iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** V **Month of publication:** May 2026

DOI: https://doi.org/10.22214/ijraset.2026.81626

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue V May 2026- Available at www.ijraset.com

AI INTERVIEW SYSTEM: AI-Powered Smart Interview Management System

Sanjay M[1], Hamsa B C[2], Akarsh M K[3], Deeksha T R[4], Deekshith H Y[5], Mohan G R[6]
Department of Information Science & Engineering, Rajeev Institute of Technology, Hassan, VTU University, Karnataka, India

Abstract: ***The increasing competitiveness of the job market necessitates effective, scalable interview-preparation tools. This paper presents an AI-powered Mock Interview System that simulates real-time interview scenarios using Artificial Intelligence (AI), Natural Language Processing (NLP), and speech technologies. The system generates dynamic, role-specific questions and supports both text-based and voice-based interactions through speech-to-text (STT) and text-to-speech (TTS). It evaluates user responses in real time and provides personalized feedback based on communication clarity, correctness, and problem-solving ability. The platform is developed using modern web technologies, including Next.js and React for the frontend, along with a scalable backend integrated with AI models and a relational database. Experimental results demonstrate reliable speech recognition performance and strong alignment between AI-generated evaluations and human assessments. The proposed system enhances interview preparedness by offering an intelligent, accessible, and interactive solution, with potential applications in education, recruitment, and professional skill development.***

Keywords— Artificial Intelligence, Mock Interview System, Natural Language Processing, Speech-to-Text, Text-to-Speech, Generative AI, Interview Preparation, Web Application, Real-Time Feedback

I. INTRODUCTION

In recent years, the job market has become increasingly competitive, requiring candidates to demonstrate not only technical knowledge but also strong communication and problem-solving skills. Interview preparation plays a crucial role in determining a candidate's success; however, traditional preparation methods such as reading question banks or attending coaching sessions are often insufficient. These methods lack real-time interaction and fail to replicate the dynamic nature of actual interviews.

Artificial Intelligence (AI) and Natural Language Processing (NLP) have introduced new possibilities for creating intelligent and interactive systems. AI-driven platforms can simulate human-like conversations, generate context-aware questions, and provide instant feedback. These advancements enable the development of systems that can adapt to individual user performance and offer personalized learning experiences.

The proposed AI Interview System leverages generative AI, speech technologies, and modern web frameworks to create a realistic interview environment. It allows users to practice interviews anytime and anywhere, reducing dependency on human evaluators and improving accessibility.

A. Problem Statement

Traditional interview preparation systems face several limitations. Most existing platforms rely on static question banks and lack real-time interaction, making them ineffective in simulating real interview scenarios. Additionally, many systems require human evaluators, which limits scalability and accessibility.

Another major issue is the lack of personalization. Existing systems do not adapt to user performance, resulting in repetitive and less effective practice sessions. Furthermore, the absence of voice-based interaction reduces the realism of mock interviews. Therefore, there is a need for an intelligent system that can generate dynamic questions, evaluate responses in real time, and provide personalized feedback.

B. Motivation

The motivation behind this research arises from the growing need for accessible and effective interview preparation tools. Many students and job seekers lack access to professional coaching or structured mock interviews due to cost and availability constraints.

With advancements in AI, NLP, and speech processing technologies, it is now possible to develop systems that simulate real interviews without human intervention. This research aims to utilize these technologies to create a scalable and user-friendly platform that enhances interview readiness, reduces anxiety, and improves confidence among users.

