AI Mock-Interview WebApp

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Abstract— This project presents an AI-driven mock interview web application designed to enhance job preparation through realistic and interactive interview experiences. Key features of the application include user authentication via email and Google sign-in, ensuring secure access. The system leverages Gemini AI to generate tailored interview questions based on job descriptions provided by users. To simulate a real interview environment, the application enables webcam and audio recording. AI algorithms analyze user responses, offering detailed feedback, including correct answers and the detection of filler words such as "you know," "like," and "okay."

Keywords – facial emotion, tone analysis, feedback, YouTube recommendation

I. INTRODUCTION

This project aims to develop an AI-driven mock interview web application designed to provide users with an immersive and interactive platform for practicing interview skills. By simulating real-life interview experiences, the application helps individuals prepare for job roles through tailored interview questions generated by Gemini AI. These questions are customized based on the job descriptions users provide, ensuring relevance to their specific goals. To offer a realistic environment, the application supports features such as webcam and audio recording, enabling users to simulate live interview scenarios. AI-driven algorithms then analyse the user's responses, offering detailed feedback on accuracy and identifying common filler words such as "like," "you know," and "okay" to help users improve their speaking clarity. Additionally, the platform incorporates real-time video conferencing, automated feedback, and personalized performance analytics, allowing users to continuously track their progress and refine their interview techniques. For user authentication, the system integrates secure sign-in options via email or Google, ensuring easy and safe access. Built using Nextjs and Talwind-CSS for front-end development, and powered by PostgreSQL for database management, the application leverages tools like Drizzle ORM and Clerk to provide a seamless and scalable experience for job seekers looking to enhance their interview performance.

II. LITERATURE SURVEY

Prof. H. R. Agashe, Dhanashri Anwat- AI Based Mock Interview Evaluator and Analysis: to Analyze Emotion, Confidence, and Knowledge

Prof. Taware. R.K, Bhagyashree Shinde- Smart Interview System Using AI Technology

Mrs. P. SWETHA, B.GOWTHAMI- AI-Based Mock Interview Evaluator: An Emotion and Confidence Classifier Model

Shashank Rai, Alisha Miranda- Skill up Bot: An AI Driven Mock Interview Platform

Prof. Sakharam Kolpe, Sarvesh Patil- AI Based Mock - Interview Behavioral Recognition Analyst

III. PROBLEM STATEMENT & OBJECTIVES

3.1 Problem Statement

Challenges in Interview Preparation: Many job seekers struggle with interview preparation, often lacking access to the right tools and resources to build confidence and improve their performance.

Difficulty Accessing Tailored Questions: A major issue is the lack of access to diverse and specialized interview questions relevant to specific industries, roles, or experience levels, with generic materials often insufficient for in-depth practice.

Inability to Track Progress: Without the ability to track progress, users find it difficult to measure improvement over time or identify areas that need more attention.

Lack of Detailed Feedback: Many candidates repeatedly face the same challenges, such as using filler words or providing incomplete answers, due to the absence of detailed feedback and performance analytics.

AI-Driven Personalized Solution: This project aims to solve these issues by developing an AI-driven mock interview web app that generates tailored questions based on job descriptions, ensuring a personalized and relevant interview experience.

Continuous Improvement with Analytics: The platform offers detailed feedback and progress tracking, helping users pinpoint strengths and weaknesses, measure improvement, and enhance overall interview skills, boosting confidence in the job market.

3.2 Objectives

AI-Driven Mock Interview Platform: The primary objective of this project is to develop an AI-driven web application that addresses common challenges faced by job seekers during interview preparation, offering a realistic simulation of interview environments.

Tailored Interview Questions: The platform generates personalized interview questions based on the user's specific job role, industry, and experience level, ensuring relevance and customization for more effective practice.

Real-Time Feedback: AI algorithms provide real-time feedback, analysing user responses for areas such as communication style, filler word usage, and content accuracy, helping users refine their skills.

Personalized Performance Analytics: The system offers detailed analytics to help users identify strengths and weaknesses, allowing for targeted practice and continuous improvement.

