

The Application and Challenges of Artificial Intelligence in Recruitment Interviews

Guanlin Liu, Zhaoyong Ouyang, Lina Sha, Battsengel Kh*

Graduate University of Mongolia, Ulaanbaatar 15160, Mongolia

**Corresponding author:* Battsengel Kh, ecbise@yahoo.com

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Abstract: In the wake of rapid technological advancements, artificial intelligence (AI) has found widespread application across numerous sectors, including the recruitment industry. This study conducts a comprehensive examination of AI's current application in recruitment interviews, underscoring the necessity for proactive collaboration between AI and human experts in practice. This approach is aimed at harnessing AI's strengths in data processing and human's adeptness in emotional cognition, to jointly drive innovation and progression in recruitment interview techniques. Additionally, the study analyzes the myriad challenges presented by this integration and envisages potential future directions for development. The in-depth analyses and proposed directions for improvement presented in this study are intended to guide practitioners in the recruitment industry and serve as a research foundation and inspiration for future scholars in the fields of artificial intelligence technology and human resource management.

Keywords: Artificial intelligence; Recruitment interview; Current application; Technical challenges; Future development

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1. Introduction

The rise of artificial intelligence (AI) in recruitment interviews has emerged from the limitations inherent in traditional recruitment processes, including time-consuming CV screening, subjective biases, and a lack of objectivity in interview evaluations. Advances in natural language processing, machine learning, and other related technologies have revolutionized the recruitment process. AI systems enable automatic resume screening, swift identification of suitable candidates, and enhanced efficiency. These systems predict candidate performance through data analysis, offering decision support. Additionally, the objectivity and accuracy of interview evaluations are improved through the integration of facial recognition and voice analysis technologies.

Artificial intelligence in recruitment has evolved into a comprehensive system deeply integrated into various aspects of the process, encompassing resume screening, initial interviews, skills testing, and emotional recognition. AI-enabled video interview platforms analyze candidates' language, facial expressions, and body language in real time, offering a holistic assessment of their communication skills and emotional stability. This technology enhances recruitment efficiency and accuracy and provides candidates with fairer evaluation

opportunities. Despite facing challenges related to data privacy, algorithmic fairness, and legal ethics, the deployment of AI in recruitment is a significant trend within human resource management, pushing toward a more intelligent and precise recruitment process.

2. Applications of artificial intelligence in recruitment interviews

2.1. Intelligent resume screening

In the rapidly evolving domain of artificial intelligence, the enhancement of CV screening intelligence has become crucial, markedly improving the efficiency and quality of recruitment ^[1]. Utilizing Natural Language Processing (NLP) technology, AI systems are capable of swiftly and accurately extracting key information from resumes, such as educational background, work experience, and professional skills, to facilitate efficient screening. This proves especially significant in large-scale recruitment efforts, conserving time and resources for HR departments and diminishing the risk of overlooking qualified candidates.

Intelligent resume screening systems leverage machine learning algorithms to learn from historical recruitment data, thereby refining screening precision. These systems analyze the CV characteristics of successfully recruited employees, automatically identify promising candidates, and adapt screening criteria based on job requirements to realize more personalized and dynamic screening. However, challenges such as the need for continual technological updates and ensuring system fairness exist. To address these, developers and HR professionals must collaborate to guarantee that the system operates with both efficiency and fairness. An illustration of the intelligent resume screening process is depicted in **Figure 1**.

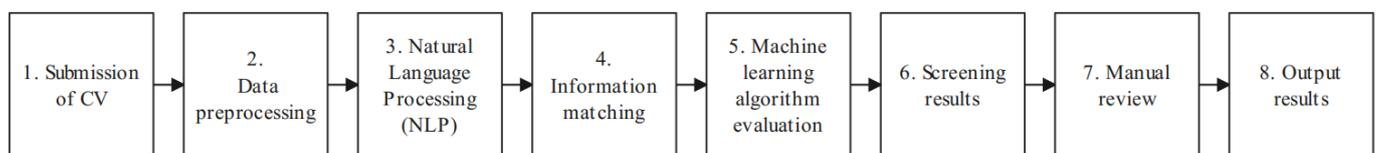


Figure 1. Intelligent CV screening flowchart

2.2. Online video interviews and artificial intelligence-assisted assessment

Online video interviews, spurred by trends in remote work and globalized recruitment, have eliminated geographical barriers, thereby enhancing flexibility and convenience for both companies and job seekers. The integration of artificial intelligence into this process enriches the technological aspects of interviews. It enables real-time analysis of candidates' facial expressions, voice tones, and non-verbal behaviors, facilitating the assessment of soft skills such as emotional states, sincerity, and communication abilities.

