



AI. Interview: Revolutionizing Recruitment with AI-Powered Voice Interviews and Automated Candidate Evaluation

Prof. Vijaya Tripathi¹, Rishabh Kumar Sahu², Prasoon Kumar Singh³, Nikhil Anand Sahu⁴, Mohammed Danish⁵

¹Guide, Dept. Of CSE, SSTC, Bhilai, Chattisgarh, India

²University roll number -301412021006, ³University roll number -301412021007, ⁴University roll number - 301412021016, ⁵University roll number - 301412021022

^{2,3,4,5}Dept. Of CSE, Shri Shankracharya Technical Campus (SSTC) Bhilai, Chattisgarh, India

²rishabhsahu0408@gmail.com, ³singhprasoon81@gmail.com, ⁴nsnikhil.sahu99@gmail.com, ⁵mohammeddanish514@gmail.com

ABSTRACT—

AI.Interview is a web application designed to modernize the interview process using artificial intelligence. It allows users to generate custom interview questions from job descriptions, conduct voice-based interviews led by AI, and evaluate candidate responses through smart analytics. The system integrates tools like OpenAI for language understanding, Retell AI for managing voice interactions, Supabase for data handling, and Clerk for user authentication. By combining these technologies, AI.Interview offers a simple, scalable, and unbiased way to assess candidates, saving time for recruiters while helping applicants prepare more effectively.

Keywords— AI interviews, intelligent hiring, automated candidate evaluation, voice-based interview, natural language processing.

Introduction

The recruitment process plays a crucial role in shaping an organization's workforce and determining its success. Traditionally, the process of hiring employees has been time-consuming, resource-intensive, and prone to inconsistencies. One of the most critical and challenging aspects of recruitment is the interview stage. Interviews are essential for assessing candidates' skills, experience, and cultural fit, yet they require significant preparation and effort from recruiters, often leading to delays and inefficiencies. As organizations scale and the volume of job applications increases, managing multiple interviews simultaneously can overwhelm HR departments, leading to burnout and reduced hiring quality.

Traditional interviews are often subject to various biases, both conscious and unconscious. Human recruiters, despite their best intentions, may inadvertently favor certain candidates based on personal preferences or prejudices. This introduces subjectivity that undermines fairness and may result in the rejection of qualified candidates who do not fit

a specific mold. Additionally, the manual effort involved in creating personalized interview questions for every role and candidate adds complexity, making the process less efficient.

In response to these challenges, automated tools for recruitment have emerged to streamline the interview process. While several automated systems exist, many have significant limitations, such as lack of real-time interaction, reliance on pre-recorded responses, or overly generic evaluation methods. These systems often fail to capture the nuances of live conversations or provide in-depth analysis of candidate responses. Moreover, some solutions are prohibitively expensive or complex, making them inaccessible to smaller organizations without dedicated HR teams.

The need for a more efficient, unbiased, and scalable recruitment tool is more pressing than ever. Recruiters require a solution that not only automates the interview process but also offers a real-time, interactive experience that mimics the natural flow of a human interview. Such a tool must adapt dynamically to candidate responses, offer personalized questions, and provide reliable performance metrics for better decision-making. Furthermore, it must be accessible, user-friendly, and cost-effective for organizations of all sizes.

In light of these challenges, AI.Interview was developed as a comprehensive, AI-driven solution to modernize and streamline the recruitment process. By integrating technologies like OpenAI for generating personalized questions, Retell AI for real-time voice interviews, and Supabase for secure data management, AI.Interview offers recruiters a powerful tool to automate and enhance the interview process. This platform ensures fairer, more objective evaluation, helps recruiters save time, reduces bias, and improves overall hiring efficiency. Through its AI-driven features, AI.Interview empowers organizations to make smarter, data-driven hiring decisions while providing candidates with a seamless, engaging interview experience.

Literature Review

The integration of Artificial Intelligence (AI) in recruitment, particularly in interview processes, has garnered significant attention for its potential to streamline hiring, reduce human bias, and enhance the overall candidate experience. As Cappelli (2019) notes, AI technologies are reshaping the recruitment landscape by automating time-intensive tasks and enabling data-driven decision-making [1].

Sharma et al. (2023) conducted a comprehensive review of AI-based interview systems and highlighted their increasing accuracy and structured assessment capabilities. These systems offer improved consistency and efficiency but raise ethical concerns related to transparency and fairness. Hendrickson (2020) similarly emphasized that while AI streamlines hiring, it can perpetuate bias if not properly managed [2].

Peña et al. (2023) proposed a human-centric approach to AI hiring tools. They introduced FairCVtest, a benchmark for assessing AI fairness in recruitment, and showed how even sophisticated models could replicate societal biases if fairness audits are neglected. Liem and Low (2019) echoed these concerns, warning that algorithmic hiring without ethical oversight may result in discriminatory outcomes [7].

