

## Review of Skillspeak : An AI Powered Mock Interview Preparation

Asiya Beegum S\*, Abhirami N R<sup>#</sup>, Fathima Rana C<sup>&</sup>, Swaliha Sakkeer<sup>@</sup>, Reenu Susan Joseph<sup>s</sup>

Department of CSE, College of Engineering Kidangoor, Kottayam, Kerala, India

\*asiyabeegum40@gmail.com, <sup>#</sup>abhiraminr2003@gmail.com,  
&fathimarana682@gmail.com, <sup>@</sup>swalihasakeer0123@gmail.com,  
<sup>s</sup>reenusjoseph@gmail.com

**Abstract**— This survey examines AI-powered mock interview platforms developed to help students and job seekers improve their interview skills through practical and interactive practice. These systems simulate real interview scenarios, enabling users to rehearse answers, build confidence, and become familiar with the interview process before attending actual interviews. By providing a realistic practice environment, such platforms help users convert academic knowledge into clear and effective communication.

The surveyed approaches focus on generating role-specific interview questions by analyzing user-provided CVs and job descriptions, ensuring personalized and relevant practice. User responses are captured using speech recognition and analyzed through Natural Language Processing and Machine Learning techniques to evaluate grammar, clarity, relevance, and confidence. Instant feedback, along with progress tracking across multiple sessions, helps users identify weak areas and continuously improve their performance. Overall, AI-based mock interview systems contribute significantly to interview readiness, employability, and career development.

**Index Terms**— AI-Based Mock Interviews, Speech Recognition, Natural Language Processing, Machine Learning, Personalized Interview Practice, Performance Feedback, Employability Enhancement

### I. INTRODUCTION

Artificial Intelligence (AI) has progressed from simple rule-based systems to intelligent technologies capable of understanding language, reasoning, and making autonomous decisions. By combining Natural Language Processing (NLP), Machine Learning (ML), and deep learning, modern AI systems can analyze complex human interactions and provide meaningful, context-aware feedback. These capabilities have enabled AI to move beyond automation and actively support learning, assessment, and skill development in personalized and interactive ways.

Interview preparation is one domain that has greatly benefited from these advancements. Interviews evaluate not only technical knowledge but also communication skills, confidence, clarity of expression. Traditional preparation methods such as manual mock interviews or static questionnaires often lack personalization and real-time evaluation. Recent AI-based interview systems address these limitations by analyzing speech patterns, language usage, and emotional cues, allowing candidates to receive objective and actionable feedback that reflects real interview expectations.

Motivated by these developments, this project presents SkillSpeak, an AI-powered mock interview preparation platform designed to act as an intelligent interview assistant. SkillSpeak generates role-specific questions from resumes and job descriptions, captures spoken responses through speech recognition, and evaluates them using NLP and machine learning models. By providing personalized feedback on grammar, fluency, confidence, and emotional cues, along with progress tracking over time, SkillSpeak offers a human-centered and adaptive approach to interview preparation, helping students and job seekers build confidence and improve employability in a competitive job market.

### II. LITERATURE SURVEY

#### A. *Prepmania : an AI powered Mock Interview Platform for Skill Evaluation and Performance Feedback*

[1]Recent research indicates that artificial intelligence has become increasingly effective in enhancing interview preparation by overcoming the subjectivity and limitations of traditional mock interviews (Kolpe et al., 2024). Kolpe et al. (2024) proposed an AI-based mock interview behavioural

