integration with resume analysis engines and job-matching APIs may also help align practice sessions with specific company roles and industry expectations.

From a technical perspective, the use of cloud-edge hybrid architectures and serverless scaling could enable faster response times, lower latency, and efficient handling of large-scale academic deployments. Enhanced data analytics dashboards for students and institutions could provide quantitative insights into skill development, helping educators and placement officers make informed decisions.

Looking ahead, the system could evolve into a comprehensive AI-driven career readiness ecosystem—one that not only simulates interviews but also mentors users through continuous learning, performance tracking, and personalized career recommendations. By integrating emotional AI, multilingual adaptability, and predictive analytics, this platform can redefine employability training—making interview preparation more intelligent, inclusive, and effective than ever before.

5. Conclusion

To sum up, the AI-Powered Mock Interview System presents a smart, accessible, and scalable solution to the challenges faced by students and job seekers in preparing for interviews. By integrating Google Gemini AI, React, and Firebase, the system provides an interactive and adaptive platform capable of generating domain-specific questions, analyzing responses, and delivering real-time performance feedback.

Unlike traditional mock interview methods that rely heavily on human interviewers and manual evaluation, this AI-driven platform ensures unlimited practice opportunities, objective assessment, and personalized learning analytics. Its ability to support both text and voice-based responses bridges the gap between

theoretical preparation and real-world communication skills, empowering users to build confidence and readiness for professional interviews.

Overall, the proposed system demonstrates how Generative AI and cloud technologies can be combined to modernize employability training and make interview practice more efficient, inclusive, and data-driven. With continued enhancements such as multimodal feedback, adaptive difficulty, and multilingual support, the platform has the potential to evolve into a comprehensive AI-based career readiness ecosystem that democratizes interview preparation on a global scale.

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