©IJRASET: All Rights are Reserved

C. Key Objectives of this Research Include

The primary objective of this research is to develop an AI-powered mock interview system that provides realistic interview simulations and personalized feedback. The system aims to:

- Generate dynamic and role-specific interview questions using AI
- Enable voice-based interaction using STT and TTS technologies
- Evaluate user responses using NLP techniques
- Provide real-time feedback and performance analysis
- Support multiple job roles and difficulty levels

II. LITERATURE REVIEW

1) *Amodei et al.* (2016) focused on speech recognition and interaction using deep learning-based speech-to-text (STT) and text-to-speech (TTS) technologies, achieving near-human accuracy in speech processing.
2) *MERN Stack Studies (2018)* explored modern web application development using the MERN architecture, providing scalable and efficient deployment solutions for full-stack applications.
3) *Lee et al. (2019)* studied AI-based tutoring systems using adaptive learning models, demonstrating improved personalization and user-specific learning experiences.
4) *Brown et al. (2020*) introduced transformer-based language models (GPT), enabling context-aware text generation and significantly improving natural language understanding.
5) *Jurafsky and Martin (2020)* contributed to Natural Language Processing by developing techniques for semantic analysis, grammar evaluation, and contextual understanding of text.
6) *Holmes et al. (2021)* examined the role of AI in education, highlighting the importance of scalable and personalized AI-driven learning systems.
7) *OpenAI (2023)* advanced generative AI through large language models, enabling dynamic question generation and intelligent feedback systems.
8) *Google Speech API (2023)* improved real-time voice processing using advanced speech recognition systems, enhancing accuracy in human-computer interaction.
9) *Pramp* Platform provides peer-to-peer mock interview systems, offering real-time interaction but limited by human availability and scalability.
10) *Interviewing.io* Platform enables live technical interview simulations with experts, providing realistic experience but constrained by scheduling and accessibility.

The above literature review indicates that while significant progress has been made in areas such as natural language processing, speech technologies, and AI-driven learning systems, existing interview preparation platforms still suffer from limitations including lack of personalization, scalability, and real-time feedback. Traditional systems either depend on human interaction or fail to simulate realistic interview scenarios effectively. Recent advancements in generative AI and speech processing provide an opportunity to overcome these challenges by enabling dynamic question generation, automated evaluation, and interactive voice-based communication. Therefore, the proposed AI Interview System builds upon these advancements to develop an intelligent, scalable, and user-friendly platform that enhances interview preparedness through personalized and realistic practice experiences.

III. METHODOLOGY

The AI Interview System is developed using a structured and modular approach that integrates frontend, backend, and AI components to simulate realistic interview scenarios. The process begins with user authentication, where users register and log in securely to access personalized interview sessions and track their progress. After authentication, users configure the interview by selecting parameters such as job role, difficulty level, and interview type (technical or behavioral). These inputs are used by the AI engine to generate dynamic, role-specific, and context-aware interview questions, ensuring that each session is unique and adaptive.Users respond to the questions through either text input or voice interaction, where voice responses are processed using speech-to-text (STT) technology to convert speech into analyzable text. The system then applies Natural Language Processing (NLP) techniques to evaluate the responses based on factors such as grammatical correctness, semantic relevance, clarity of expression, and problem-solving approach. Based on this evaluation, the AI generates real-time, personalized feedback, highlighting strengths, identifying weaknesses, and suggesting improvements to enhance performance.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

All user responses, feedback, and session details are stored in a database, enabling performance tracking and continuous learning over multiple sessions. The system architecture consists of a responsive frontend built using Next.js and React, a backend powered by Node.js for handling APIs and business logic, and a scalable database such as PostgreSQL or MongoDB for data management. The AI module, integrated through a generative language model, handles both question generation and response evaluation. This methodology ensures an interactive, intelligent, and scalable platform that adapts to individual user needs while providing a realistic and effective interview preparation experience.