recognition system that evaluates facial expressions, speech patterns, and emotional responses, highlighting the importance of multimodal analysis for objective interview assessment. Rai et al. (2024) introduced the SkillUp Bot, an AI-driven mock interview platform that generates job-specific questions and evaluates candidate responses using natural language processing, though it provides limited analysis of non-verbal behaviour. Katarakar et al. (2024) demonstrated the feasibility of AI-powered interview simulations through an automated mock interview system focused on question generation and response evaluation. Agashe et al. (2023) developed an AI-based mock interview evaluator that incorporates speech recognition and sentiment analysis to assess verbal responses, with limited emphasis on physical behavioural cues. Wilkie and Rosendale (2019) emphasized the need for realistic interview simulations combined with personalized feedback on communication, timing, and non-verbal behaviour. Daryanto et al. (2024) presented Conversate, an AI-driven interview practice tool leveraging large language models to promote reflective learning through interactive feedback. Mishra et al. (2024) showed that AI-driven virtual mock interview systems support adaptive and self-paced learning, thereby improving professional competence and confidence. Shi and Wang (2025) empirically demonstrated that AI mock interviews significantly enhance graduates' perceived employability and real interview performance. However, many existing solutions lack integrated real-time multimodal feedback and learner-centric progress tracking, which motivates the development of comprehensive systems such as Prepmania.

[1] PrepMania is designed to deliver a seamless AI-driven mock interview experience that enables users to practice, receive real-time feedback, and track progress over time. Users securely authenticate and access a personalized dashboard to initiate interviews by specifying the job role, key skills, and experience. Based on these inputs, interview questions are dynamically generated using the Gemini API and presented sequentially. Users record spoken responses while the system performs simultaneous speech-to-text conversion and real-time body posture and gesture analysis

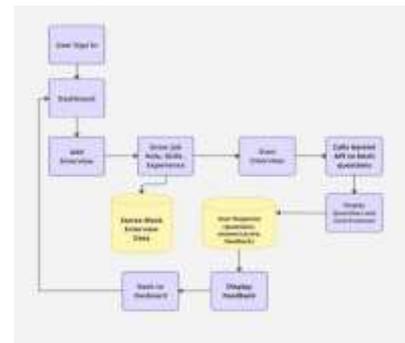


Fig. 1. System architecture of prepmania [1]

using MediaPipe, providing instant prompts for improper behavior. Each response is evaluated by AI for relevance, clarity, and confidence, and all interview data—including transcripts, feedback, and performance metrics—is securely stored in a Neon PostgreSQL database via Drizzle ORM. Upon completion, users receive comprehensive feedback on answer quality, body language, and performance trends, after which they can return to the dashboard to review progress or start new sessions.

**B. AI Based /interview Preperation Platform**

[2] AI is being used to improve interview preparation, analyzing speech, behavior, and emotions. Early systems like Sim Sensei and platforms such as HireVue helped assess candidates, but mostly for recruiters, leaving fairness and transparency concerns. Most existing preparation tools are static and generalized, not giving candidates personalized guidance on technical, behavioral, or communication skills. This leaves many, especially from under-resourced backgrounds, under prepared. The proposed platform addresses this by offering real-time, AI-driven interview simulations with personalized feedback, helping users build skills, confidence, and readiness for modern interviews. [2] Artificial Intelligence is reshaping interview preparation by analyzing speech, behavior, and emotions to make practice more realistic and effective. While early systems like Sim Sensei and HireVue mainly helped recruiters assess candidates, many existing tools for job seekers remain generic and lack personalization, leaving many—especially those from under-

resourced backgrounds—feeling unprepared. The proposed AI-Based Interview Preparation Platform addresses this gap by offering role-specific mock interviews with real-time, personalized feedback. It evaluates communication skills, tone, emotional expression, and body language using AI, machine learning, and NLP, while tracking progress and adapting question difficulty based on performance. Designed to be accessible and user-friendly, the platform acts like a smart personal coach, helping candidates build confidence, improve their skills, and feel ready for real-world interviews. [2]The



Fig. 2. diagram [2]

AI-driven interview platform effectively simulates real interview scenarios for specific roles, helping users improve communication, accuracy, and confidence while providing actionable feedback after each session.



Fig. 3. [2]

The platform creates realistic mock interviews, enhancing users’ skills and confidence through role-specific practice and detailed AI-generated feedback.

**C. InterviewEdge: A Smart Interview Assistant**

[3]Traditional interview methods like the Behavioral Event Interview (BEI) depend heavily

on human judgment, which can make the process subjective, time-consuming, and expensive. To improve efficiency and consistency, AI is now widely used in recruitment through resume screening tools, candidate-matching algorithms, chatbots, and video assessments. Advanced NLP models such as BERT, RoBERTa, and SBERT help understand the meaning and relevance of candidate responses.

