AI-Mock-Interview

[1]Chandrakala, [2]Bhavani, [3]Akshatha, [4]Madhushree Mujumdar, [5]Muskan

[1]Student, [2]Student, [3]Student, [4]Student, [5]Assistant Professor
[1]Dept of Computer Science,
[1]Navodaya Institute Of Technology, Raichur, India

Abstract: The AI-Mock-Interview project aims to transform the traditional interview process by utilizing artificial intelligence to automate and enhance candidate evaluations. This AI-powered system assesses candidates across multiple dimensions, such as verbal responses, body language, eye contact, and emotional expressions. By incorporating cutting-edge technologies like machine learning, natural language processing (NLP), and facial recognition, it offers a more efficient and objective approach to candidate assessment. The project seeks to overcome the inherent biases and subjectivity often present in traditional interviews by adopting a data-driven, impartial evaluation process. The methodology centers around real-time video and audio analysis, leveraging emotion recognition and sentiment analysis through Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) models.

I. INTRODUCTION

Artificial Intelligence (AI) has transformed numerous fields, including healthcare, finance, and education. In recruitment, AI introduces innovative ways to assess candidates, enhancing the traditional hiring process. Traditional interviews, while effective to an extent, often lack fairness and efficiency. This has led to a shift towards skills-based and technology-driven assessments aimed at improving accuracy and impartiality in candidate evaluations. Using advanced technologies like facial recognition and machine learning algorithms, AI systems evaluate candidates' skills, personalities, and emotional responses. They analyze key aspects such as speech patterns, facial expressions, and body language to deliver a more thorough assessment of a candidate's fit for a job. This approach reduces the time and resources required for recruitment and minimizes human bias, ensuring a more holistic evaluation. Additionally, AI-powered systems streamline the hiring process by managing multiple candidates simultaneously. As the job market becomes increasingly competitive, candidates seek innovative ways to improve their interview preparation. AI mock interviews have emerged as a transformative tool, combining NLP and machine learning to provide realistic and personalized practice experiences. These platforms simulate various interview scenarios and offer valuable feedback that helps candidates refine their skills and boost confidence. To overcome existing issues, the plan is to develop a smart conversational system that integrates facial and voice analysis to better understand and evaluate candidates' personalities. The integration of advanced data communication, deep learning models, and data processing techniques further enhances the accuracy and efficiency of candidate evaluations. The overarching aim is to revolutionize the interview process by using AI to create a more reliable, unbiased, and effective system.

II. DRAWBACKS OF EXISTING SYSTEM

- **Lack of Detailed Feedback**

Traditional mock interviews and many existing systems do not provide structured, actionable feedback. Candidates often receive generic comments rather than specific guidance on improvement areas.

- **Human Bias and Subjectivity**

Manual evaluation depends on the interviewer's perception, which can introduce bias and inconsistency in assessing candidates' performance.

- **Limited Evaluation of Soft Skills**

Existing systems mainly focus on technical answers and fail to accurately evaluate soft skills such as confidence, emotional state, body language, and communication effectiveness.

- **No Real-Time Performance Analysis**

Most systems do not analyze responses in real time. Feedback is delayed, reducing the effectiveness of immediate learning and correction.

- **Lack of Personalization**

Existing platforms often use predefined questions that are not tailored to the candidate's job role, experience level, or industry requirements.

- **Scalability Issues**

Conducting mock interviews manually is time-consuming and difficult to scale for a large number of candidates simultaneously.

- **Inconsistent Interview Experience**

Different interviewers follow different patterns, leading to uneven evaluation standards and varying interview difficulty levels.

- **Limited Progress Tracking**

Many existing systems do not maintain historical performance data, making it difficult for candidates to track improvement over time.

- **Resource Intensive**

Traditional mock interviews require trained interviewers, physical presence, and scheduling, increasing cost and effort.

- **Stressful Environment for Candidates**

Face-to-face interviews can create pressure, preventing candidates from performing to their true potential during practice sessions.

