

AI - Powered Job Interview Simulation System

¹Mr. SUDHARSAN S,²Ms. VIKNESWARY P, ³Mr. GANESHEN P, ⁴Ms. SUBASREE GS,⁵Ms. SUBATHRA A,

^{2,3}ASSISTANT PROFESSOR, ^{1,4,5}STUDENT,

^{1,2,3,4,5}DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING,

^{1,2,3,4,5}KNOWLEDGE INSTITUTE OF TECHNOLOGY, SALEM, INDIA.

¹2k22cse179@kiot.ac.in, ²pvwcse@kiot.ac.in, ³pgncse@kiot.ac.in, ⁴2k22cse146@kiot.ac.in,
⁵2k22cse147@kiot.ac.in

Abstract— The interview stage is essential for measuring both technical competence communication skills and problem-solving capabilities of applicants but many students and employment candidates are often unable to access to practical interview scenarios and organized feedback which is which is crucial for proper preparation in that regard this paper presents an ai powered job interview simulation system which puts forth an intelligent and an intelligent platform designed for interview practice and candidate evaluation by examining resumes uploaded as pdf format via optical character recognition ocr and natural language processing nlp to extract out key info like competencies credentials and experience based out of the present study we have developed a which presents a personalized set of interview questions is created for the candidate from the available question pool which are relevant with reference to the candidates profile also we have integrated biometric verification which is done in real time via facial recognition which we have put in via the local binary pattern histogram lbph algorithm to confirm user identity and to also prevent against the issue of some else taking the interview which is not the actual person we implemented the system using html and css for the front end and python with the flask framework for the back end which is also for the systems integration we also used opencv pypdf2 numpy and scikit-learn for image processing document parsing and data analysis also we present auto evaluation and interactive feedback to the candidates which is to help them to do better we did some tests which showed that the put forth system we have is very efficient secure and scalable for use in todays interview preparation and candidate evaluation.

Index Terms— Artificial Intelligence (AI), Interview Simulation, Resume Analysis, Optical Character Recognition (OCR), Natural Language Processing (NLP), Facial Recognition, Local Binary Pattern Histogram (LBPH), Candidate Assessment, Adaptive Question Generation, Flask Framework.

I. INTRODUCTION

In today's competitive job market, interviews are a key part of evaluating a candidate's **technical knowledge, communication skills, confidence, and problem-solving ability**. However, many students and job seekers struggle due to **lack of practice, nervousness, and limited exposure to real interview environments**. To address this issue, this paper proposes an **AI-Powered Job Interview Simulation System** that helps candidates prepare for **HR and technical interviews** in a structured and personalized way. The system analyzes resumes uploaded in **PDF format** using **OCR and NLP** to extract important details such as **skills, qualifications, and experience**, and generates **role-specific interview questions**. It analyzes facial expressions, speech patterns, and responses to provide AI-driven scoring and personalized feedback. Developed using **HTML, CSS, Python, Flask, OpenCV, PyPDF2, NumPy, and Scikit-learn**, the proposed system offers an **intelligent, practical, and scalable solution** for modern interview preparation and candidate assessment.

II. SURVEY

[1] This research introduces a smart ai-enabled interview rehearsal and evaluation system engineered to refine evaluation session abilities preparation through structured practice and personalized assessment the system analyzes resumes using nlp techniques and conducts hr technical and aptitude-based interview rounds it further applies ai-driven semantic analysis and similarity scoring to evaluate reaction and generate performance inspection aimed at job seeker develop confidence and readiness to face interviews.

[2] This study delivers an intelligent ai-based interview practice tool that leverages cloud-based infrastructure for scalable performance and safe data management to enhance domain-specific interview readiness in addition to voice verbal answers and interview session rehearsals users can receive ai-driven assessments using nlp and ml approaches the system provides methodical feedback by comparing responses to predefined criteria the study also addresses technology problems optimization techniques and implementation difficulties for ai-based interview platforms.