[3]InterviewEdge is one such AI-powered platform designed to provide accurate and context-aware interview evaluation. It uses a simple client-server setup where candidates submit text or voice answers through a frontend interface. The back-end processes these responses using models like LLAMA, RAG, and ChromaDB, converting answers into vector embeddings and comparing them with trusted reference materials. With the help of LangChain, the system retrieves relevant content and evaluates responses based on technical accuracy, completeness, language knowledge, and clarity.

[3]Candidates receive detailed scores, short improvement comments, and access to a performance dashboard where they can review or download reports. The system’s scoring accuracy is validated using metrics like MAE, MSE, and RMSE by comparing AI scores with human ratings, ensuring reliable and consistent feedback. Overall, InterviewEdge offers a more objective, scalable, and user-friendly way to assess interview performance while helping candidates clearly understand how to improve.

Criterion	MAE	MSE	RMSE
Technical Accuracy	2.667	10.167	3.189
Completeness	2.5	8.083	2.834
Language-Specific Knowledge	1.958	5.625	2.372
Clarity & Structure	1.875	5.125	2.264

Fig. 4. Quantitative analysis

Criterion	Accuracy (%)
Technical Accuracy	75.873
Completeness	70.263
Language-Specific Knowledge	83.563
Clarity & Structure	77.122

Fig. 5. Quantitative analysis [3]

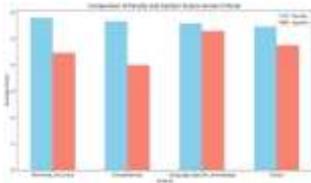


Fig. 6. Qualitative analysis [3]

**D. Enhancing Interview Evaluation : AI based Emotion and Confidence Analysis in Mock Interviews**

[4] Sharma et al introduced an automated system for assessing emotional intelligence in job interviews. Their approach uses machine learning to analyze candidates’ facial expressions, tone of voice, and speech patterns during mock interviews. By detecting subtle cues such as confidence, enthusiasm, and empathy, the system provides detailed feedback to both candidates and interviewers. This allows for a more objective and insightful evaluation of a candidate’s interpersonal and emotional skills, helping them understand and improve how they present themselves in interviews. [4] Lee et al focused on measuring candidate confidence using deep learning. Their system leverages convolutional neural networks (CNNs) and recurrent neural networks (RNNs) to interpret speech patterns, body language, and facial expressions. By analyzing vocal tone, posture, and eye contact, it provides a holistic view of a candidate’s confidence level. Extensive testing on a diverse set of mock interviews showed that the system can reliably assess confidence and offer actionable feedback, helping candidates refine their interview strategies. Wang et al proposed a similar deep learning-based method for evaluating interview confidence. Using the same multidimensional cues—speech, body language, and facial expressions—the system combines CNNs and RNNs to give a nuanced understanding of a candidate’s self-assurance and overall performance. Experimental results confirmed the model’s accuracy and reliability, and the feedback it generates helps candidates identify areas to improve, enhancing their readiness for real interviews. Chen et al developed a real-time system that evaluates candidate confidence during online interviews by analyzing speech patterns, tone, and sentiment, providing instant feedback to improve

interaction and performance. Kumar et al extended this approach with a multimodal framework, integrating facial expressions, voice, and gestures to assess both emotion and confidence, delivering holistic, actionable insights that help candidates understand and enhance their interview presence. Together, these studies show how AI can provide objective, real-time feedback on both verbal and nonverbal aspects of interview performance. [4] The system begins with pre-processing to clean raw speech data by removing noise, silence, and irrelevant portions, and normalizing it for consistency. Using labeled training samples, key features such as pitch, MFCCs, and spectral characteristics are extracted and stored as feature vectors in a training dictionary. A separate set of test samples evaluates the model’s accuracy on unseen data. The emotion recognition classifier learns to map these features to specific emotions during training, enabling the system to predict emotions in new speech recordings and provide reliable, real-time emotion detection.