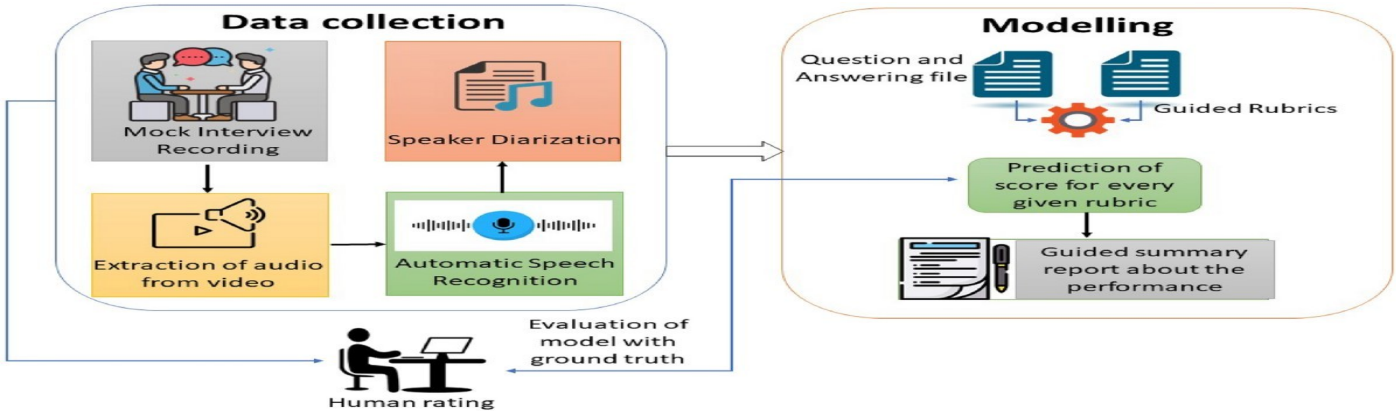


Fig.1 Workflow of AI-Powered Interview System

IV. RESULTS AND SNAPSHOTS

The AI Mock Interview System was evaluated to assess its effectiveness in simulating real-time interview scenarios and providing meaningful feedback to users. The system successfully integrates AI-based question generation, speech processing, and response evaluation to deliver an interactive interview experience. Experimental results demonstrate that the system performs efficiently in generating relevant questions, accurately processing user responses, and delivering real-time feedback.

The speech recognition module effectively converts voice input into text with high accuracy, enabling seamless voice-based interaction. The Natural Language Processing (NLP) component analyzes user responses based on clarity, relevance, and correctness, ensuring reliable evaluation. The system also maintains a consistent response time of under a few seconds, making it suitable for real-time applications.

User testing was conducted with multiple participants, and the majority reported improved confidence and better preparedness for real interviews after using the system. The feedback mechanism was found to be highly useful in identifying strengths and areas for improvement. Additionally, the system demonstrated scalability by handling multiple sessions without significant performance degradation.

Landing Page

The landing page provides an overview of the platform, including features such as interview simulation, role selection, and user authentication. It is designed with a clean and intuitive interface to guide users through the application.

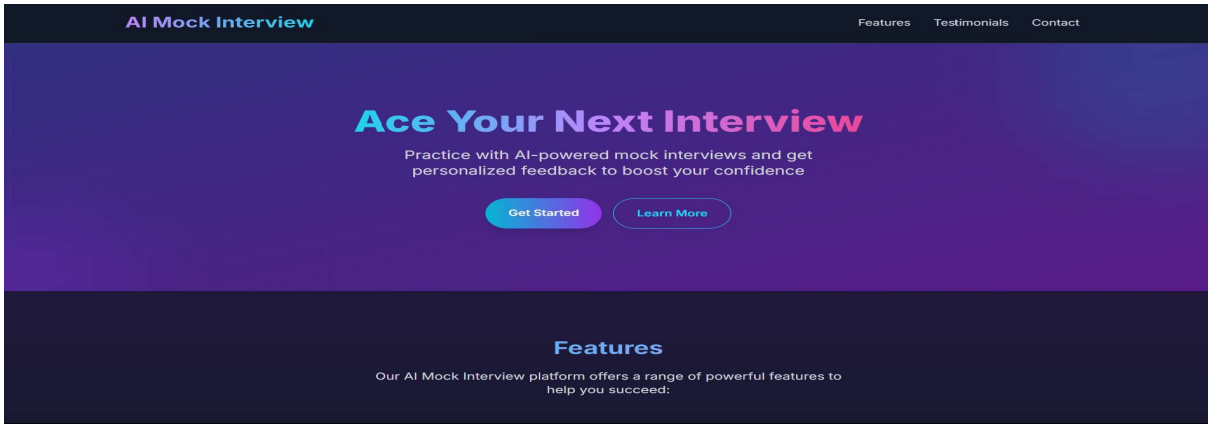


Fig.2 Loading Page

Dashboard

The dashboard displays user information, previous interview sessions, and performance analytics. It allows users to track their progress and access past feedback reports.