[3] This paper describes the development and testing of an ai-driven virtual mock interview platform to help clients perform better during interviews the system which was created with the mern stack assesses responses for accuracy and relevance employing nlp voice recognition and semantic comparison methods validation results show significant improvements in interview skills and increased user confidence demonstrating the platforms effectiveness in preparing candidates for real-world interviews.

[4] An ai-powered mock interview system that improves interview practice with realistic virtual interactions and personalized feedback is presented in this study while image algorithmic procedures examine non-verbal indicators and facial cues the system employs automated content evaluation to assess verbal responses grounded in coherence relevance together merging sentiment and voice analysis is used to evaluate articulation intonation and spoken data pitch allowing for a thorough multi-modal assessment of candidate performance and enhancing overall interview preparedness.

[5] In order to improve early-stage recruiting decisions by extracting role-specific and nuanced candidate information, this research suggests using massive language models as virtual interviewers. By using a rubric-based examination to update ideas about applicants' latent abilities, the system assesses candidates beyond the conventional resume screening process. The potential of LLM-driven systems for scalable and economical candidate evaluation is highlighted by experimental results on simulated interviews, which show effective convergence towards applicant skill levels.

[6] In order to enhance corporate interview readiness, this work presents a polyglot artificial intelligence (AI) interview training system that makes use of customized and ethnically sensitive simulations. In order to create realistic interview environments and enable real-time conversational assessments, the system matches interview scenarios with user resumes and job criteria using massive language models with retrieval-augmented generation. Included is voice synthesis. Technologies for virtual avatars and speech recognition The trials' outcomes demonstrate improved conversational preparedness. outstanding client satisfaction and precise multilingual adherence to work standards.

[7] In order to improve hiring procedures by lessening the cognitive load on interviewers, this work proposes an AI-assisted interview support system. During interviews, the system offers real-time capabilities including skill-evidence mapping, intelligent note-taking, and adaptive question design. In addition to exposing usability issues and worries about trust and interaction complexity in human-AI collaboration, evaluation results show decreased documentation effort without raising stress.

[8] In order to enhance interview preparation this study proposes an ai-based interview platform that simulates real-world interview scenarios using an android application using generative intelligent systems and language processing techniques the system analyzes written and spoken responses to assess technical mastery accuracy and expressive abilities it offers a scalable and a versatile platform for effective interview coaching that uses integrated learning modules to develop both technical expertise and soft skills while offering immediate personalized feedback.

[9] In order to improve interview readiness through customized and interactive simulations, this study introduces a generative AI-based mock interview platform. The system conducts resume-based, role-specific interviews in real time by combining massive language models with natural language processing, computer vision, and speech recognition. It provides AI-driven feedback to enhance performance and close the gap between practice and actual interview situations by assessing user responses based on communication skills, grammar, and confidence.

[10] This study offers an AI-based simulated interview system to enhance candidates' social and communication skills under realistic interview conditions. The system uses virtual recruiters and signal processing techniques to analyze behavior, emotions, and performance in real time. Users can track their progress and improve their interview readiness with tools like voice analysis, behavioral feedback, and facial expression analysis. The proposed approach shows how social skills and interview performance can be enhanced by AI-powered platforms.

III. EXISTING SYSTEM

Current interview preparation approaches mainly rely on self-study question banks online tutorials aptitude platforms and manual mock interviews which often lack direct real-time communication consistent evaluation and tailored feedback over the past few years several ai-based interview systems have been introduced using natural language processing nlp speech analysis and facial expression recognition to simulate interviews and assess candidate performance some platforms can generate role-specific questions and provide automated evaluation based on answer accuracy grammar speech fluency or basic behavioral indicators however most existing systems focus only on limited aspects of interview assessment and do not offer a fully integrated solution that incorporates resume evaluation adaptive question generation behavioral monitoring and candidate-specific feedback in a single platform hence there is still a need for a more intelligent interactive and comprehensive interview simulation system for effective candidate preparation.