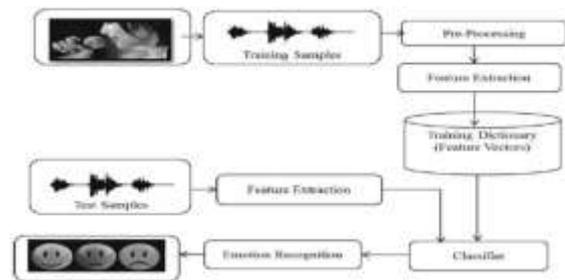


Fig. 7. Speech emotion detection [4]

**E. Artificial Intelligence Powered Mock Interview Generator: Revolutionizing Interview Preparation with Real-Time Feedback**

[5] Virtual Prep is an AI-powered interview preparation platform that generates realistic, role-specific questions and provides real-time feedback on speech, clarity, tone, and behavior. It offers a smooth user experience with secure authentication, customizable mock interviews, and performance tracking. It is Built using Next.js, Node.js, and PostgreSQL, the system integrates the Google Gemini API for intelligent question generation and feedback, Clerk for authentication, and speech-to-text/text-to-speech for interactive interviews. It is

scalable, secure, and accessible across devices. Key features include AI-driven interviews, instant feedback, progress dashboards, and multilingual support. Advanced algorithms such as sentiment analysis (LSTM, Word2Vec) and HMM-based speech recognition are used for accurate evaluation, making Virtual Prep a personalized and efficient alternative to traditional interview preparation systems.



Fig. 8. System Architecture [5]

[5]Virtual Prep delivers a smooth and reliable interview practice experience, generating personalized questions in about 150 ms using the Google Gemini API, even when tested with 50 concurrent users, and maintaining stable performance over 10 days of continuous simulation. In a study of 50 participants, 92 percent found the platform easy to use and 90 percent were satisfied with its real-time speech analysis and feedback. Built with React and Next.js for a dynamic interface and secured with Clerk for safe login management, the system uses PostgreSQL and Drizzle ORM to efficiently store responses. Candidates can answer questions through text or voice, with speech-to-text conversion, and the AI evaluates responses by assigning ratings and offering clear, structured feedback on strengths and areas for improvement. By storing past attempts and tracking progress over time, Virtual Prep acts as an interactive and supportive coach, helping users steadily improve their communication skills, problem-solving ability, and overall interview readiness.

**F. Smart Prep: AI Based Interactive Interview Preparation System**

[6]AI-powered chatbots are increasingly used for interview preparation, skill development, and public engagement, offering interactive and personalized learning experiences. They help users practice communication, problem-solving, and

adaptability in a safe, controlled environment. [6]Barambones et al showed that ChatGPT can help HCI students practice creating user personas, allowing them to learn empathy and analysis without involving real users, though response variety was sometimes limited. Similarly, Smart Prep uses AI to let users practice interview questions repeatedly in a realistic setting. Jiang et al developed CommunityBots, a multi-agent chatbot system where each agent specializes in a topic, improving engagement and response quality. Smart Prep could adopt this approach by using domain-specific agents for technical, behavioral, and situational questions, giving tailored feedback. [6] Gul et al focused on self-assessment, using AI to analyze users' emotions and confidence through video and audio feedback. This complements Smart Prep by helping users improve not just answers but also non-verbal cues and emotional readiness. Waghmare et al. created a chatbot using ChatGPT and Whisper APIs that allows bidirectional interview practice, letting users ask and answer questions like in a real interview. Smart Prep follows a similar approach, offering text and voice interactions to create immersive, realistic interview practice. [6]Recent studies show that AI greatly enhances interview preparation. Researchers like Mandal et al and Suen et al highlight how emotion analysis and personality prediction improve candidate evaluation, while others emphasize scalability, personalization, and organizational readiness for AI. Smart Prep builds on these ideas by using domain-specific agents and adaptive feedback to create a more realistic, personalized interview experience. Many existing tools struggle to capture the dynamic nature of real interviews, often lacking adaptability and real-time, domain-specific guidance. Smart Prep addresses this with a multi-agent system that tracks user progress, adapts to their learning journey, and offers evolving feedback—helping users build confidence and perform better in live interviews. The platform combines modern technologies for speed, flexibility, and future upgrades. Svelte was chosen for the frontend due to its fast, lightweight performance, while Flask handles backend processing efficiently and supports high concurrency. OpenAI's API provides real-time, context-aware

feedback, ensuring a seamless, interactive, and adaptive interview practice experience.

