IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940



International Journal of Advanced Research in Computer and Communication Engineering

Impact Factor 8.471 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 15, Issue 10, October 2026

DOI: 10.17148/IJARCCE.2026.1510108

AI Based Interview and Evaluation System

S Asif Hussain[1], Mizba[2], Mohammad Kouser [3], Mohammed Mehraj Fathima[4], Vijay Kumar R[5]

7^{th} Sem B.E.(CSE-AI), Ballari Institute of Technology and Management (BITM), Ballari, Karnataka-583104, India[1-5]

Abstract: In today's competitive job market, the interview plays an essential part in determining the candidate's career opportunities. Nevertheless, many candidates experience difficulty preparing for the interview since they do not have enough opportunities for training, are unable to assess their performance adequately, and receive insufficient personalized feedback. Besides, traditional interviewing can take too much time and be biased due to subjective opinion of the interviewer. That is why an innovative solution in the form of VoxEval AI, an AI-based interview evaluation system, which is aimed at assisting candidates in assessing their interview skills and receiving personalized feedback, is suggested. This paper provides information on the development of VoxEval AI – a platform which uses Artificial Intelligence, Machine Learning, Natural Language Processing, Speech Processing, and Computer Vision to analyze various aspects of interview. Candidates will be able to register on the platform, upload their resume, choose a certain position and take mock interviews with the help of artificial intelligence. Resumes will be analyzed for skills and qualifications, answers given by candidates during interview will be evaluated according to their relevancy and quality, and speaking characteristics like clarity, fluency, speaking pace, use of filler words and pauses will be analyzed. On the basis of the assessments, the system will create a performance score, interactive dashboards, and comprehensive reports that enable the candidates to recognize their strong points and weak points. Additionally, the system provides individual suggestions on how to improve the technical knowledge, communication skills, and interview preparation. Through this integration of capabilities in one platform, VoxEval AI strives to make the process of preparing for interviews easier, more structured, and less laborious. With this system, students and job seekers can easily practice their interviews and keep track of their development.

Keywords: VoxEval AI; interview evaluation via artificial intelligence; mock interviews; Artificial Intelligence; Machine Learning; Natural Language Processing; speech recognition; computer vision; resume analysis; automated assessment; personalized feedback.

I. INTRODUCTION

Interviews are very important nowadays in assessing candidates' knowledge, skills, communication abilities, and suitability for certain positions. At the same time, many students and future employees struggle with interview preparations due to lack of practice, improper guidelines, and lack of feedback. Such circumstances can negatively impact their confidence and make it impossible to realize what needs to be improved. This is why an intelligent and effective interview preparation system should be developed to enable candidates evaluate themselves and get ready for real interviews.

Current interview assessments are subjective and depend greatly on the interviewer's opinion. Moreover, candidates can have problems understanding the quality of their responses, the relevance of their resumes to the particular job and their own strong points and weaknesses regarding communication. Finally, aspects like voice clearness, fluency, speech patterns, and facial expression are not necessarily assessed. That is why an automated system is required.

In order to overcome these difficulties, VoxEval AI – an AI-Based Interview Evaluation System – is suggested which will help applicants via conducting AI-based mock interviews and evaluating performance. Artificial Intelligence, Machine Learning, Natural Language Processing, Speech Processing, and Computer Vision are the technologies which will be used by the suggested solution to conduct evaluation of many dimensions of interview performance. Applicants will have access to the website of the proposed solution where they will be able to register, upload their resumes, choose the required job and conduct mock interviews based on their career preferences.

The suggested system will analyze resumes to find relevant skills and qualifications as well as to evaluate responses during interviews based on their relevance and quality. It will also assess such dimensions of the speech as clarity, fluency, speaking speed, filler words, pauses, and facial expressions. The results will be analyzed to calculate the scores, create interactive dashboards, and generate evaluation reports. Recommendations will be offered to the candidates to improve their knowledge and skills related to interviews.

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This is where VoxEval AI tries to integrate all the assessment tools into one single platform. Not only does it help make the process of preparing for interviews more organized and convenient but also it helps track one's progress throughout the practice sessions and review his/her previous results of evaluations. Using various AI-powered assessment techniques will help eliminate the need for human evaluation and give data-backed feedback. Hence, VoxEval AI could be used by people as an aid in preparing for interviews.