IV. CHALLENGES IN EXISTING SYSTEMS

Although existing interview preparation systems are useful, they still have several limitations that reduce their ability to provide a realistic interview experience. One of the main problems is the **lack of personalization**, as many platforms use **common or fixed interview questions** without considering the candidate's **resume, skills, educational background, or job role**. Another challenge is that answer evaluation is often based only on **keyword matching or simple text comparison**, which may not properly judge the **quality, meaning, or depth** of the candidate's response.

In addition, many systems do not fully evaluate **communication and behavioral aspects** such as **speech fluency, confidence, pauses, over-speaking, facial expressions, and nervousness**, which are very important in real interviews. Most existing platforms also do not provide a **complete end-to-end solution** that combines **resume analysis, personalized question generation, behavior monitoring, AI-based scoring, and improvement feedback** in one system. Technical issues such as **poor lighting, background noise, and reduced face or speech recognition accuracy** can also affect the performance of these systems. Therefore, there is a strong need for a more **intelligent, accurate, and user-friendly AI-based interview preparation system**.

V. METHODOLOGY

This is an interview preparation and assessment system that has been created to present a real life interactive and personal experience for candidates throughout the workflow begins with user registration and login after wherein the job seeker chooses identifies the intended job role and interview type mode once that is done the candidate uploads a resume in pdf format we have used pdf parsing ocr and nlp in to analyze the resume which in turn we use to put together a in-depth profile of the candidates expertise and qualifications projects and relevant experience through the processed data the platform puts out custom and occupation-specific role-specific interview questions suited to the candidates profile during the interview session the verbal the interviewees responses are analyzed with the help of ai and nlp tools which we use to determine the relevance clarity and quality of the answers also within the system we look at webcam based analysis of the interviewees facial expressions and study elements of speech like fluency use of pauses speaking speed and over speaking after we put all that together the system puts out a total performance score and we also give out very personal feedback which notes what did great and what needs work also at the end we save off the results of each session which allows applicants to assess how they did along with how they have improved on over time thus we have put forth a smart practical and easy for the user approach to interview prep and also to how we evaluate candidates.