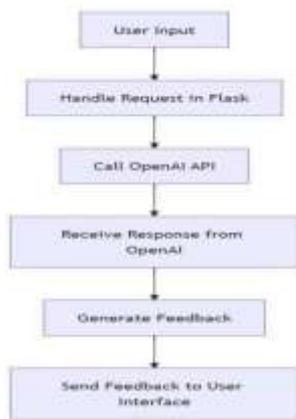


Fig. 9. Backend Processing with Flask [6]

[6]Smart Prep is built on a client-server architecture that ensures smooth, real-time interaction between users, the backend, and external APIs. It has three main layers: the Svelte frontend for a responsive user interface, the Flask backend for processing and session management, and the OpenAI API for generating context-aware, personalized feedback. Users can select interview agents, respond via text or speech, and receive instant feedback. Svelte keeps the interface fast and interactive, while Flask handles requests, manages sessions, and connects to the OpenAI API. This setup allows Smart Prep to provide dynamic, adaptive responses that mimic real interviews. Agents are designed using prompt engineering to simulate different interview types, adjusting questions based on the scenario. Speech-to-text functionality lets users answer verbally, enhancing the realism of practice sessions. Session tracking with thread and message IDs ensures all interactions are organized, allowing users to review entire sessions and track progress. For example, an interviewee can select DevOps, HR, or Software Engineer agents. The platform guides them through questions, analyzes answers, and offers personalized insights to help improve performance and confidence in real interviews.

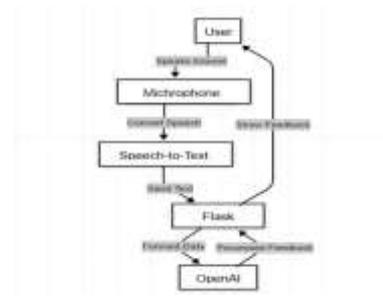


Fig. 10. Speech to Text functionality [6]

**G. AI-Powered Interview Preparation System: Integrating Resume Analysis, HR Simulation, and Technical Skill Assessment**

[7]The survey explores the use of Artificial Intelligence in interview preparation systems to overcome the limitations of traditional methods such as fixed question banks and coaching-based training. AI-driven platforms provide automated, personalized, and scalable interview training, helping candidates improve technical, behavioral, and communication skills while meeting the growing demand for job-ready graduates.

[7]The study highlights AI’s role in recruitment through automated resume screening, candidate evaluation, and bias reduction. It discusses key components such as NLP-based resume analysis, AI-powered HR interview simulations using chatbots, and automated technical skill assessments. By integrating these modules into a unified platform, AI enables holistic evaluation, personalized feedback, and continuous performance tracking, effectively bridging the gap between academic learning and industry expectations.

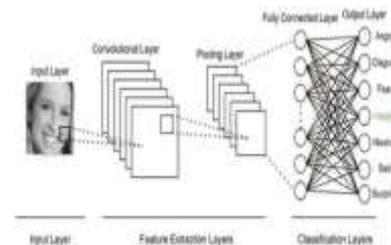


Fig. 11. CNN Model [7]

[7]The CNN model starts by taking facial

images or video frames as input, which are first cleaned and standardized through resizing and normalization, while face detection methods focus only on the important facial region. It then gradually learns meaningful details through convolutional layers, beginning with simple patterns like edges and shapes and moving on to more complex features such as facial muscle movements and expressions. To make the process faster and more reliable, pooling layers reduce the size of the data while keeping the most important information and minimizing the effect of noise or small changes in the image. The learned features are then brought together in fully connected layers, where the model makes a decision about the emotion being shown. Finally, the softmax layer assigns probabilities to different emotions such as happiness, sadness, anger, fear, surprise, disgust, and neutrality, and the emotion with the highest probability is chosen as the final result.