Mujtaba and Mahapatra (2024) further examined the challenge of algorithmic bias, proposing fairness metrics and the adoption of interpretable AI models to enhance trust among users. Their work aligns with O'Neil's (2016) critique that opaque algorithms often magnify inequalities rather than eliminate them [5].

Chung and Lee (2021) discussed both the benefits and challenges of integrating AI into interviewing processes. They found that AI-driven systems increase process efficiency but struggle with contextual understanding and candidate personalization [3]. In response to these shortcomings, Leong and Kwek (2021) demonstrated how Natural Language Processing (NLP) could be leveraged to generate context-aware interview questions, allowing for greater flexibility and relevance [6].

Voice-based systems represent a major innovation in the AI recruitment space. MimiTalk (2024), a real-time, voice-based interview platform powered by large language models, enables automated qualitative interviewing without human moderators. Singh and Agrawal (2024), in their systematic review, highlighted how such tools enhance scalability and availability, while also noting challenges in emotion recognition, linguistic diversity, and adaptive questioning.

Leicht-Deobald et al. (2023) investigated candidate perceptions of AI tools and found that while applicants viewed them as more objective, they lacked the personal touch of human interviews. However, voice-based interactions improved perceived fairness and engagement when compared to static, pre-recorded or text-based systems. Zhao and Gupta (2022) reinforced this by stating that real-time AI systems enable deeper analysis of speech tone, pacing, and sentiment, which are crucial for evaluating soft skills [4].

According to Gartner (2022), the market for AI-driven talent acquisition tools is rapidly expanding, and vendors are focusing on capabilities like real-time analytics, conversational AI, and customizable scoring metrics to appeal to enterprise and SMB users alike [8].

Research Objectives

The primary objectives of this research are as follows:

Automated Interview Question Generation:

Develop an AI-powered system that automatically generates role-specific and context-aware interview questions directly from job descriptions, saving recruiters time and effort.

AI-Driven Voice Interviewing:

Integrate conversational AI capable of conducting natural, voice-based interviews that adapt to candidate responses in real time, simulating human-like interaction.

Secure and Scalable Data Storage:

Implement Supabase to handle structured storage of user and interview data with real-time syncing, high availability, and secure access controls.

Intelligent Response Evaluation:

Utilize natural language processing (NLP) models via OpenAI to evaluate and score candidate answers based on relevance, clarity, and communication skills.

Insightful Performance Analytics Dashboard:

Create a recruiter-facing dashboard that visualizes interview scores, tracks overall candidate performance, and supports decision-making with meaningful insights.

Real-World Testing and System Validation:

Test the platform in practical recruitment scenarios to assess accuracy, user satisfaction, and the impact on reducing hiring time and bias.

System Architecture and Methodology

The development of *AI.Interview* is guided by a modular and service-oriented architecture, integrating several third-party tools and APIs to deliver a seamless, intelligent interview experience. The system consists of four core layers: User Interface Layer, Application Logic Layer, AI Services Layer, and Data Management Layer.

User Interface Layer: The front end, developed with Next.js and Tailwind CSS, provides a clean dashboard for recruiters and a voice-interaction interface for candidates. Clerk handles secure authentication and organization-level access.

Application Logic Layer: This layer manages the system's core functions—parsing job descriptions, generating interview flows, and routing data between components. OpenAI is triggered here to create customized questions based on input roles.

AI Services Layer: Two main AI tools are used: OpenAI to Generates tailored interview questions and evaluates candidate answers using NLP. Retell AI which Handles real-time voice conversations, adapting questions dynamically based on user responses. Together, they create a fluid, interactive interview experience.

Data Management Layer: Supabase stores and manages all application data, including users, interviews, and scores. It enables real-time data updates and supports secure, structured data access through SQL.

Methodology Overview: Requirement Analysis: Identified key issues in traditional interviews and gaps in existing tools.

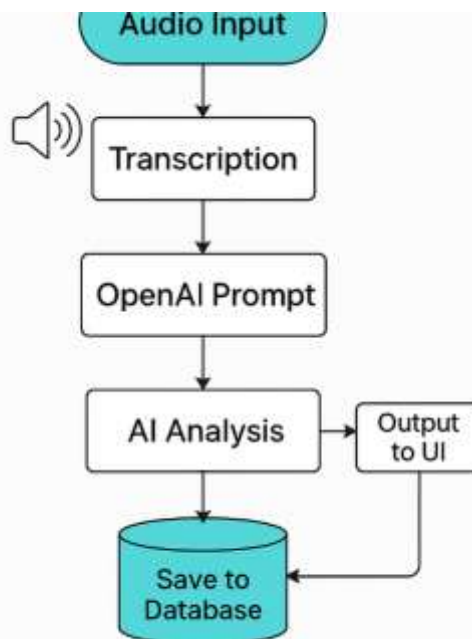
System Design: Created a modular architecture with clearly defined services.