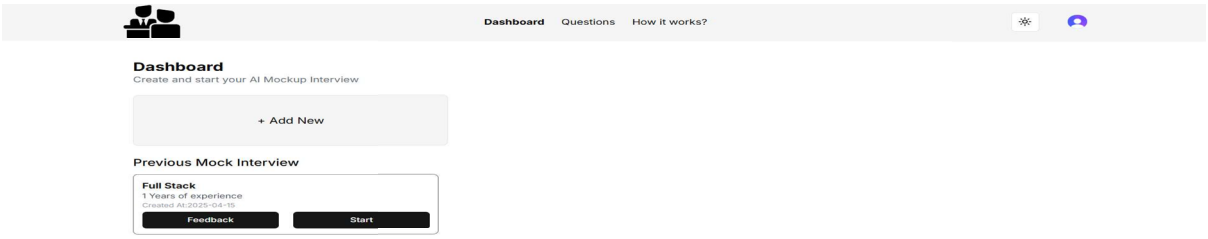


Fig.3Dashboard Page

Interview Setup Page

This page enables users to select interview parameters such as job role, difficulty level, and interview type. Based on these inputs, the system customizes the interview session.

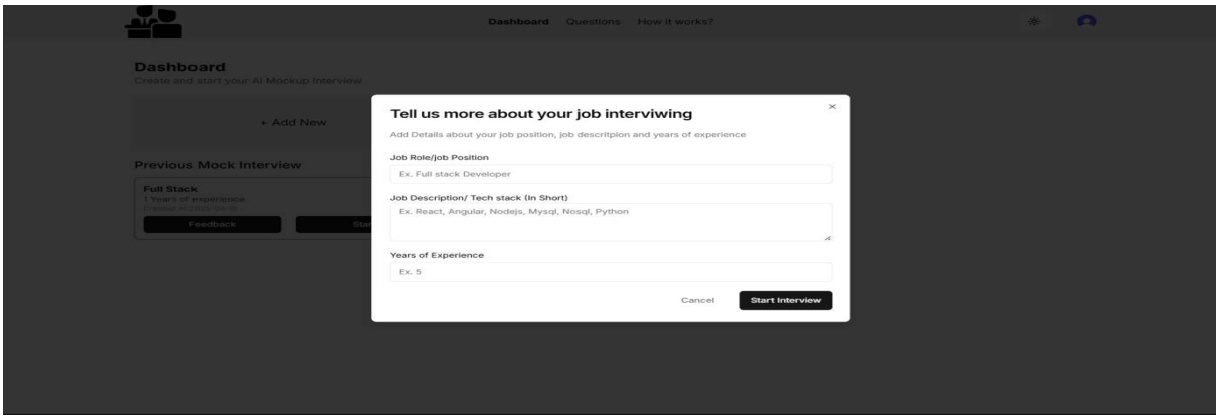


Fig.4Interview Setup Page

Interview Session Interface

The interview interface presents questions generated by the AI and allows users to respond via text or voice. It ensures a smooth and interactive experience similar to real interviews.