#### H. AI Powered Mock Interview Preparation

[8] Existing mock interview systems lack personalization, rely on fixed question sets, provide subjective feedback, and have weak security mechanisms. These limitations reduce realism and effectiveness in interview preparation. [8] To address these issues, the proposed system uses advanced AI to generate role-specific interview questions and provide objective evaluation of both technical and behavioral responses. Strong security measures such as email verification and OTP-based two-factor authentication ensure data protection. [8] The system follows a modular architecture with a responsive frontend, scalable backend, and secure database. Google Gemini Pro API is used for realistic question generation and accurate response evaluation. Key features include secure authentication, dynamic question generation, real-time AI feedback, and performance analytics. Built using FastAPI, PostgreSQL, SQLAlchemy, and a React/Vue frontend, the system offers a smooth and reliable user experience. Evaluation results showed high accuracy, user satisfaction, fast response times, and good scalability, making it more effective than traditional mock interview methods.

#### I. AI Based Mock Interview Simulation System for Job Preparation

[9] This project focuses on developing an AI-based mock interview system that helps candidates prepare more effectively for real job interviews. Unlike traditional interview preparation tools that mainly test technical knowledge, this system adopts a holistic approach by evaluating technical skills, communication ability, confidence, and emotional expression. This ensures that candidates are prepared not only for what to say, but also for how to say it during an interview. [9] The system personalizes each interview session based on the user's selected job role, technology stack, and experience level. Using Google Gemini, it dynamically generates role-specific and experience-appropriate interview questions, making the sessions realistic and relevant. The interview is conducted in a simulated real-world environment using video recording, which helps users experience actual interview pressure. User responses are converted from speech to text and analyzed by the AI for technical accuracy. In addition, sentiment analysis is performed on the transcribed responses to assess clarity, confidence, and emotional tone. This allows the system to understand how effectively candidates communicate their ideas. [9] After the interview, the system provides detailed and actionable feedback across multiple dimensions, including technical performance, communication skills, and emotional expression.

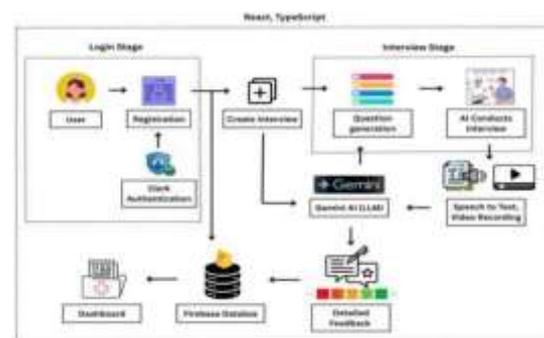


Fig. 12. System Architecture

[9]

A real-time scoring system offers transparent performance metrics, enabling users to track their progress over time. All interview data, including

videos and feedback, is securely stored and accessible through a personalized dashboard. Built using cloud-based technologies, the platform is easily accessible from any device with a webcam and internet connection. It eliminates the need for costly coaching or scheduling, making high-quality interview preparation affordable, scalable, and convenient for students and job seekers.

**J. Mock Interview Evaluator Powered By AI**

[10] The AI-Powered Mock Interview Evaluator is designed to assess candidates' emotional states and confidence during mock interviews and provide actionable, personalized feedback. Its goals are to help job seekers improve communication and confidence, simulate realistic interview scenarios, make preparation accessible via web or mobile platforms, and track progress through data-driven insights. [10] Motivation: Traditional mock interviews are often subjective and inconsistent, offering limited guidance on emotional readiness. By using AI to analyze emotions, confidence, and communication, this system delivers fair, standardized, and constructive feedback, helping candidates identify weaknesses, improve skills, and build confidence while reducing the time and effort needed from human evaluators. Recent studies on AI-powered mock interviews focus on improving preparation by analyzing emotions, confidence, communication, and knowledge. Platforms use tools like facial expression recognition, voice analysis, posture detection, chatbots, and even virtual reality to provide realistic simulations and personalized feedback, helping candidates build confidence and reduce interview anxiety.