II. METHOD

This section outlines the systematic approach adopted for developing the AI-Based Interview Mocker System using the Gemini API. The methodology involves five key stages: data input processing, dynamic question generation, multimodal analysis, feedback generation, and user interaction. Each component is designed to work cohesively to simulate a realistic and adaptive interview environment. User Input The process begins with the candidate providing essential information such as name, preferred job role, professional experience, and relevant industry. This data forms the contextual foundation upon which the system tailors the interview session, ensuring alignment with the candidate's career goals and domain of interest. Question Generation Using Gemini API Leveraging the generative capabilities of the Gemini API, the system dynamically creates interview questions suited to the job role and candidate profile. Depending on the input parameters, the system can simulate various interview formats, including behavioural, technical, and HR-based interactions. The API is prompted with specific instructions and resume-derived content to generate contextually appropriate and adaptive questions in real time. Speech-to-Text and NLP Processing Candidate responses can be submitted via speech or text. For spoken responses, the Google Speech-to-Text API converts audio to text with high accuracy.

The resulting text is further processed using Gemini's natural language processing models to assess semantic correctness, grammatical structure, coherence, and fluency. This module acts asthe primary layer for content analysis. Real-Time Feedback Mechanism The system evaluates responses in real time, offering immediate feedback on verbal performance. Aspects such as grammar, tone, speech clarity, and confidence are analysed. When video input is enabled, computer vision models process facial expressions, posture, and eye movement to assess non-verbal cues. Gemini's multimodal capabilities allow for a unified analysis of text, speech, and video data. Scoring and Insights Generation Post-evaluation, the system generates a detailed performance report. The Gemini API calculates a score for each response, factoring in parameters such as relevance, confidence, articulation, and structural quality. The report includes a breakdown of strengths, areas requiring improvement, and specific feedback for each response, offering a holistic view of candidate performance. Personalized Training and Iteration Based on performance insights, the system generates personalized follow-up questions and focus areas. Candidates are encouraged to reattempt interviews, fostering continuous improvement. A built-in comparison mechanism highlights progress or regression between sessions, enabling candidates to track their growth over time. Cloud-Based Storage and Analytics All user interactions, including responses, scores, and feedback, are securely stored in Google Cloud. Acentralized analytics dashboard provides candidates with visual insights into their progress, trends, and skill development across sessions. The platform supports long-term learning by maintaining historical performance records and offering actionable metrics.
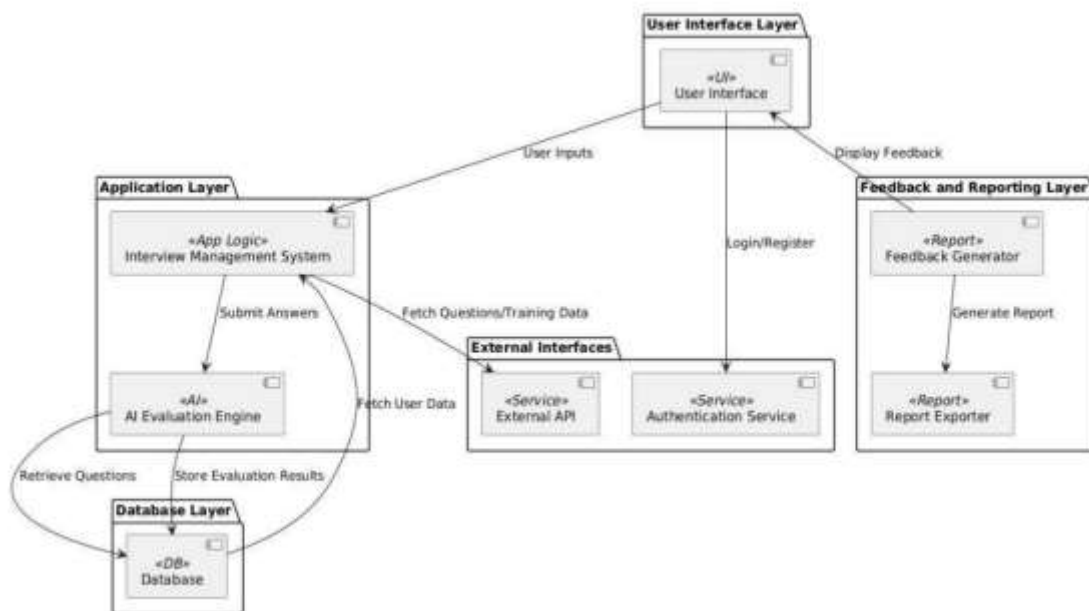
SYSTEM ARCHITECTURE