The addition of artificial intelligence in assessment not only refines the evaluation of candidates' hard skills but also provides interviewers with extensive data support ^[2]. It identifies subtle cues potentially overlooked in traditional interviews, rendering the evaluation process more comprehensive and objective. Moreover, the sentiment analysis feature of these systems quantifies candidates' emotional responses using algorithms, offering additional dimensions of information for human resource management.

Nonetheless, the application of this technology is not without challenges. These include ensuring the accuracy and fairness of algorithmic assessments, preventing algorithmic biases, and safeguarding candidate privacy. As a result, professionals involved in the design and application of these systems must adhere to ethical principles, ensuring the systems' transparency and interpretability. Such measures are crucial to utilize the technology both reasonably and effectively.

2.3. Candidate background checks and analysis

In complex business environments, comprehensive candidate background checks are pivotal for organizational security and maintaining team culture. AI plays a key role in this aspect, creating multi-dimensional candidate profiles. It does so by searching for candidates' education, career history, and social media activities in publicly available data sources, utilizing data mining and pattern recognition techniques. Moreover, AI systems analyze historical hiring data to identify characteristics indicative of successful job performance or long-term retention. This approach not only accelerates the background check process but also enhances predictive accuracy and identifies potential risk factors.

However, intelligent background checks also encounter challenges related to privacy and data protection ^[3]. Enterprises are required to ensure that their application of AI systems is both legal and ethical. Concurrently, they must establish a robust data security system to prevent information leakage and misuse.

Overall, the application of AI technology in recruitment interviews is rapidly evolving. This evolution encompasses intelligent resume screening, AI-assisted online video interviews, and thorough candidate background checks, thereby driving innovation in the recruitment industry. Nevertheless, the accompanying challenges need to be continually focused upon and addressed, to fully realize the potential of AI in the sphere of recruitment interviewing.

3. Addressing the challenges of AI recruitment interviews

3.1. Intelligent resume screening

The application of AI in recruitment interviews underscores the significance of privacy and data security. Inadequate management of candidate information collection and processing, including identity, educational background, work experience, and biometrics (such as voice and facial expressions), can result in information breaches. The recruitment process involves a substantial amount of data, necessitating efficient encryption and access control mechanisms to mitigate unauthorized access and misuse risks. With the proliferation of online recruitment processes like video interviews and assessments, cloud-based data storage and processing need stringent security measures against cyber threats.

Given the variation in personal privacy and data protection laws across different regions and countries, organizations utilizing AI recruitment tools globally must thoroughly understand and adhere to these regulations to ensure the legality of cross-border data transfers ^[4]. Consequently, when employing AI in recruitment interviews, organizations confront significant challenges regarding privacy and data security. They must adopt comprehensive measures across technical, managerial, and legal domains to safeguard data security and candidate privacy.

3.2. Algorithmic bias and decision impartiality

Algorithmic bias and fairness in AI recruitment interviews are of paramount concern. Training algorithms with historical data that may contain inherent biases can skew evaluations. For instance, data reflecting low success rates in certain groups might lead the system to unfavorably evaluate these groups. Additionally, algorithm designers might unintentionally embed their biases into the systems, compromising fairness. The complexity and lack of transparency in algorithms further complicate fairness verification.

Algorithmic bias is not just unfair to candidates; it can also tarnish a company's reputation and elevate legal risks. Ensuring recruitment fairness involves minimizing bias at every stage from algorithm design and training to testing and implementation. Enhancing decision transparency and interpretability, along with regular algorithm audits and bias detection, is vital for continuous improvement.

