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Full Length Article

AI Meet

M Sravanthi[1],Aligeti Puneetha[2],Vuppala Sai Srija[3],Routhu Shriya[4]
[1]Assistant Professor;Department Of Information Technology Bhoj Reddy Engineering College For Women Hyderabad India
[2,3,4]B.Tech Students; Department Of Information Technology Bhoj Reddy Engineering College For Women Hyderabad India
Mail Id;srijavuppala295@gmail.com[3]

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Abstract

Preparing for job interviews has become increasingly important for students and job seekers in the rapidly evolving technology sector. However, many candidates face difficulties due to the absence of realistic interview practice environments and personalized feedback. Conventional preparation approaches, such as reading interview questions or solving coding problems, often fail to replicate real interview conditions and therefore provide limited insight into a candidate's performance.This paper presents AI MEET, an Artificial Intelligence–driven mock interview preparation platform designed to simulate real interview experiences and provide structured performance evaluation. The system integrates voice-based interaction with AI-powered interviewers that conduct dynamic interviews in real time. Users can configure interviews based on type (technical, behavioral, or hybrid), preferred technology stack, and experience level.The platform employs speech-to-text technology to convert spoken responses into textual data, which is then processed using large language models to analyze the quality of responses. Based on this analysis, the system generates detailed feedback evaluating various dimensions such as communication ability, technical competency, analytical thinking, confidence, and cultural alignment.Beyond mock interviews, AI MEET offers additional preparation features including resume-driven question generation, AI-based quizzes covering multiple technical domains, and company-oriented question repositories for major technology firms. The platform also includes an intelligent conversational chatbot available around the clock to assist users with interview strategies, resume guidance, and career advice. Furthermore, the system provides performance analytics dashboards that track interview attempts, quiz scores, and improvement trends over time.The proposed system aims to enhance interview preparedness by delivering an interactive and personalized learning environment powered by modern artificial intelligence technologies. By combining automated interview simulation, adaptive feedback mechanisms, and performance analytics, AI MEET supports candidates in identifying weaknesses, strengthening skills, and improving their chances of success in competitive hiring processes.

Keywords: *Artificial Intelligence, Mock Interview System, Voice-Based Interviewing, Career Preparation, Speech Recognition, AI-Driven Feedback, Resume-Based Question Generation, Conversational AI, Technical Interview Training, Performance Analytics.*

Introduction

In the modern technology-driven job market, interview preparation has become a crucial step for students and professionals seeking employment opportunities. Technical interviews not only evaluate a candidate's knowledge of programming and system design but also assess communication skills, confidence, and problem-solving capabilities. Despite the availability of numerous learning resources, many candidates struggle to perform effectively during interviews due to the absence of realistic practice environments and constructive feedback mechanisms.Traditional preparation approaches such as reading interview questions, studying theoretical concepts, or solving coding problems on online platforms help candidates improve their technical understanding. However, these methods rarely replicate the conditions of an actual interview where candidates must articulate their thoughts clearly, explain problem-solving strategies, and respond to follow-up questions under time constraints. As a result, candidates often experience difficulty in translating theoretical knowledge into effective interview performance.To address these challenges, this research introduces AI MEET, an Artificial Intelligence–driven mock interview preparation platform designed to simulate realistic interview scenarios. The system employs AI-based interviewers capable of conducting voice-based interactions with users in real time. Candidate responses are processed and analyzed to generate structured feedback that highlights strengths and areas requiring improvement.In addition to mock interview simulations, the platform integrates several preparation tools, including resume-based interview question generation, AI-driven technical quizzes, company-specific interview question repositories, and an intelligent chatbot that provides interview guidance and career advice. These features collectively create an integrated environment where

users can practice interviews, evaluate their performance, and continuously improve their skills. The proposed system aims to enhance interview readiness by combining artificial intelligence technologies with personalized learning and performance analytics.