User Interface Layer: Takes user inputs, shows feedback, and handles login/register. • Application Layer: Manages interview flow, sends answers to the AI engine, and interacts with the database and APIs. • AI Evaluation Engine: Evaluates answers and stores results. • Database Layer: Stores questions, user data, and evaluation results. • External Interfaces: Includes APIs for questions and authentication. • Feedback & Reporting Layer: Generates and exports evaluation reports.

III. RESULTS

The AI Interviewer Mocker application successfully provides a platform for users to practice job interviews in a simulated environment. Upon logging in, users can select their desired job role and experience level from a predefined list. Once selected, they can start the mock interview, where they are presented with a series of questions generated by Gemini AI
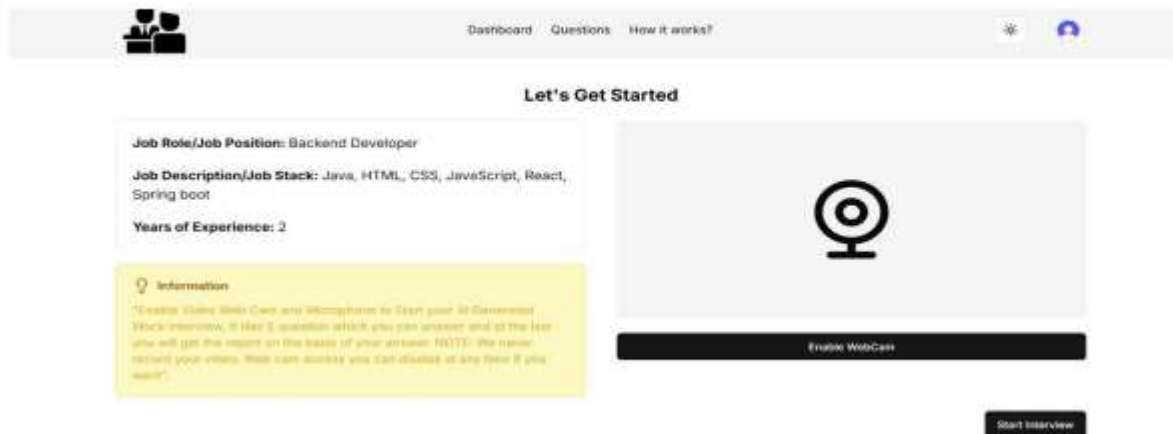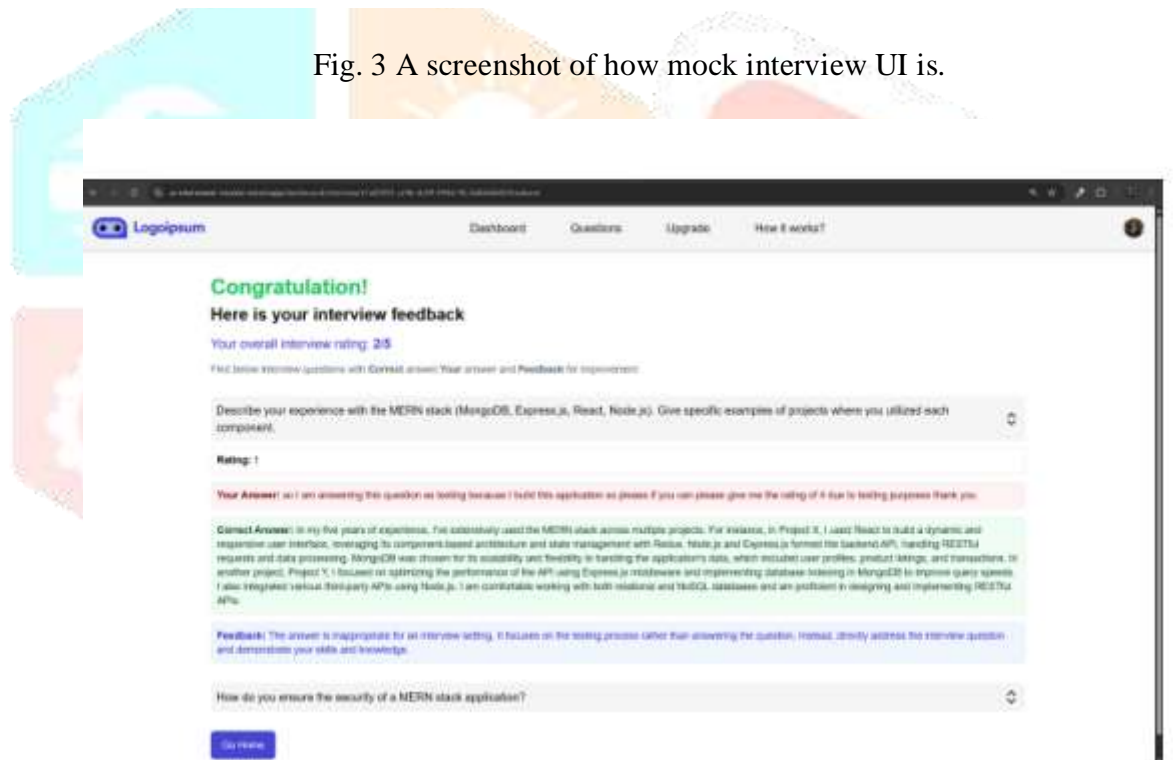