II. LITERATURE REVIEW

In recent times, the application of Artificial Intelligence (AI) to enhance the process of interviewing through automated assessment and feedback has been considered. Interviews usually rely on the judgment of the interviewer, leading to subjective evaluations. Many studies have focused on the AI-based mock interview system which relies on Machine Learning (ML), Natural Language Processing (NLP), Speech Processing, and Computer Vision to assess knowledge, communication ability, confidence, and overall interview performance of the candidates.

Various researches have examined deep learning methods for creating automated mock interview systems. The article Real Time Mock Interview using Deep Learning (2021), written by Joel Manuel C. J., Maria Sabi, and Gokul Baburaj, discusses the generation of interview questions based on resumes and the analysis of confidence, sentiment, emotion, language ability, and correctness of information provided. Likewise, Rubi Mandal et al. (2023) in their research titled AI-Based Mock Interview Evaluator: An Emotion and Confidence Classifier Model use CNN-based facial emotion recognition, speech processing, and natural language processing to evaluate candidate confidence and knowledge. However, such methods lack the capacity to analyze the full context of answers, measure confidence, and recognize emotions.

Another area recently researched is the importance of semantic analysis and generation of AI in automated interviews' assessment. Rai et al. (2024) created an automated assessor of the interview relying on DeepFace, Haar Cascade, and speech-to-text methods for assessing facial emotions and oral responses. At the same time, Uppalapati et al. (2025) concentrated on the application of generative language models, automatic speech recognition, speaker diarization, and question-answer separation concerning the assessment of interview responses. The listed examples illustrate how the use of NLP and current language models may be helpful in terms of the evaluation of the response's relevance and quality. Nevertheless, the effective automation of the process depends on the correct data inputs and contextual understanding of the situation.

Moreover, there have been some studies done in multimodal AI systems where speech and computer vision techniques have been used for evaluation of the candidates. For instance, Farhan Kabir et al. (2025) have developed a live interview system in multimodal AI which utilizes the integration of NLP and Computer Vision techniques for evaluation of the candidates. The role-based mock interview system, presented by G. A. V. Ramachandra Rao et al. (2026), analyzes the facial expressions of the candidate, speech recognition, questions related to the resume of the candidate, and personal feedback. These studies clearly show the importance of using different assessment tools for evaluating the performance of the candidate. Nevertheless, multimodal systems require more computing resources and face problems with audio/video quality.

Considering the results of the above-stated research, the proposed AI-Based Interview Evaluation System is intended to cover resume evaluation, question creation based on the specific position, answer evaluation, speech evaluation, and visual evaluation in relation to candidate's confidence level. The score, interactive dashboard, and feedback which will disclose strengths and weaknesses of the candidate will be provided by the proposed system. Considering the fact that the proposed system will use such technologies as Natural Language Processing, Machine Learning, Speech Processing, and Computer Vision, it can provide effective interview practice for candidates.

III. METHODOLOGY

Methodology of AI-Based Interview and Evaluation System is based on evaluation of interview performance of the candidate using AI, Machine Learning, NLP, Speech Processing and Computer Vision.

1.User Registration and Resume Uploading: The first stage includes user registration and logging into the system. Candidates will upload their resumes in the system and choose the job roles that they wish to apply for. Data regarding skills, education and experience of the candidate will be obtained from the resume.

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2. Job Role Analysis and Question Generation: On the basis of the job role chosen by the candidate, skills needed for that job role will be evaluated. Technical and HR questions will be generated accordingly for the candidates.

3. Web-based Interview System: The candidate is made to take part in a simulated interview through the web interface. Questions are asked and the candidate's answers are captured via audio using a microphone and video using a webcam.

4. Speech and Answers Analysis: Through speech recognition technology, the candidate's voice is converted to text format. Through NLP algorithms, the candidate's answers are analyzed with regard to their relevance, semantics, key phrases, and other criteria. Speech analysis also includes an analysis of speech fluency, rate, pauses, and fillers.

5. Facial Emotions and Confidence Analysis: Through computer vision algorithms, the facial expressions of the candidate in webcam snapshots are analyzed to identify the emotions, whether it is happiness, sadness, or neutrality. The features from speech and facial expression analysis are used as additional feedback on the presentation and communication abilities.