Purpose of the Project

The primary objective of the AI MEET project is to develop an intelligent platform that assists students and job seekers in preparing effectively for both technical and behavioral interviews. Many candidates lack access to structured mock interview sessions and professional feedback, which makes it difficult to identify performance gaps and improve interview skills. This project aims to bridge this gap by providing an automated system capable of simulating realistic interview environments and evaluating candidate responses using artificial intelligence techniques.The platform enables users to participate in voice-based mock interviews where AI interviewers present questions relevant to various technical domains such as frontend development, backend development, full-stack development, DevOps, and system architecture. Before initiating a session, candidates can customize interview parameters including the interview type, experience level, preferred technology stack, and number of questions. This flexibility allows users to tailor the preparation process according to their career objectives and targeted job roles.Another important goal of the system is to provide **personalized interview preparation** by analyzing a candidate's resume and job requirements. Based on this information, the platform generates role-specific interview questions and recommendations that help users prepare more effectively for particular positions. Furthermore, AI-generated quizzes and company-specific question banks allow candidates to strengthen their understanding of technical topics and familiarize themselves with recruitment patterns used by major technology organizations.

Existing Systems

Current interview preparation tools primarily focus on coding practice platforms, question repositories, and peer-to-peer interview sessions. Popular platforms such as **LeetCode, HackerRank, and CodeSignal** provide extensive collections of programming challenges designed to improve algorithmic and problem-solving skills. While these platforms are valuable for strengthening technical proficiency, they generally do not replicate the complete interview experience, particularly aspects related to verbal communication, behavioral evaluation, and real-time interaction.In addition, several existing systems provide limited feedback mechanisms. Candidates may receive only brief comments or general observations instead of detailed analysis of their responses. Without structured evaluation covering communication ability, technical understanding, and confidence, it becomes challenging for candidates to identify specific areas that require improvement.

Proposed System

To overcome the shortcomings of existing solutions, this paper proposes AI MEET, an AI-enabled mock interview preparation platform that integrates artificial intelligence, speech recognition, and modern web technologies to provide an interactive interview training environment.The system conducts voice-based mock interviews through AI interviewers that interact dynamically with candidates. Users can configure interview parameters such as interview type, job role, experience level, and technology stack prior to starting the session. Candidate responses are captured through speech input and converted into textual data using speech-to-text technology. The responses are then analyzed using advanced AI models to generate structured performance feedback.

Related Work

The rapid growth of the technology industry has significantly increased competition in the job market, making effective interview preparation essential for students and professionals. Conventional preparation approaches, such as reading interview guides, attending online tutorials, and solving programming problems, help candidates build technical knowledge. However, these approaches typically lack interactive components that replicate real interview conditions. As a result, candidates often struggle to evaluate their communication ability, confidence, and response quality during actual interviews.Recent advancements in Artificial Intelligence (AI) and Natural Language Processing (NLP) have enabled the development of intelligent interview preparation systems. Several research studies have explored AI-based conversational agents capable of simulating interview scenarios and evaluating candidate responses. These systems use large language models to analyze answers based on contextual relevance, grammatical correctness, technical accuracy, and clarity of explanation. By processing user responses automatically, such platforms can provide structured feedback that assists candidates in improving their interview performance.

Requirement Analysis

Requirement analysis plays a crucial role in system development by identifying the functional capabilities and operational constraints required for successful system implementation. In the case of the AI MEET platform, requirement analysis helps define the features, performance expectations, and technical components necessary to create an

intelligent interview preparation environment. The platform is designed to simulate real interview scenarios and assist candidates in improving their performance through AI-generated feedback and interactive learning tools.The system integrates multiple components, including user authentication, AI-driven interview simulations, preparation resources, assessment modules, conversational chatbot support, and performance analytics dashboards. By utilizing artificial intelligence and natural language processing techniques, the platform analyzes candidate responses and generates personalized feedback. Proper requirement analysis ensures that the platform remains reliable, scalable, and capable of supporting users preparing for different interview roles across various technical domains.

