Full-Stack Ai Interview Mocker

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***Abstract*—The increasing competitiveness of the job market demands not only strong technical knowledge but also effective communication skills, confidence, and interview readiness. Traditional interview preparation methods often lack personalization and real-time feedback. This paper presents a Full-Stack AI Interview Mocker, an intelligent web-based application designed to provide automated and realistic mock interview experiences using artificial intelligence. The system integrates AI-driven question generation, voice-based response analysis, and performance evaluation. Experimental results indicate improved interview readiness and reduced anxiety among users.**

***Index Terms*—Artificial Intelligence, Mock Interview System, Natural Language Processing, Speech-to-Text, Full-Stack Development**

I. INTRODUCTION

In the present competitive employment landscape, interview performance plays a crucial role in determining a candidate's success. While academic knowledge and technical skills are essential, employers increasingly assess communication ability, confidence, clarity of thought, and problem-solving skills during interviews. Many students and job seekers face difficulties such as interview anxiety, lack of structured practice, limited access to professional interviewers, and absence of meaningful feedback.

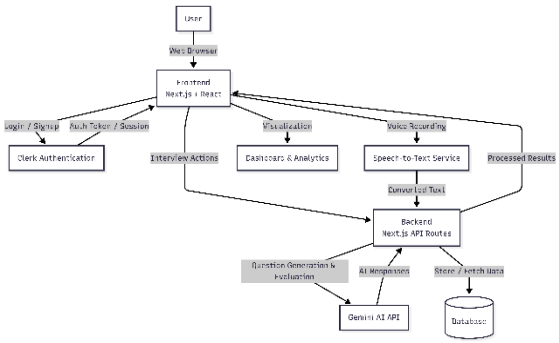
Traditional interview preparation methods, including self-study, reading interview questions, and peer-based mock interviews, often fail to replicate real interview scenarios. These methods lack personalization and do not provide objective evaluation of performance. As a result, candidates are unable to identify their weaknesses or improve effectively.

II. METHADOLOGY

A. SYSTEM DESIGN

System design describes the overall architecture and structural components of the proposed system. It defines how different modules interact with each other to achieve the intended functionality. The design phase ensures that the system is scalable, efficient, and easy to maintain while meeting all specified requirements.

B. SYSTEM ARCHITECTURE DESIGN



This system shows an AI interview platform workflow. The user accesses the app through a web browser, interacting with a Next.js + React frontend and authenticates via Clerk.

Interview actions and voice recordings are sent to the backend through Next.js API routes, where speech is converted to text and processed. The backend uses the Gemini AI API for question generation and evaluation, stores data in the database, and returns result. Finally, analytics and interview results are displayed on the dashboard for visualization. The Data Flow Diagram represents the flow of information within the AI Interview Mocker system. At Level 0, the system is shown as a single process interacting with external entities such as the user, authentication service, AI service, and database. Level 1 further decomposes the system into sub-processes including authentication,

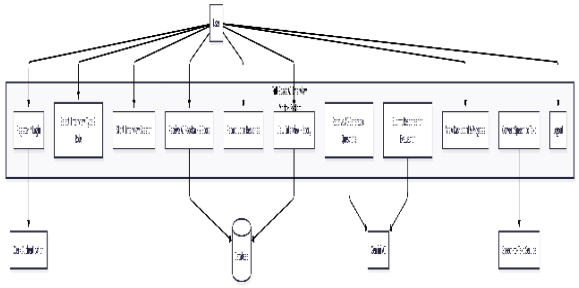
interview management, voice processing, AI evaluation, and result storage. This illustrates how data flows between processes and external entities to deliver interview simulation and performance analysis.

C. USE CASE DIAGRAM

The use case diagram represents the functional behavior of the Full-Stack AI Interview Mocker system and illustrates the interactions between the user and the system. The primary actor of the system is the user, who interacts with the application to practice mock interviews and track performance. External services such as Clerk Authentication, Gemini AI, Speech-to-Text service, and the database act as supporting systems that enable secure access, intelligent question generation, response evaluation, and data storage.

The user begins by registering or logging into the system through secure authentication. After successful login, the user selects the interview type and role and initiates an interview session. The system then generates role-specific interview questions using AI. During the interview, the user provides responses through voice input, which are converted into text using a speech-to-text service. These responses are evaluated by the AI engine to generate feedback and performance scores.

The evaluated results, including scores and feedback, are stored in the database and made available to the user through an interactive dashboard. The user can view interview history, track progress over time, and log out of the system securely. Thus, the use case diagram clearly depicts how the system fulfills user requirements by integrating authentication, AI services, and data management to provide an effective interview preparation platform.



D. SYSTEM TESTING

AUTHENTICATION TESTING

Authentication testing was performed by logging in and logging out using the Clerk authentication system. Valid and invalid login scenarios were tested to verify that only authenticated users could access the dashboard and interview features, while unauthenticated users were redirected to the sign-in page.

INTERVIEW FLOW TESTING

Interview flow testing was conducted by starting a new mock interview from the dashboard. The system was tested to ensure that AI-generated interview questions were displayed correctly based on the selected role and that the interview flow progressed smoothly from question generation to answer submission.