Fig. 13. flowchart

[10]

The AI-based mock interview evaluator works

in six main steps: it starts by collecting user details, then launches an AI-driven interview session. User responses are recorded via video and audio, analyzed for communication, confidence, and technical skills. The system then generates a performance report with scores, actionable feedback, and improvement suggestions. The system has six key layers: the User Interface handles inputs and feedback, while the Application Layer manages the interview flow and communicates with the AI engine and database. The AI Evaluation Engine scores answers, and the Database stores questions, users, and results. External Interfaces manage APIs for questions and login, and the Feedback Reporting Layer generates and shares evaluation reports.

**III. CONCLUSIONS**

The Online Mock Interview System provides a structured and interactive platform for users to practice job interviews in a realistic environment. The system integrates key modules such as user authentication, resume and role selection, interview simulation, speech processing with NLP, and feedback generation to ensure a complete interview experience. AI and NLP techniques help analyze user responses, speech clarity, confidence, and relevance of answers, making the evaluation more accurate and meaningful. Automated feedback and performance reports enable users to identify their strengths and areas for improvement without the need for human interviewers. The web-based interface ensures easy accessibility, allowing users to attend mock interviews anytime and from anywhere. Overall, the proposed system enhances interview preparation, builds user confidence, and improves employability skills in an efficient and scalable manner.

**REFERENCES**

[1] S. Awasare, S. Vedpathak, S. Pawar, S. Hatrote, S. Patil, and K. A. Bhosale, "Prepmania: An ai-powered mock interview platform for skill evaluation and performance feedback," *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, vol. 13, no. 5, May 2025.

[2] P. Bansode and A. Jakkani, "Ai-based interview preparation platform," *Journal of Emerging Trends in Electrical Engineering*, vol. 7, no. 2, pp. 33–39, May–Aug 2025.

[3] J. R. Bhuva, V. K. Dabhi, T. V. Parmar, and H. B. Prajapati, "Interviewedge: A smart interview assistant," in *2025 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS)*, 2025.

- [4] M. B. Amrutha, T. N. Kumar, M. N. Sathwika, P. Pavansai, and B. Khasim, "Enhancing interview evaluation: Ai-based emotion and confidence analysis in mock interviews," *Journal of Nonlinear Analysis and Optimization*, vol. 15, no. 1, 2024.
- [5] P. Kumar, N. Kumar, P. Dutta, T. Ansary, and G. S. Reddy, "Artificial intelligence powered mock interview generator: Revolutionizing interview preparation with real-time feedback," *International Research Journal of Engineering and Technology (IRJET)*, vol. 12, no. 03, p. 765, Mar. 2025.
- [6] R. M. Marvaniya, V. K. Dabhi, A. S. Acharya, H. B. Prajapati, and D. M. Detroja, "Smart prep: Ai based interactive interview preparation system," in *2025 4th OPJU International Technology Conference (OTCON) on Smart Computing for Innovation and Advancement in Industry 5.0*. IEEE, 2025.
- [7] H. Koshti, P. Gosavi, R. Pagar, and S. Telekar, "Ai-powered interview preparation system: Resume analysis, hr simulation & technical skill assessment," *Journal of Engineering Research and Reports*, 2025.
- [8] G. R. Rao, B. C. Reddy, A. S. Kalyan, G. K. Priya, and K. Rajesh, "Ai-powered mock interview preparation," *International Journal for Modern Trends in Science and Technology*, vol. 11, no. 04, pp. 65–70, Mar. 2025.
- [9] R. Shirbhate, H. Kulkarni, N. Bidaye, and S. Kangude, "Ai-based mock interview simulation system for job preparation," *Journal of Emerging Technologies and Innovative Research (JETIR)*, vol. 12, no. 5, May 2025.
- [10] S. V. Golande, P. Dandage, A. Jadhav, P. Mohite, and A. Shahane, "Mock interview evaluator powered by ai," *Excel International Journal of Technology, Engineering and Management*, vol. 12, no. 2, pp. 80–87, 2025.