Functional Requirements

Functional requirements describe the essential operations that the AI MEET platform must perform to achieve its objectives. These requirements define how users interact with the system and how different components collaborate to provide interview preparation services.The platform includes a secure user registration and authentication system that allows candidates to create accounts, log in using registered credentials, and manage their personal profiles. User data, including preparation history and performance statistics, is securely stored using encrypted authentication mechanisms.A central feature of the system is the AI Mock Interview Simulator, which enables candidates to participate in simulated interview sessions. During these sessions, the AI interviewer presents questions related to technical topics, behavioral scenarios, or a combination of both. Users can respond through text or voice input, allowing the system to replicate real interview interactions.The system also provides a quiz and assessment module that evaluates candidate knowledge through automated quizzes covering programming concepts, aptitude questions, and logical reasoning problems. Performance analytics are generated after each assessment to help users identify strengths and areas requiring improvement.Finally, the system maintains a database management component responsible for storing user profiles, interview transcripts, quiz scores, and preparation data. This centralized data storage ensures efficient retrieval of user information and supports performance tracking across multiple interview sessions.

Non-Functional Requirements

Non-functional requirements describe the quality attributes necessary for the reliable operation of the AI MEET platform. These attributes ensure that the system remains secure, efficient, and scalable while delivering a smooth user experience.Security is a critical requirement because the platform handles sensitive user information such as resumes and interview performance data. The system employs secure authentication mechanisms and encrypted data storage to protect user accounts. Access to personal information is restricted to authorized users through secure API communication.Maintainability is another important aspect of the system design. The platform follows a modular architecture that allows developers to update individual components—such as the AI interview engine, chatbot module, or quiz system—without affecting the entire application. This modular structure simplifies system upgrades and bug fixes.Reliability ensures that the system performs consistently during operation. The platform must handle interview simulations, response analysis, and data storage without interruption.Flexibility enables the platform to adapt to different interview types and technological changes. The system supports technical interviews, behavioral interviews, and hybrid formats while allowing integration of additional AI models or question banks in the future.