VOICE RECORDING AND SPEECH-TO-TEXT TESTING

Voice input testing was carried out by recording user responses through the microphone. The recorded audio was tested to ensure it was successfully captured and converted into text using speech-to-text functionality before being sent for evaluation.

AI EVALUATION TESTING

AI evaluation testing was performed by submitting recorded answers to the Gemini AI service. The system was verified to generate feedback and ratings based on the user's response, ensuring that evaluation results were displayed correctly on the user interface.

DATABASE AND DATA STORAGE TESTING

Database testing was conducted by completing interview sessions and verifying that interview questions, user answers, feedback, and ratings were saved correctly. Stored data was then retrieved and displayed in the interview history section to confirm data consistency.

DASHBOARD AND PROGRESS VIEW TESTING

Dashboard testing was performed by accessing the interview history and progress pages. The system was tested to ensure that past interviews, feedback, ratings, and performance summaries were fetched from the database and displayed accurately.

NAVIGATION AND UI TESTING

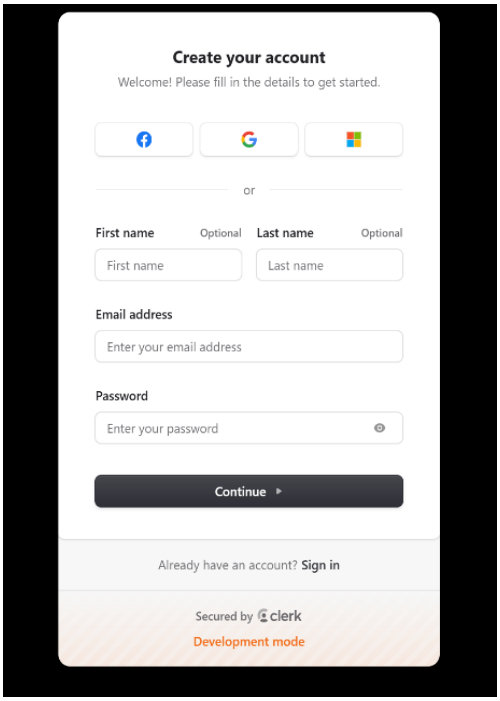
User interface testing was carried out by navigating through different pages such as login, dashboard, interview screen, history, and results. The layout, buttons, and navigation flow were tested to ensure a

smooth and user-friendly experience.

ERROR AND EXCEPTION HANDLING TESTING
Error handling testing was performed by simulating conditions such as invalid inputs, microphone permission denial, network interruption, and AI response delays. The system was observed to handle errors gracefully without crashing and to display appropriate messages.

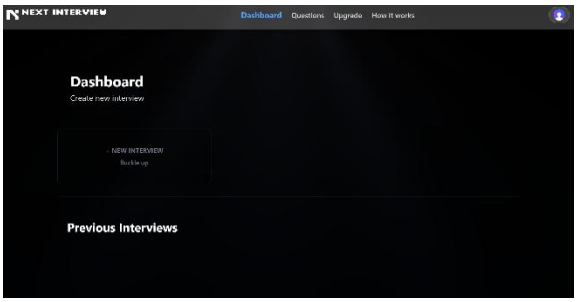
III. RESULTS

E. USER AUTHENTICATION PAGE



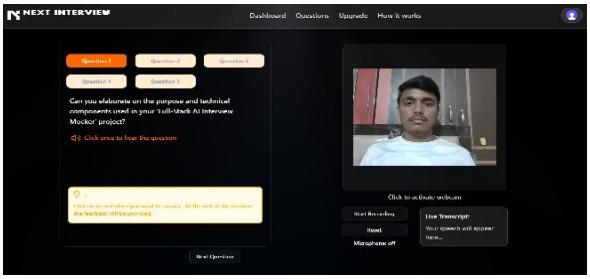
This screenshot shows the authentication interface of the application. Users can securely register or log in using Clerk authentication. Only authenticated users are allowed to access the dashboard and interview features.

F. USER DASHBOARD



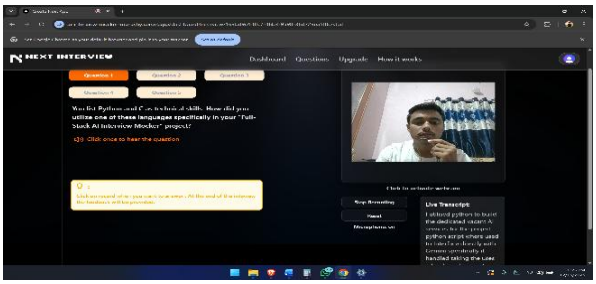
The dashboard provides access to all major functionalities of the system. Users can start a new mock interview, view interview history, and check performance progress and ratings.