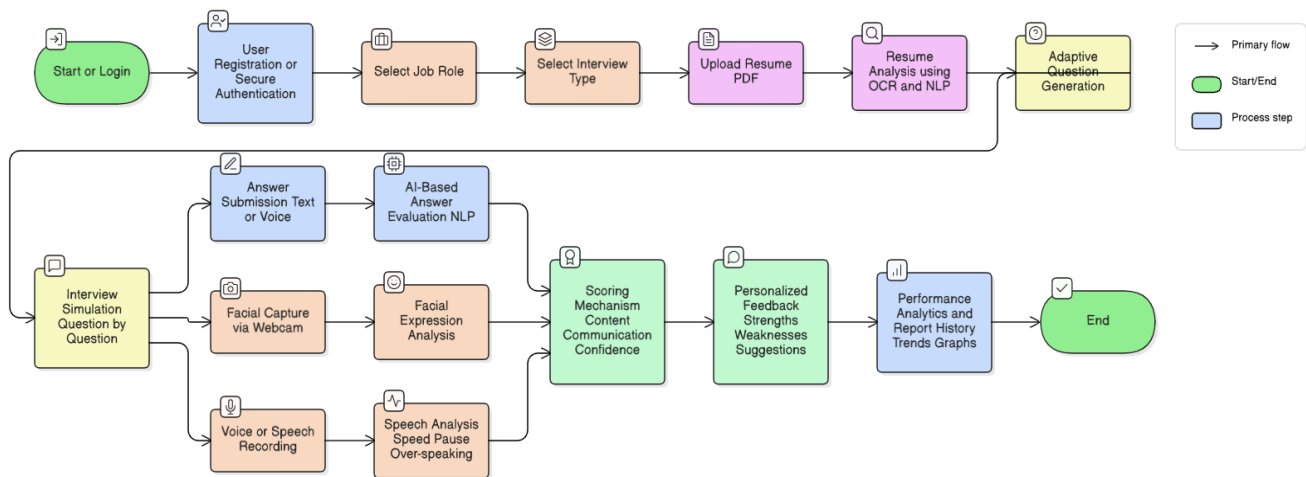
VI. PROPOSED SYSTEM

The proposed system is an **AI-powered job interview simulation platform** designed to help students and job seekers improve their interview skills through realistic, interactive sessions. Users register and log in, select a job role and interview type, and upload a PDF resume. The system analyzes the resume using **PDF parsing, OCR, and NLP** to extract skills, education, projects, and certifications, and generates **profile-based, role-specific interview questions**.

During the interview, responses in text or voice are evaluated for relevance, clarity, and quality using AI techniques. **Facial expressions** and **speech patterns** are also analyzed to assess confidence, communication, and behavioral cues. A **scoring mechanism** combines these parameters, and personalized feedback highlights strengths and areas for improvement.

The system stores results for progress tracking, while an **admin module** manages job roles, question banks, and difficulty levels. Overall, the platform provides a **comprehensive, intelligent, and scalable solution** for modern interview preparation, combining resume analysis, adaptive questioning, AI evaluation, and performance feedback.

VII. FLOW DIAGRAM OF PROPOSED SYSTEM



VIII. EXPECTED OUTCOMES

The goal of the proposed smart ai-integrated this interview platform intends to give students together with job applicants an automated and interactive system for refining job interview techniques it is anticipated to replicate real-world interview simulation scenarios lessen anxiety and improve poise the system offers distinctive role-based practice interviews harnesses ai to evaluate responses and examines emotional expressions and communication patterns to evaluate behavioral factors and interpersonal skills personalized feedback identifies strengths weaknesses and areas for improvement promoting progressive learning by sustaining interview analytics of past performance metrics overall it is anticipated that the system will improve technical preparedness verbal and interaction skills self-confidence and interview outcomes while allowing candidates to follow their progress over time over time.

IX. CONCLUSION

The suggested ai-powered job interview simulation system combines speech analysis resume analysis adaptive question generation ai-based answer evaluation and facial expression detection to offer a clever and efficient platform for interview preparation through practical interview practice and tailored feedback the system assists candidates in enhancing their technical expertise communication abilities and self-assurance all things considered it provides a workable and expandable way to improve interview preparedness and facilitate improved performance in actual job interviews

AI Interview Pro Features Interview Tips Success Stories Login [Register](#)

Master Your Interview Skills

Get AI-powered coaching, personalized feedback, and expert tips to transform your interview performance.

[Start Practicing →](#) [View Tips](#)

✔ Used by professionals at FAANG companies

AI-Powered Coaching

Personalized for your career goals

Create Your Account

Join our AI-powered interview simulator to boost your career

First Name **Last Name**

Thaniska G

Email Address

thaniska.sekar@gmail.com

Face Registration *

[Retake](#)

❗ Face registration is required for account creation

@ Username

thaniska.sekar@gmail.com

Password

.....

Password strength: Strong

Confirm Password

.....

✔ Passwords match!

I agree to the [Terms of Service](#) and [Privacy Policy](#)

[Create Account](#)



Interview Analysis



Eye Contact: 57%
Facial Expression: Confused
Speech Clarity: Moderate
Confidence Level: Moderate

Disable Webcam

Welcome to the AI Job Interview Simulator! Upload your resume (PDF or text) to start a mock interview with real-time video analysis.

Assistant

Please upload your resume (PDF or text) to begin the interview simulation! I'll analyze your responses and provide feedback on both content and delivery.

Type your answer here...