System Design

System Architecture

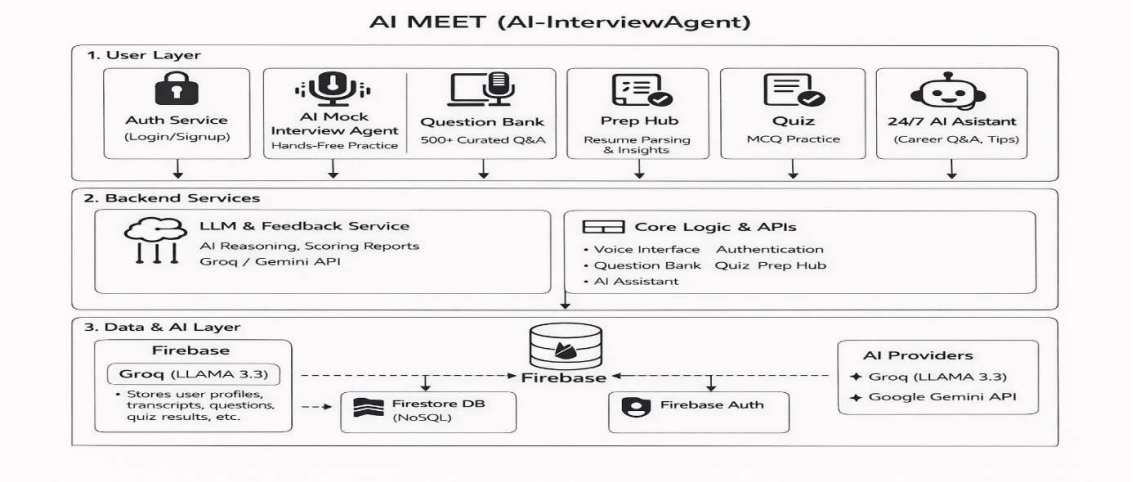

Fig 1 System Architecture

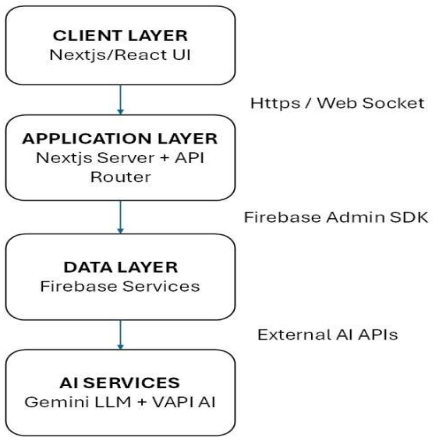

Fig 2 Technical Architecture

The architecture of the **AI MEET platform** is designed to support interactive interview preparation using artificial intelligence technologies. The system consists of three primary components: the user interface layer, the AI service layer, and the centralized data management system.Users interact with the system through a web-based interface that provides access to interview simulations, quizzes, and preparation resources. The interface allows candidates to participate in mock interviews using text or voice responses while also enabling them to track their preparation progress through personalized dashboards.The AI service layer forms the core of the system. It is responsible for generating interview questions, analyzing candidate responses, and producing structured feedback. Technologies such as **Google Gemini AI, Groq AI, and Vapi AI** are integrated into this layer to enable natural language interaction and voice-based interview simulations. These AI models evaluate responses based on clarity, relevance, and technical accuracy.The backend layer manages system operations including authentication, interview session management, quiz evaluation, and communication with AI services. This layer is implemented using **Next.js API routes and Node.js**, which serve as a bridge between the frontend interface and the AI models.All user data—including profiles, interview history, and performance reports—is stored in a **Firebase Firestore** cloud database. This centralized storage ensures efficient data management and enables users to review their previous interview attempts and monitor improvement over time.The architecture ensures secure communication between components while maintaining scalability and reliability for a large number of users.

Implementation

Technologies Used

The AI MEET platform is implemented using modern web technologies and cloud-based services to deliver an interactive interview preparation environment. The system integrates frontend frameworks, backend services, artificial intelligence APIs, and cloud databases to support real-time interview simulations and performance evaluation.Artificial intelligence plays a central role in the platform's functionality. AI models such as Google Gemini AI, Groq AI, and Vapi AI are used to generate interview questions, process user responses, and enable voice-based interaction with the AI interviewer. Gemini AI analyzes candidate responses and produces structured feedback, while Groq AI accelerates inference speed for faster response generation. Vapi AI enables natural voice communication between the user and the AI interviewer.The frontend interface is developed using Next.js, React, and TypeScript, which provide a dynamic and responsive user interface. Styling is implemented using Tailwind CSS and ShadCN UI, enabling the creation of modern and accessible design components. Through this interface, users can participate in interviews, access question banks, interact with the chatbot, and review performance analytics.For deployment, the platform is hosted on Vercel, which provides optimized hosting for Next.js applications and automatic scaling based on user demand. Development workflows are managed through GitHub, which supports version control and continuous integration for efficient deployment and system updates.

Testing and Validation

Testing and validation are essential phases in software development that ensure the system operates according to the intended requirements. In the AI MEET platform, a structured testing approach was implemented to verify functionality, performance, and reliability. Multiple testing methodologies were applied to evaluate individual

modules, system integration, and overall platform behavior. The testing process ensured that the application performed accurately under different operational scenarios and delivered a stable user experience during interview simulations.

Test Cases

A series of test cases were designed to verify the correctness of the platform's major functionalities, including authentication, resume processing, voice-based interviews, quiz generation, database synchronization, and chatbot interactions. Each test case evaluated whether the system produced the expected output for a given input condition. The test cases also helped identify potential issues related to system performance and integration between different modules.The results indicated that most core functionalities performed as expected, including user authentication, resume parsing, feedback generation, and quiz modules. However, certain issues were observed in voice session stability and API key rotation under high load conditions. These issues were analyzed and addressed to improve system reliability and performance.

Types of Testing

Unit Testing

Unit testing was conducted to verify the correctness of individual components within the system. In this process, small units of code such as functions, classes, and modules were tested independently to ensure that they behaved according to the specified logic. By validating each component separately, potential errors could be detected early during development. Unit testing ensured that the internal program logic correctly processed inputs and produced the expected outputs before integration with other system components.

Integration Testing

Integration testing was performed after unit testing to verify that different modules interacted correctly when combined. While unit testing focuses on isolated components, integration testing evaluates the communication and data flow between modules. In the AI MEET system, this testing ensured that components such as the frontend interface, backend APIs, AI services, and database interacted seamlessly. The testing process helped identify issues such as interface mismatches, incorrect data exchange, and communication errors between modules.