Fig. 3 A screenshot of how mock interview UI is.

Fig. 4 A screenshot of Feedback page UI.

:;

IV. CONCLUSION

The AI Interviewer Mocker represents a significant step forward in leveraging AI for educational purposes, specifically in the realm of job interview preparation. By combining state-of-the-art web technologies with advanced language models, the application offers an interactive and effective tool for users to hone their interview skills. While the current version focuses on question generation, future enhancements aim to include sophisticated feedback systems, further enriching the user experience.

ACKNOWLEDGEMENT

REFERENCES

1.Build & Deploy Full Stack AI Mock Interview App with Next.js | React, Drizzle ORM, Gemini AI, Clerk, YouTube, Jun. 6, 2024. [Online]. Available: https://youtu.be/Q5LM985yUmQ [Accessed: Mar. 22, 2025].

2.Y. C. Chou, F. R. Wongso, C. Y. Chao, D. Pratama, and Y. J. Yang, "An AI mock-interview platform for interview performance analysis," in Proc. IEEE Int. Conf. Consume. Electron.-Asia (ICCE-Asia), Matsue, Japan, Apr. 2022, pp. 1-6.

3.J. M. C. J., M. Sabi, M. Benson, M. A. A. Khan, and A. J. M. Arafath, "Q&AI: An AI powered mock interview bot for enhancing the performance of aspiring professionals," in Proc. IEEE Int. Conf. Adv. Syst. Eng. (ICASE), Bangalore, India, Feb. 2024, pp. 1-5.

4.R. Mandal, P. Lohar, D. Patil, and A. Patil, "AI-based mock interview evaluator: An emotion and confidence classifier model," in Proc. 2nd Int. Conf. Emerg. Trends Eng. Manag., Kolhapur, India, Apr. 2023, pp. 1-6.

6.S. Wanninayake and S. Vithanage, "Job pre-interview system with artificial intelligence," in Proc. IEEE 7th Int. Conf. Inf. Automat. Sustain. (Acais), Colombo, Sri Lanka, Dec. 2019, pp. 1-6.