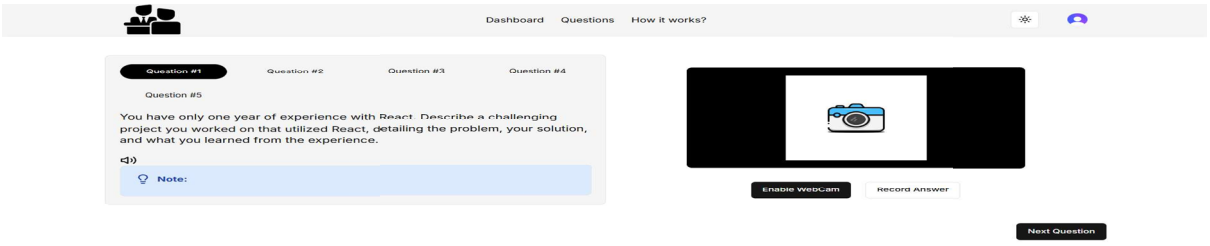


Fig.5Interview Session Interface

Feedback Page

After completing the interview, the system generates a detailed feedback report. This includes performance scores, strengths, weaknesses, and suggestions for improvement.

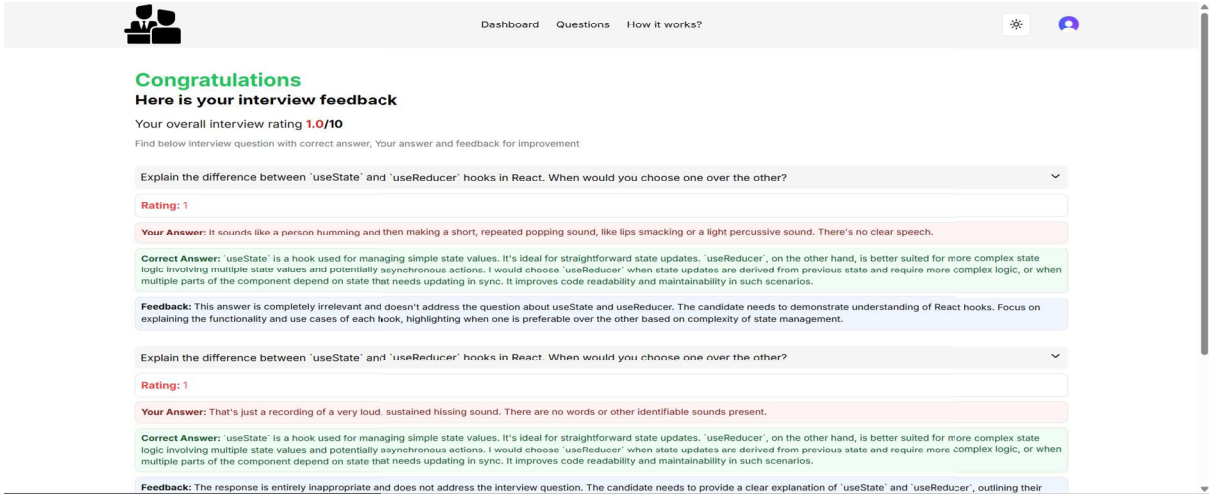


Fig.6Feedback Page

Additional Pages

Other pages such as account settings, security options, and help sections enhance usability and provide a complete user experience.