Functional Testing

Functional testing was carried out to confirm that the system behaved according to the specified functional requirements. This testing method evaluated whether the application correctly processed valid inputs, rejected invalid inputs, and generated accurate outputs. Functional testing also verified the correct execution of workflows, system interfaces, and user interactions. Through this process, the development team ensured that all features—including mock interviews, quizzes, chatbot assistance, and performance analytics—operated as intended from a user's perspective.

System Testing

System testing involved evaluating the complete integrated platform to ensure that all components functioned together effectively. This stage of testing was conducted in an environment that closely resembled the real deployment environment. System testing examined the overall functionality of the platform, including interview simulations, data processing, storage operations, and communication with external AI services. This phase helped identify issues that were not visible during earlier testing stages.

White Box Testing

White box testing, also referred to as structural testing, was applied to examine the internal logic of the application. In this approach, testers had complete knowledge of the source code and analyzed program execution paths, conditional statements, loops, and control structures. Test cases were designed to ensure that each logical branch of the program was executed at least once. This testing method helped detect hidden logical errors and potential security vulnerabilities within the application.

Black Box Testing

Black box testing was used to evaluate the system without considering its internal implementation. In this method, testers focused on the input-output behavior of the system. By providing various inputs and observing the outputs, testers verified whether the system met the functional specifications. This testing method was particularly useful for validating user interface behavior, input validation mechanisms, output correctness, and system error handling from the perspective of an end user.

Result Analysis

The performance evaluation of the AI MEET platform was conducted using several key performance indicators that measured both technical efficiency and user experience.From a technical perspective, the system demonstrated efficient processing capabilities. The platform achieved response latencies below 100 milliseconds during voice interactions by utilizing Vapi AI in combination with Groq-powered inference models. This low latency enabled smooth conversational interactions between the user and the AI interviewer, closely resembling real human interviews. Additionally, the hybrid AI architecture using Google Gemini and Groq models allowed the platform to generate structured interview feedback reports in less than five seconds after the completion of an interview session.System reliability was also evaluated during testing. The implementation of an automated API key rotation mechanism helped maintain approximately 99.9% system uptime by handling rate limit constraints associated with AI

service providers. This ensured continuous system availability even during periods of increased usage.The system's resume parsing engine achieved a 100% success rate in extracting relevant information from standard PDF and DOCX resume formats. This ensured that personalized interview questions generated by the system accurately reflected the user's professional background.