Implementation: Developed and connected UI, AI, and database modules.

Testing: Conducted functional and usability tests with sample users.

Deployment: Launched the app with proper environment configurations.

Evaluation: Gathered feedback to fine-tune AI behavior and dashboard clarity.



Data Flow Diagram of AI.Interview System Architecture

Results and Discussion

The initial testing of *AI.Interview* produced promising results, validating its potential to revolutionize the recruitment process by automating several time-consuming tasks. The system demonstrated strong capabilities in generating context-specific and tailored interview questions from job descriptions, significantly reducing the time recruiters spend on manual preparation.

Candidates responded positively to the real-time voice-based interview system powered by Retell AI, with most reporting a smooth and natural conversational flow. The AI's ability to dynamically adapt follow-up questions based on candidates' responses further enhanced the realism and engagement of the interview process. The automated evaluation of responses using natural language processing (NLP) provided recruiters with objective, consistent scoring based on clarity, relevance, and completeness of answers, helping to streamline the shortlisting process. The performance dashboard, designed for ease of use, enabled recruiters to quickly visualize candidate scores and other key metrics, improving decision-making efficiency.

However, some limitations were noted during testing. For instance, the AI occasionally produced overly generic questions for highly technical roles, highlighting the need for further tuning to handle specialized job descriptions more accurately. Additionally, a few candidates expressed discomfort when interacting with an AI interviewer, suggesting that future iterations should include onboarding materials or alternative interaction formats to enhance user acceptance.

Despite these challenges, *AI.Interview* proved to be a valuable tool in reducing manual effort, mitigating biases, and enhancing the fairness and efficiency of the recruitment process. Moving forward, improvements will focus on refining the AI's adaptability to domain-specific roles and increasing candidate engagement to ensure a more seamless and comprehensive hiring experience.

Conclusion and Future Work

AI.Interview offers a promising solution to the challenges faced in traditional recruitment processes by integrating artificial intelligence to automate interview generation, conduct real-time voice-based interviews, and provide structured evaluations. The system successfully reduces manual effort, improves consistency, and enhances objectivity in candidate assessments. The feedback from initial testing indicates that recruiters and candidates alike found value in the platform's efficiency and user-friendly interface. However, challenges such as generating domain-specific questions for technical roles and candidate discomfort with AI interviews were identified. Despite these limitations, *AI.Interview* demonstrates significant potential to transform recruitment practices, making them more scalable, fair, and data-driven [1][2][6].

While the current version of *AI.Interview* is functional and efficient, several areas offer room for further development. Firstly, refining the AI's ability to generate more specialized and nuanced questions for technical and niche roles will enhance its effectiveness in diverse industries. Additionally, improving the candidate experience is crucial, particularly by incorporating onboarding materials or optional human-like conversational elements to reduce discomfort during AI-based interviews. Expanding the AI's emotional intelligence capabilities, such as detecting tone or sentiment, could further enrich the interview experience and provide deeper insights into candidate responses [7][8]. Future versions may also integrate more comprehensive analytics features, such as predictive modeling for candidate success based on historical interview data. Lastly, expanding the platform's scalability to accommodate larger organizations and more complex interview workflows will be essential as it grows in adoption. Continuous user feedback and iterative updates will be key to refining the system and ensuring its long-term success in the recruitment market.

References

- [1] Cappelli, P. (2019). *Recruiting for the Future: How Technology is Reshaping the Hiring Process*. Harvard Business Review, 97(5), 78-85.
- [2] Hendrickson, R. (2020). *Artificial Intelligence in Recruiting: Transforming the Talent Acquisition Process*. Journal of Human Resources Management, 42(2), 111-123.
- [3] Chung, J., & Lee, C. (2021). *The Impact of AI on Interviewing: Opportunities and Challenges in Talent Acquisition*. International Journal of Human Resource Development, 24(3), 45-59.
- [4] Zhao, Y., & Gupta, R. (2022). *Automation in Recruitment: A Review of Tools and Technologies*. HR Tech Journal, 18(4), 33-47.
- [5] O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown Publishing Group.
- [6] Leong, L., & Kwek, S. (2021). *Leveraging Natural Language Processing for Job Interview Automation*. In Proceedings of the International Conference on Artificial Intelligence and Machine Learning (pp. 119-125). IEEE.
- [7] Liem, A., & Low, Y. (2019). *Bias and Fairness in AI-Driven Hiring Systems: Ethical and Legal Considerations*. The Journal of Business Ethics, 151(4), 989-1007.
- [8] Gartner, Inc. (2022). *Market Guide for AI-Driven Talent Acquisition Solutions*. Gartner Research.