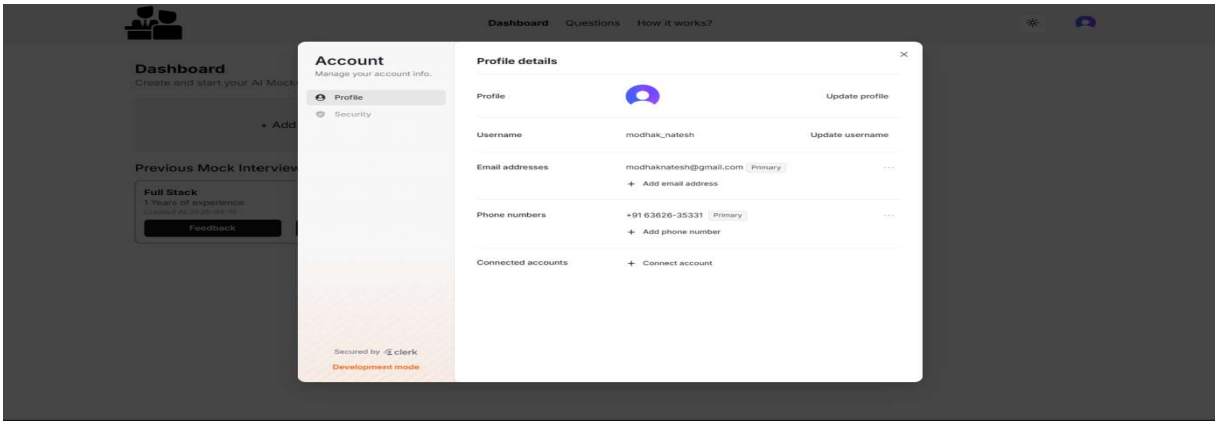


Fig.7Account Page

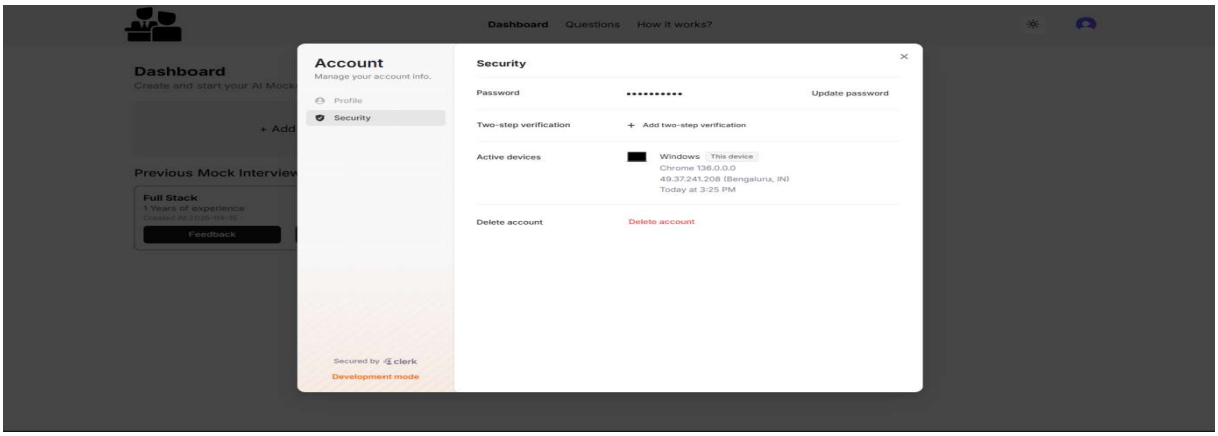


Fig.8Security Page

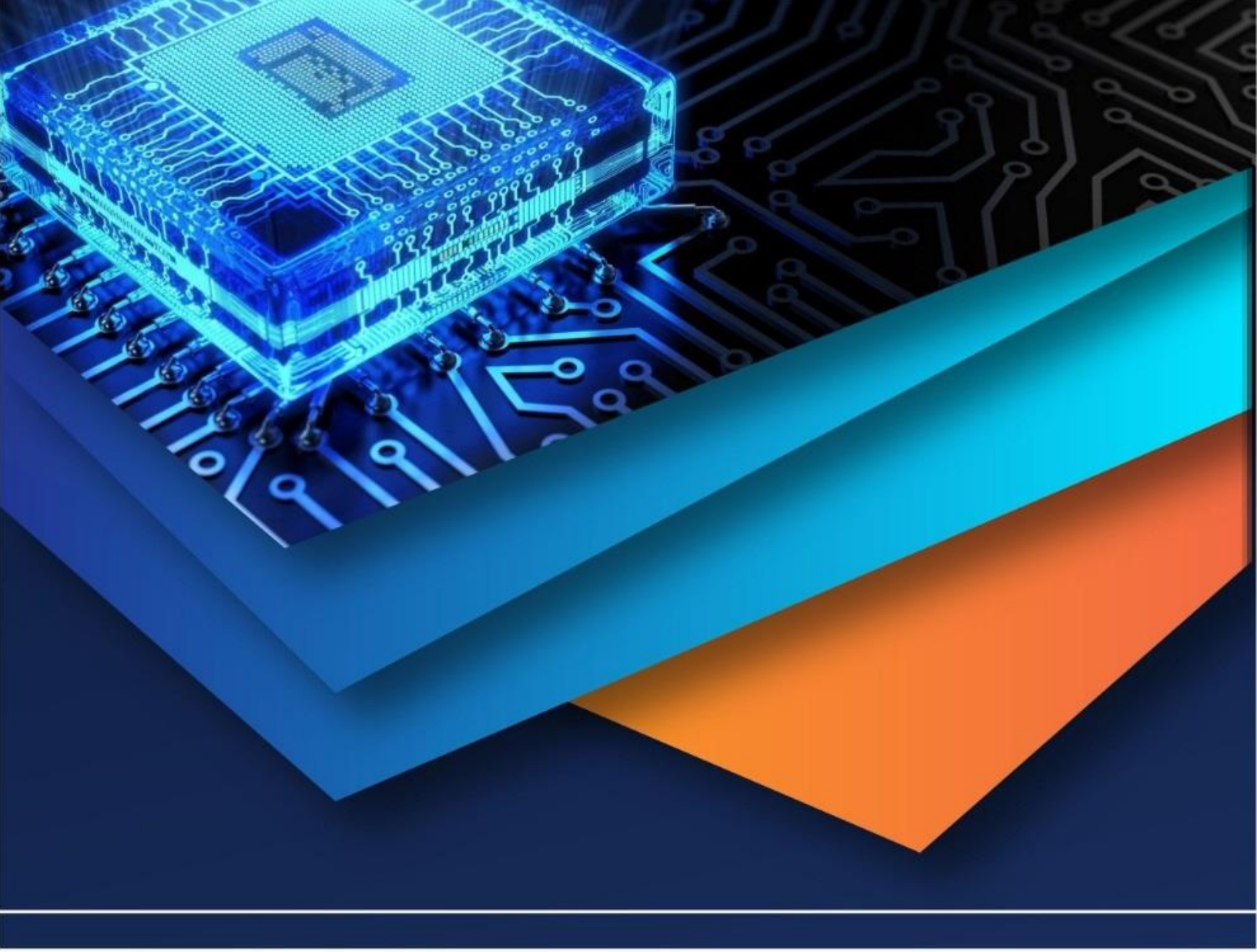
V. CONCLUSION

The AI Mock Interview System presents an intelligent and scalable solution for enhancing interview preparation by integrating Artificial Intelligence, Natural Language Processing, and speech technologies. It effectively simulates real-time interview scenarios through dynamic question generation and supports both text and voice interactions, providing users with a realistic experience. The system evaluates responses and delivers personalized feedback, helping users improve communication, confidence, and problem-solving skills. Unlike traditional methods, it offers accessibility, adaptability, and continuous learning without the need for human evaluators. Experimental results indicate improved user performance and satisfaction, demonstrating the system's effectiveness. Overall, the proposed system bridges the gap between conventional preparation techniques and modern recruitment demands, making it a valuable tool for students, job seekers, and professionals.

REFERENCES

[1] Amodei, D., et al. (2016). Deep Speech: Scaling up end-to-end speech recognition. arXiv.
[2] Lee, S., et al. (2019). Impact of Intelligent Tutoring Systems on Personalized Learning. JETS.
[3] Jurafsky, D., & Martin, J. H. (2020). Speech and Language Processing (3rd ed.). Pearson.
[4] Holmes, W., Bialik, M., & Fadel, C. (2021). Artificial Intelligence in Education.
[5] Kumar, P., et al. (2025). AI-Powered Mock Interview Generator IRJET.
[6] Pramp. (n.d.). Live peer-to-peer mock interviews.
[7] Interviewing.io. (n.d.). Anonymous technical interview practice.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)