Screenshots

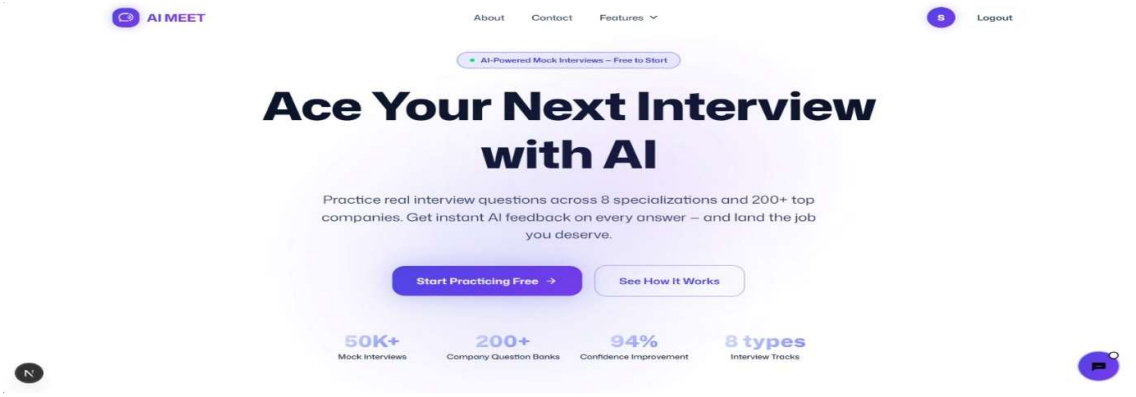

Fig 1 Home Page

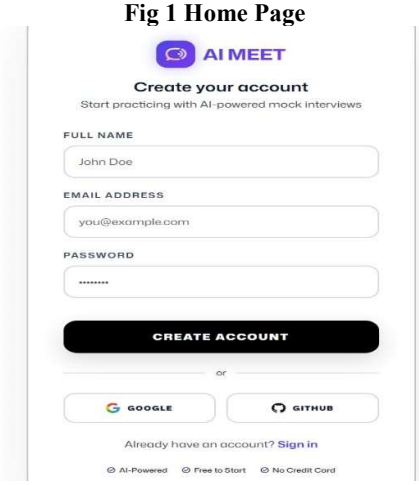

Fig 2 Sign Up Page

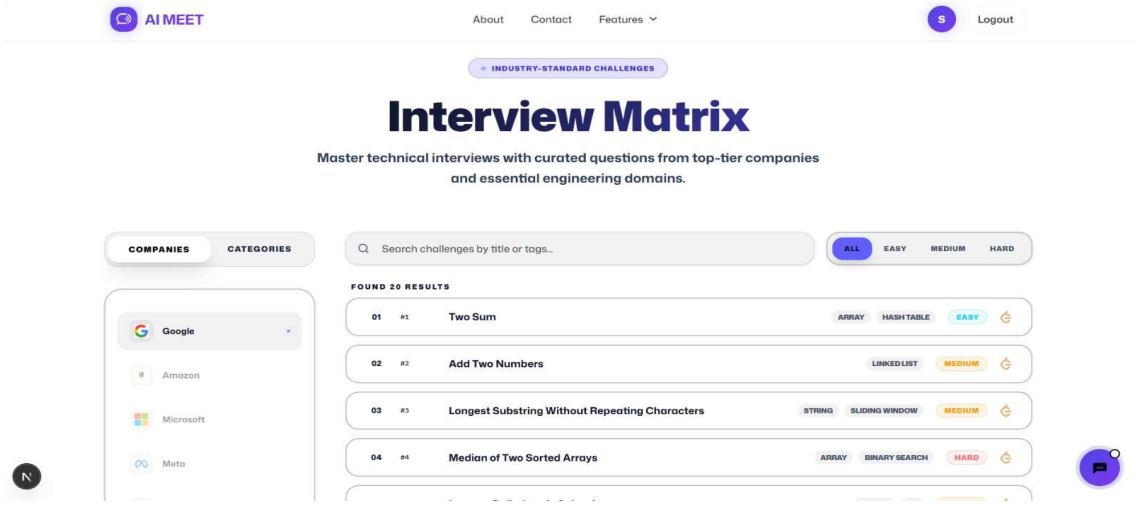

Fig 3 Interview Question Bank Module

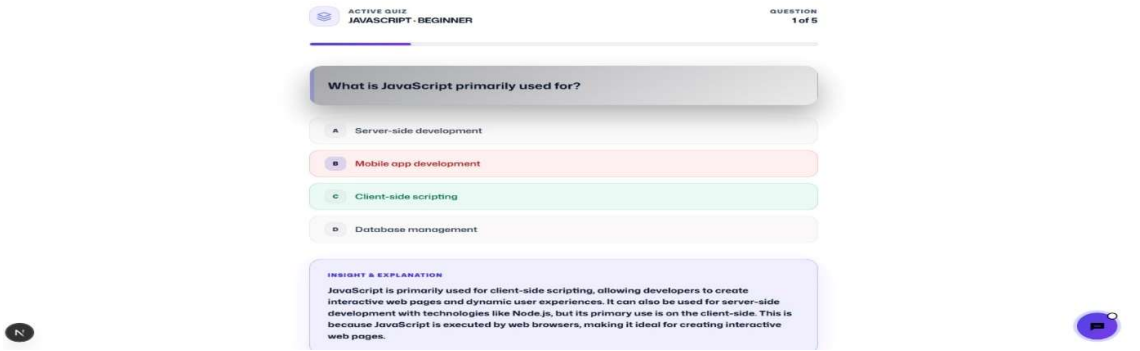

Fig 4 Interview Preparation Hub Module

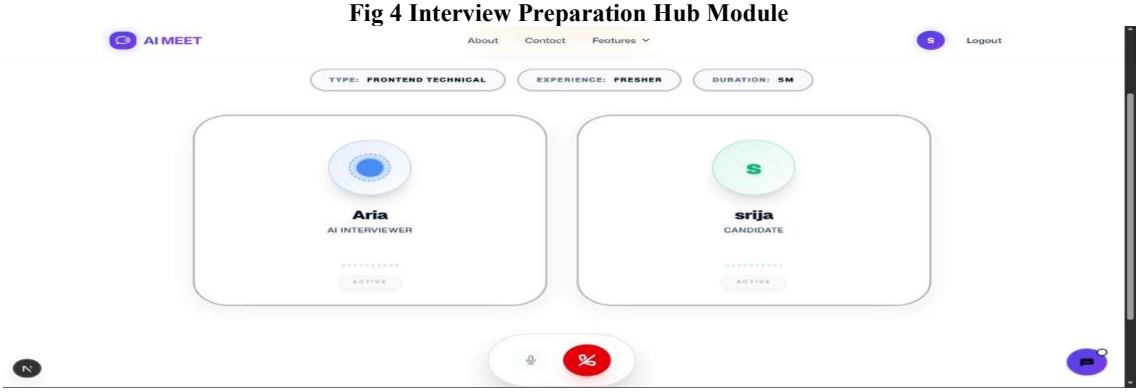

Fig 5 AI Mock Interview Module

Fig 6 AI Chatbot Module

Conclusion

The AI MEET platform represents a significant advancement in modern interview preparation systems by leveraging artificial intelligence to provide accessible and intelligent training tools. Through the integration of technologies such as Vapi AI for voice-based interaction and hybrid AI models including Google Gemini and Groq, the system is capable of conducting realistic mock interviews and delivering meaningful performance feedback.One of the key achievements of this project is the creation of a highly interactive interview simulation environment that closely mirrors real recruitment processes. The system evaluates candidate responses and provides structured feedback highlighting both strengths and areas requiring improvement. This transforms traditional interview preparation into a data-driven learning experience where users can track their progress and refine their skills through repeated practice sessions.Furthermore, the platform is designed using scalable cloud infrastructure and modern development frameworks that ensure reliability and efficient performance. The use of serverless deployment platforms and automated API

key management enhances system stability while supporting multiple users simultaneously.In summary, AI MEET provides an innovative solution for job seekers by combining artificial intelligence, conversational interfaces, and performance analytics. The platform helps candidates strengthen technical knowledge, improve communication abilities, and build confidence before participating in real-world job interviews.

