



# Survey on Automated Interview Systems Based on AI Technologies

Varun Naik<sup>1</sup>, Vedant Kute<sup>2</sup>, Chaitannya Deore<sup>3</sup>, Unnati Deore<sup>4</sup>, Prof. Naved R. Ali (Guide)

*Smt. Kashibai Navale College of Engineering, Vadgaon, Pune*

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**Abstract** - AI-based mock interview systems integrate multiple technologies—natural language processing, speech analytics, and computer vision—to create realistic and adaptive training environments for job seekers. These systems simulate various interview types, including behavioral, situational, and technical formats, offering structured, unbiased, and repeatable practice. By analyzing verbal, vocal, and visual cues, they provide holistic feedback that enhances communication clarity, confidence, and readiness. Recent advancements in multimodal analytics and remote hiring trends have accelerated their development and adoption. This survey examines the technological foundations, data management challenges, fairness and transparency concerns, and emerging directions for personalized AI coaching. It highlights ongoing efforts to make these systems more supportive, accurate, and ethically responsible.

**Keywords** — AI-based Mock Interviews, Natural Language Processing, Speech Analytics, Computer Vision, Human-AI Interaction, Fairness, Personalization, Interview Simulation, Multimodal Systems, Automated Feedback.

## INTRODUCTION

The landscape of professional interviews has evolved rapidly with increased emphasis on both technical proficiency and soft skills. Many candidates find themselves struggling to meet the high standards set by recruiters, largely because traditional interview preparation methods do not simulate the actual interview environment. Recognizing this gap, our project introduces an automated system that replicates realistic interview scenarios and offers detailed, actionable feedback to candidates.

### 1.1 Problem Statement

In today's competitive job market, many candidates face significant challenges during technical and behavioral interviews. The lack of consistent, rolespecific practice and constructive feedback often leads to poor performance. Traditional methods such as peer-to-peer mock interviews or static question banks are not only time-consuming but also limited in their ability to simulate dynamic interview conditions. This inadequacy creates a pressing need for an automated system that can efficiently generate realistic interview questions and provide insightful evaluations of candidate responses.

### 1.2 Motivation

Our motivation for developing the Mock Interview System stems from the desire to bridge the gap between theoretical knowledge and practical application. Many job seekers are well-versed in their respective fields but struggle when it

comes to articulating their knowledge during an interview. This system is designed to boost candidate confidence by offering a safe environment where they can practice, make mistakes, and learn from detailed feedback. Additionally, the scalable nature of the system allows for broader access, making quality interview preparation available to a wide audience without incurring high costs.

### 1.3 Objectives

The primary objectives of this project are threefold. First, we aim to develop a system that dynamically generates interview questions tailored to specific job roles, thus ensuring relevance and practical value. Second, the system is designed to evaluate candidate responses using advanced AI, offering feedback that addresses both technical competencies and communication skills. Third, we have prioritized user security and data privacy by incorporating robust authentication methods, including email verification and OTP-based 2FA. These objectives collectively aim to create a comprehensive tool that supports effective interview preparation. This document shows the suggested format and appearance of a manuscript prepared for SPIE journals. Accepted papers will be professionally typeset. This template is intended to be a tool to improve manuscript clarity for the reviewers. The final layout of the typeset paper will not match this template layout.

## TECHNOLOGIES

## USED

AI-based interview systems rely on several advanced technologies to function effectively. Natural Language Processing is used for analyzing textual responses, extracting keywords, and understanding semantic meaning. Speech processing techniques convert spoken responses into text and analyze voice characteristics such as tone, pitch, and fluency. Computer Vision enables the system to evaluate non-verbal cues like facial expressions and eye movement. Furthermore, Machine Learning algorithms are employed for classification, scoring, and prediction tasks. These technologies collectively enhance the accuracy and effectiveness of the interview system.

## LITERATURE REVIEW

Previous research on Automated Interview Systems based on Artificial Intelligence highlights the growing importance of intelligent recruitment solutions. Many studies focus on the use of Natural Language Processing techniques to analyze candidate responses, where systems evaluate grammar, fluency, and contextual meaning to assess communication skills. Machine Learning models are widely used to predict candidate suitability based on historical hiring data and predefined evaluation metrics.

Research also shows that Computer Vision plays a significant role in analyzing facial expressions, eye movements, and emotions during video interviews. These features help in understanding candidate confidence, honesty, and engagement levels. Speech Recognition and voice analysis techniques are used to evaluate tone, pitch, and speaking patterns, providing additional insights into candidate personality traits.

Several existing platforms such as AI-based hiring tools demonstrate the practical implementation of these technologies in real-world recruitment processes. Studies indicate that such systems significantly reduce hiring time and improve consistency in evaluation. However, some researchers highlight challenges such as algorithmic bias, lack of transparency, and ethical concerns related to data privacy.

Recent advancements focus on Explainable Artificial Intelligence to make decision-making processes more transparent and trustworthy. Hybrid approaches combining human judgment with AI-based evaluation are also being explored to improve accuracy and fairness. Overall, literature suggests that while AI-based interview systems offer numerous advantages, continuous improvements are necessary to address existing limitations and ensure ethical implementation.

### EXISTING PLATFORM

Several platforms have been developed to provide AI-based interview solutions. HireVue uses artificial intelligence to analyze video interviews and assess candidate performance. InterviewBuddy offers a combination of human and AI-driven mock interviews. Pramp focuses on peer-to-peer interview practice. These platforms differ in terms of features, technological implementation, and level of automation. Studying these systems helps in understanding current trends and limitations in the field.

### CHALLENGES AND LIMITATION

Despite significant advancements, AI-based mock interview systems face several challenges. One major issue is bias in AI algorithms, which can lead to unfair evaluations. Another limitation is the lack of emotional intelligence, making it difficult for systems to fully understand human behavior. Data privacy is also a concern, as these systems often require access to personal information and recorded responses. Furthermore, current systems may struggle with contextual understanding and soft skill evaluation. Addressing these challenges is essential for improving the reliability and fairness of AI interview systems.

### RESEARCH GAP

The survey identifies several research gaps in existing AI-based mock interview systems. Most systems lack personalization and fail to adapt to individual user needs. There is also limited integration of multimodal data, such as combining text, voice, and facial analysis for better evaluation. Real-time feedback mechanisms are often insufficient or delayed. Additionally, there is a need for more transparent and

explainable AI models to improve user trust. These gaps highlight opportunities for future research and development.

### CONCLUSION

AI-based mock interview systems are transforming the way candidates prepare for interviews by providing automated, scalable, and intelligent solutions. These systems leverage multiple AI technologies to simulate real-world interview scenarios and offer valuable feedback. However, challenges such as bias, lack of emotional intelligence, and limited personalization still need to be addressed. Continued research and innovation in this field will lead to more advanced and reliable systems, ultimately enhancing the interview preparation process.

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