Progress Tracking and Monitoring: Users can track their progress over time through session tracking, personalized analytics enabling them to measure

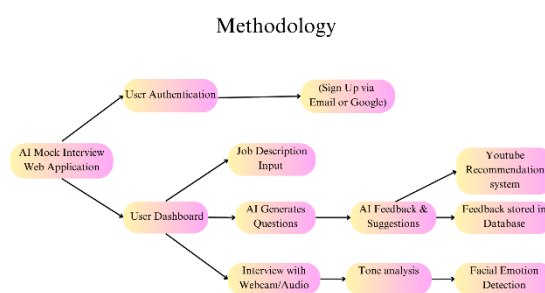improvements in areas like confidence, clarity, and accuracy.

Empowering Job Seekers: The ultimate goal of the project is to empower job seekers by giving them the tools to effectively practice, improve, and excel in their interview performance, increasing their chances of landing their desired roles.

IV. PROPOSED SYSTEM

This project incorporates several key components to create an AI-driven mock interview platform. User authentication is handled through Clerk, allowing for secure sign-up and login, while all user data is stored in the PostgreSQL database for easy access and management. Upon logging in, users can input job descriptions, which are also stored in the database. For question generation, the platform leverages the Gemini API, which creates tailored interview questions based on the job descriptions provided by users. These questions are saved in the database for future reference and interview simulations. The mock interviews are conducted using webcam and audio features, simulating a real interview environment. User responses and corresponding questions are stored securely in the database. The system performs tone analysis to evaluate user responses based on professionalism which detects whether the response is formal or casual and stress levels which identifies hesitant, uncertain, or confident speech patterns to assess interview anxiety. Users can right-click on selected feedback text to trigger a YouTube recommendation system, suggesting relevant interview preparation videos based on their weaknesses. This feature helps users improve their responses effectively. Using tone analysis, and facial emotion detection, the system

evaluates responses and generates suggestions based on relevance, clarity, and overall communication skills. This personalized feedback is stored in the database, ensuring users can track their progress over time. By integrating AI-powered tools with secure data storage, this project aims to offer a comprehensive and dynamic mock interview platform that improves user performance over time.

V. METHODOLOGY

5.1 METHODOLOGY

VI. HARDWARE & SOFTWARE

6.1 Hardware
- CPU (Central Processing Unit)
- GPU (Graphics Processing Unit)
- RAM(Memory)

6.2 Software

Frontend:
- Next.js
- Clerk

Deployment:
- Render (Hosting)

Backend:
- PostgreSQL
- Flask

VII. FUTURE SCOPE

- **Real-time Interaction**
1. Video Conferencing: Integration with video call services (e.g., Zoom, Google Meet) or a built-in video feature for mock interviews.
2. Chat Functionality: Real-time messaging or chat for communication between interviewer and interviewee.

- **Feedback and Evaluation**
1. Post-Interview Feedback: Allow interviewers to provide detailed feedback on performance.
2. Self-Assessment: Enable interviewees to reflect on their performance and assess their own strengths and weaknesses.

- **Integration and API**
1. Integration with Job Boards: Optionally integrate with job boards or career platforms for seamless experience.
2. API Integration: Allow third-party integrations for added functionalities (e.g., calendar syncing, additional video tools).
3. Security and Privacy
4. Data Encryption: Ensure that user data is encrypted and stored securely.
5. Privacy Controls: Allow users to control their privacy settings, including who can see their interview recordings and feedback.

VIII. CONCLUSION

This algorithm outlines the core flow for an AI-powered mock interview web application. It mimics real-world interactions by simulating user actions like navigation, form submissions, and AI-driven content generation, while imitating backend operations such as data storage and processing. At the heart of the application is the AI engine, which dynamically generates personalized interview questions and responses based on user input, including job descriptions and past interactions. This makes the mock app feel interactive and adaptive, providing a realistic experience. The AI engine also evaluates user responses in real time, delivering feedback on areas like content quality and communication clarity, while the backend supports these processes through secure authentication, data management, and analytics, enhancing the overall functionality and responsiveness of the app.

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