6. Multi-modal Evaluation and Scoring: The interview score depends on the resume relevancy, answer quality, speech, and facial expression analysis scores. Metrics and visual dashboards are used to represent the evaluation results.

7. Generation of Feedback and Performance Improvement: The feedback is delivered in the form of the report. It provides the candidate's strengths, weaknesses, and communication skills information. Previous interviews results are stored in the database to allow the candidate to monitor his or her progress.

8. System Development and Deployment: React.js, TypeScript, HTML, and CSS are used for frontend development, while the backend is implemented by using Python and FastAPI. SQLite database is used for storage, Sentence Transformers, spaCy/NLTK, and Whisper are used for evaluation and analysis of answers and speeches.

IV. RESULT AND DISCUSSION

The expected results of AI-Based Interview and Evaluation System show how the role of artificial intelligence can help people prepare for the interview and evaluate the performance of the interviewees. It is achieved by analyzing the candidate’s answers, speech, and facial expressions to evaluate their performance. The system uses natural language processing and machine learning to analyze the quality and relevance of the answers and help candidates know how they are performing.

As far as the communication skills are concerned, the system analyzes the speech pattern, including the speed, fluency, pauses, and filler words. Speech-to-text technology helps convert speech into text for evaluating the relevance of the answers.

Moreover, face emotion analysis is another crucial aspect of the proposed system. This system performs face expression analysis using computer vision technologies. The system identifies different types of facial expressions, including happiness, sadness, and neutral faces, which the candidate may show during the interview. Such information serves as an additional source of knowledge about the patterns of facial expressions and the presentation of the candidates. But this type of analysis alone does not help to detect the true emotions and confidence of the candidates.

Also, the use of resume analysis along with job-role-based question generation makes the process of interview practice more relevant. The system analyzes the resume of the candidates and selects different skills, education, and experience of the candidate and creates questions according to the chosen job role.

The other strengths of the proposed system include access, standardization, and efficiency. First, candidates can engage in mock interviews anytime they want without necessarily having an interviewer present during each session. The central database stores results of interviews and performance reports enabling candidates to track their improvement throughout different interview simulations. This system could help to save efforts involved in manual evaluation.

Nevertheless, some obstacles may appear when implementing this technology. First, the performance of the system in terms of speech recognition and facial expression recognition may be influenced by various factors such as background noise, lightening, camera quality, accent, and different individual behaviors. In addition, automatic evaluation of interview responses may sometimes not capture all the nuances of answers given. Finally, the system should have proper data protection policies regarding resumes, audio and video recordings, and candidates' personal data.

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However, the AI-Based Interview and Emotion Analyzer system has a lot of potential in helping students and those seeking jobs become better interviewees. As long as the system is tested well, evaluated using appropriate measures, and improved constantly, it will offer valuable feedback on how well one answers questions, communicates, and presents oneself during the mock interview. In all, it is an intelligent way to practice mock interviews.

V. CONCLUSION

AI-Based Interview Evaluation System is a novel technique of interview preparation which involves the use of Artificial Intelligence (AI), Machine Learning (ML), NLP, Speech processing, and Computer Vision. The system will analyze candidates' resume, their interview responses, their voice tone, and facial expressions in order to evaluate their performance, understand their strengths and weaknesses, and give recommendations on how to enhance communication and interviewing skills. The conclusion of the project is that combining several AI technologies in one web-based system enables candidates to conduct their mock interviews, get their performance evaluated and receive a detailed report. Moreover, candidates will be able to generate questions depending on the particular role they are applying for.

VI. FUTURE SCOPE

The Future research could involve the creation of better AI and ML algorithms that would improve the effectiveness of the interview assessment process. Algorithms based on deep learning, advanced natural language processing, and large language models could be used to assess interview answers more effectively, generate questions, and provide feedback on the basis of candidates' answers.

Additionally, there is much room for improvement of real-time speech and facial expressions analysis through better use of speech recognition and computer vision technologies. The system can be modified to enable multilingual assessments, different interview types, and jobs. Moreover, future improvements could be associated with the integration of generative AI, which would allow for giving interview coaching, finding appropriate learning materials, and suggesting means to enhance communication and technical skills.

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