Send

Speak

Upload

You

My Java Full Stack project is Municipal Corporation Application. In this project, I developed a web-based system where users can register, log in, and submit complaints, while the admin can manage and update them. I used HTML and CSS for frontend, Java Servlets for backend, Oracle DB for database, and JDBC for connectivity. This project helped me understand CRUD operations, frontend-backend integration, and real-time application development.

Assistant

Please confirm to start the interview (e.g., 'start' or 'yes').

You

yes

Assistant

Explain the difference between `final`, `finally`, and `finalize` in Java.

You

In Java, `final` is a keyword used to restrict changes, `finally` is a block used in exception handling that always executes, and `finalize()` is a method called before garbage collection, though it is deprecated in modern Java.

#

💡 Recommendations

* **Deepen Understanding of Java Memory Management:** For Q1, research the reasons behind the deprecation of `finalize()` and explore modern Java patterns for resource management.

* **Refine HTML Semantic Element Usage:** For Q4, review best practices for using `<div>` in conjunction with semantic elements to ensure optimal SEO, accessibility, and maintainability.

* **Explore CSS Cascade:** Study the concepts of CSS specificity, inheritance, and the cascade to build more robust and predictable stylesheets.

#

Final Remarks

This was a strong performance overall. The candidate possesses a solid understanding of the fundamental technologies discussed and demonstrates the ability to apply this knowledge practically. With a little more depth in certain areas, particularly around the nuances of Java's garbage collection and the precise roles of HTML elements, the candidate would be even more impressive. We encourage you to continue honing your skills in these areas. We will be in touch regarding the next steps in the hiring process.

REFERENCES

- [1] Pushpa Chavan and Sandeep Jadhav, "A General Paper on AI Based Mock Interview System," 2026.
- [2] Sharayu Deote, Vaishnavi Pawar, Yeshaswini Pandilwar, Shruti Chandra and Gunashree Bawankule, "AI-PrepMate: AI-Assisted Mock Interview and Feedback System," 2026.
- [3] Dr. Vijayant Verma, Rana Padwar, Apurva Chandrakar, Khushi Jaiswal and Palak Mishra, "AI-Powered Mock Interview System for Automated Skill Assessment," 2025.
- [4] Sridevi R and Nithyabharathi S, "Virtual Interview Simulator: Leveraging AIML and Vision Technology," 2025.
- [5] Harry Stuart, Masahiro Kaneko and Timothy Baldwin, "Beyond the Resumé: A Rubric-Aware Automatic Interview System for Information Elicitation," 2026.
- [6] Truong Thanh Hung Nguyen, Tran Diem Quynh Nguyen, Hoang Loc Cao, Thi Cam Thanh Tran, Thi Cam Mai Truong and Hung Cao, "SimInterview: Transforming Business Education Through Large Language Model-Based Simulated Multilingual Interview Training System," 2026.
- [7] Zhengtao Xu, Nattapat Boonprakong, Casimiro Pio Carrino, Zimo Xia, Yu-An Chen, Yi-Chieh Lee, Zicheng Zhu and Rabih Zbib, "InterPilot: Exploring the Design Space of AI-Assisted Job Interview Support for HR Professionals," 2026.
- [8] Prof. Swapnali S. Bhokare, Dr. Anand A. Khatri, Mitali Vaidya, Dnyanal Pawar and Akshada Kolhe, "AI Interview Platform: Intelligent Android-Based System for Automated Interview Practice and Evaluation," 2025.
- [9] K. Divya Bhavani, G. H. S. V. K. Prasad, V. G. S. Sai Krishna, M. S. Koti Reddy, K. Shanmukh Vardhan and Md. Sadik, "Prep AI - Customized Mock Interview Platform Using Gen AI," 2026.
- [10] Prof. Sakharam Kolpe, Sarvesh Patil, Jay Deshmukh, Suraj Jeughale and Yash Misal, "AI Based Mock-Interview Behavioural Recognition Analyst," 2024.