3.3. Optimizing human-computer interaction experience

In AI recruitment interviews, optimizing the human-computer interaction (HCI) experience is crucial for enhancing candidate satisfaction and interview outcomes [5]. The user-friendliness of the interaction interface significantly impacts the candidate experience. A streamlined, responsive design enhances the process's fluidity. The AI system's interaction logic should closely mimic a human interviewer, with intelligent Q&A through natural language processing to simulate realistic dialogues, boosting engagement and interactivity. For technical issues like network delays or equipment failures, contingency plans and technical support are essential to minimize assessment impacts.

Moreover, the system should be adaptable, modifying its interaction strategy based on candidate responses to offer a personalized experience. Enhancing HCI in AI recruitment interviews necessitates technological innovation and sensitivity to candidates' psychological experiences, improving overall effectiveness through human-centric design and services. **Table 1** succinctly outlines the main challenges encountered in AI recruitment interviews and their corresponding response strategies:

Table 1. Major challenges and coping strategies in AI recruitment interviews

Challenge category	Primary challenges	Response strategies
Privacy and data security issues	Risk of data leaks, unauthorized access, and misuse.	Implement robust data encryption, and access controls, comply with privacy laws, and establish comprehensive data security.
Algorithmic bias and decision fairness	Bias from historical data, designer preferences, algorithm opacity.	Reduce bias in the design, conduct regular algorithm audits, and enhance decision transparency and interpretability.
Human-computer interaction optimization	Unfriendly interfaces, issues like network delays, and equipment failures.	Design clear, responsive interfaces, provide emergency solutions and technical support, and personalize interaction strategies.

4. Prospects of AI recruitment

4.1. Future trends in AI recruitment techniques

Looking ahead, the application of AI in recruitment interviews is expected to grow. Key developments include continuous evolution in algorithms, such as advancements in deep learning, enabling more precise natural language processing, refined extraction of CV information, and intelligent matching of personal experiences and skills. Technological maturity will also introduce nuanced features like sentiment analysis to assess candidates' emotional responses and evaluate their adaptability and teamwork skills.

Convergence and innovation in technology will be a notable trend. Developments in biometrics, big data analytics, and cloud computing will broaden and sophisticate AI's role in recruitment. Biometrics will ensure the safety and authenticity of the recruitment process, while big data analytics will aid companies in identifying the characteristics of successful employees.

As AI becomes more prevalent, enhancing the candidate experience will become a focal point. AI systems will evolve to offer more personalized services, such as tailored advice, interview coaching, and career planning, thereby improving the candidate experience and helping companies attract top talent.

4.2. Strategies for improving fairness and transparency

Future advancements in AI recruitment technology must prioritize enhancing fairness and transparency. Regular algorithm audits will be essential to ensure AI systems are unbiased, examining potential preferences or

influences related to demographics like gender or age. Increased transparency will necessitate clear explanations from vendors about their algorithms, enabling organizations and candidates to understand their operation and decision-making processes. Establishing feedback mechanisms for continuous recruitment process optimization and developing industry standards and guidelines will also be crucial for ensuring compliance and consistency.

4.3. Multi-convergence: integrating human expertise with AI

As AI technology advances, the vital role of human expertise in recruitment should not be overlooked. A multi-convergent model, blending AI with human expertise, is the future. AI will handle large volumes of CVs and initial screenings, while human experts will apply interpersonal understanding and emotional judgment in interviews and decision-making.

To achieve this integration, recruitment systems need to facilitate human-AI collaboration with actionable interfaces and the ability to self-adjust based on human feedback. For instance, systems should incorporate feedback from human experts to refine recommendation algorithms. Organizational training and education will also be key in enhancing HR professionals' ability to work effectively with AI.

In conclusion, the future of AI in recruitment interviews is promising, with a focus on evolving algorithms, integrating and innovating technology, enhancing candidate experience, and improving fairness and transparency. The multi-convergent approach combining human and AI expertise will be pivotal. Through ongoing exploration and practice, AI's potential will be further harnessed to address challenges and steer recruitment toward greater scientific, efficient, and humane approaches.

Disclosure statement

The authors declare no conflict of interest.

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