Future Scope

The architecture of the AI MEET platform has been designed with extensibility in mind, allowing it to incorporate future technological advancements. One potential enhancement involves the integration of multimodal video analysis capabilities. By utilizing computer vision techniques, the system could analyze non-verbal communication elements such as facial expressions, body posture, eye contact, and gestures during interview sessions. Combining visual and audio feedback would provide users with a more comprehensive evaluation of their interview performance.Another area of future development involves the implementation of adaptive AI coaching mechanisms. The AI interviewer could dynamically adjust question difficulty based on the user's responses and confidence levels. If a candidate encounters difficulty in a particular topic, the system could provide hints or contextual guidance to maintain the flow of conversation while encouraging learning.Additionally, future versions of the platform may include emotion recognition and stress analysis based on voice characteristics. By analyzing tone variations, speech patterns, and hesitation levels, the system could detect signs of nervousness and provide suggestions for improving composure during interviews.Further enhancements could focus on improving user engagement through collaborative learning features such as peer-to-peer mock interviews, competitive interview challenges, and global performance leaderboards. Expanding language support and developing dedicated mobile applications for Android and iOS would also increase accessibility and allow users to practice interviews from anywhere.These future improvements will transform AI MEET into a more comprehensive AI-driven career preparation platform capable of supporting diverse users across different industries and geographical regions.

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