G. INTERVIEW QUESTION GENERATION



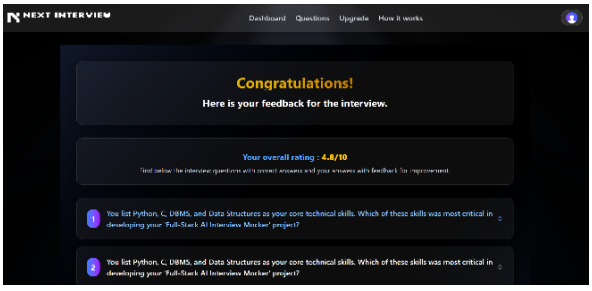
This screenshot displays interview questions generated dynamically using Gemini AI based on the selected role and interview type. The system successfully generates relevant and role-specific questions.

G. VOICE RECORDING INTERFACE



The voice recording interface allows users to record their answers using a microphone. The recorded responses are captured successfully and prepared for speech-to-text conversion.

H. AI EVALUATION AND FEEDBACK



This screenshot shows the evaluation result generated by the AI. The system provides feedback on the user's response along with performance ratings, helping users understand their strengths and areas for improvement.

III. CONCLUSION

This project successfully designed and implemented a Full-Stack AI Interview Mocker to simulate real-time technical and HR interview scenarios using artificial intelligence. The primary objective of the system was to provide an automated, personalized, and efficient interview preparation platform, overcoming the limitations of traditional mock interviews such as lack of real-time feedback and limited personalization.

The system effectively integrates Gemini AI to generate role-specific interview questions and evaluate user responses. Voice-based answers are captured and converted into text for detailed AI-driven analysis, enabling objective assessment of content relevance, communication clarity, and overall performance. The implementation of a user-friendly dashboard allows users to visualize scores, performance trends, and progress over time, thereby supporting continuous skill improvement.

IV. REFERENCES

[1] Vikash Salvi, Adnan Vasanwalla, Niriksha Aute, And Abhijit Joshi, *Virtual Simulation of Technical Interviews*, 978-1-5386-4008-1/17/$31.00 ©2020 IEEE. [Retrieved from https://www.researchgate.net/publication/322137698VirtualSimulation]

[2] Tyagi, Rinki. (2020). *Resume Builder Application*. International Journal for Research in Applied Science and Engineering Technology. 8. 14-18. 10.22214/ijraset.2020.5003. [Retrieved from https://www.researchgate.net/publication/341779638ResumeBuilder]

[3] B C Lee and B Y Kim, Development of an AI-Based Interview System for Remote Hiring, International Journal of Advanced Research in Engineering and Technology (IJARET)12(3),2021,pp.654-663 [Retrived from https://iaeme.com/MasterAdmin/Journaluploads/IJARET/VOLUME12ISSUE]

[4] Yi-Chi Chou, Felicia R. Wongso, Chun-Yen Chao and Han-Yen Yu, *An AI Mockinterview Platform for Interview Performance Analysis*, 10th International Conference on Information and Education Technology,2022.[Retrivedfrom https://www.scribd.com/document/774076958/An AI-Mock-interview]

[5] 2023 IEEE Paper- AI -Based mock interview evaluator: An emotion and confidence classifier model by Rubi Mandal Pranav Lohar. [Retrieved from https://ieeexplore.ieee.org/document/10100589]

[6] J. Purohit, A. Bagwe, R. Mehta, O. Mangaonkar and E. George, *Natural Language Processing based Jaro-The Interviewing Chatbot*, 2019 3rd International Conference on Computing Methodologies and Communication (ICCMC), Erode, India, 2019, pp. 134-13 doi:10.1109/ICCMC.2019.8819708.[Retrieved from https://www.researchgate.net/publication/335497666_Natural_Language_Processing_based_Jaro-The_Interviewing_Chatbot]

[7] Troussas, Christos & Papakostas, Christos & Krouska, Akrivi & Mylonas, Phivos & Sgouropoulou, C. (2023). *Personalized Feedback Enhanced by Natural Language Processing in Intelligent Tutoring Systems*. 10.1007/978-3- 031-32883-1_58. [Retrieved from https://ieeexplore.ieee.org/search/searchresult.jsp?queryText=QoE%20estimation%20of%20WebRTC-based%20audiovisual%20conversations]

[8] Eleni Adamopoulou and Lefteris Moussiades. 2020. *An overview of chatbot technology*. In IFIP international conference on artificial intelligence applications and innovations. Springer, 373–383. [Retrieved from https://www.researchgate.net/publication/341730184_An_Overview_of_Chatbot_Technology]

[9] Bingöl, G., Porcu, S., Floris, A., & Atzori, L. (2022, October). *QOE estimation of WebRTC-based audiovisual conversations from facial expressions*. 16th International Conference on Signal-Image Technology & Internet-Based Systems (SITIS), 577-584. [Retrived from https://ieeexplore.ieee.org/search/searchresult.jsp?queryText=QoE%20estimation%20of%20WebRTC-based%20audiovisual%20conversations]

[10] Daryani, C., Chhabra, G. S., Patel, H., Chhabra, l. K., & Patel, R. (2020, January). *An automated resume screening system using natural language processing and similarity. Ethics and Information Technology*. https://doi.org/10.26480/etit.02.2020.99.10 [Retrieved from https://doi.org/10.26480/etit.02.2020.99.10]