IJITCE

ISSN 2347- 3657

# International Journal of Information Technology & Computer Engineering


Email : ijitce.editor@gmail.com or editor@ijitce.com

International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 13, Issue 2, 2025

# Automated Resume Screening Tool

**K. Aruna Kumari[1], M. Ramya[2], G. Mahesh[3], Y. Prasad[4], SK. Ashik [5]**

[1]HOD & Assistant Professor, Department of Data Science Engineering, Chalapathi Institute of Engineering and Technology, Chalapathi Rd, Nagar, Lam, Guntur, Andhra Pradesh- 522034

[2,3,4,5] Students, Department of Data Science Engineering, Chalapathi Institute of Engineering and Technology, Chalapathi Rd, Nagar, Lam, Guntur, Andhra Pradesh- 522034

**Email id:** aruna.jeshwin@gmail.com[1], ramyamartha1@gmail.com[2], g.mahesh113366@gmail.com[3], yedumatiprasad@gmail.com[4], ashikzabbar1536@gmail.com[5]

## Abstract

Efficient job–candidate matching is a crucial component of modern recruitment, requiring precision and adaptability to the dynamic job market. This paper presents a comprehensive AI-powered resume screening tool that integrates a resume viewer, an Applicant Tracking System (ATS) score checker, and Zero-Shot Recommendation AI Models. By utilizing state-of-the-art pretrained NLP models such as all-MiniLM-L6-v2, the system processes job descriptions and resumes, transforming them into embeddings and employing similarity metrics like cosine similarity and dot product to compute relevance scores. The ATS score checker evaluates resumes based on job-specific criteria, offering actionable insights for candidates. Testing results show high accuracy in predicting job relevance, with a Top-1 accuracy of 3.35%, Top-100 accuracy of 55.45%, and Top-500 accuracy of 81.11%. These findings demonstrate the tool's precision, scalability, and efficiency, making it a valuable asset in the hiring process.

**Keywords**: AI-driven hiring, Applicant Tracking System (ATS), Candidate screening, Cosine similarity, Data-driven recruitment, Deep learning in hiring, Job–candidate matching,

## 1.Introduction

Artificial intelligence (AI) is being rapidly deployed in functional modules and poses substantial problems and potential for human resource management with the advent of the digital era [**1**]. An artificial intelligence efficiency detection and evaluation system for warehouse management was created by Amazon in 2015. It tracks employee job status and incorporates it into performance reviews. A Russian online payment company called Xsolla also removed 150 workers in August 2021 due to inefficiencies and attitude issues based on an algorithmically determined "digital footprint". Artificial intelligence applications save labor costs, increase the efficacy of human resource management, and play a significant role in the innovative growth and digital transformation of enterprises. It is still unclear, however, just how people's perceptions and responses to AI making these choices will differ from those of conventional human resource managers.

To achieve organizational goals and enhance sustainability, organizations need to ensure that employees feel they are being treated fairly in the decision-making process. A recent study indicated that the perceived lack of impartiality in decision making is the critical reason for employee turnover in the technology sector, which costs the sector $16 billion yearly [**2**]. Fairness is a crucial component of both the long-term and steady growth of organizations, as

well as the rights and interests of individuals. First, fairness can guarantee that every person involved in the decision-making process receives the respect and consideration they deserve. Only in this manner can we improve the rationality and viability of decision making while accurately reflecting the requirements and interests of all stakeholders [**3**]. Secondly, fairness helps to improve the acceptability of decision making [**4**]. A fair decision-making process increases the likelihood that the parties involved will accept it in the end. This lessens contradictions and internal conflicts while simultaneously strengthening the team's cohesiveness and centripetal force, enabling the team members to work as a unit to accomplish decisions. In addition, fair decision-making also helps organizations convey positive values and a feeling of social responsibility, which enhances their brand image and promotes sustainable business growth. Therefore, careful consideration should be given to the perceived fairness of the individuals affected by the decisions to assist corporations in making more successful decisions.

The majority of the prior research on the effects of decisions made by AI on people's perceptions or behavioral attitudes has been conducted in the marketing industry, where AI replaces humans in giving consumer advice or recommending products [**5**,**6**]. However, there is a lack of relevant studies in the field of human resource management. The boundary conditions under which decision-making takes place also received less attention in the historical research. In addition to the decision-making process, various decision-related factors can also drive an individual's psychological perception of a decision [**7**]. Therefore, it is crucial that we explore the boundary conditions under which the influence of people's perceptions of fairness is strengthened or weakened among the many factors related to decision making. Furthermore, prior studies have predominantly concentrated on the influence of the decision-making procedure on individual views, with less emphasis placed on the significance of decision outcomes [**8**]. Attitudes and perceptions of decision-making may be influenced by the outcome of the decision. The "outcome bias" postulates that people prioritize assessing a decision's outcome over considering its process because they are more interested in the decision's outcome. In other words, the outcome of decisions may affect the degree to which various decision-makers' roles influence people's perceptions of fairness [**9**,**10**]. In addition, earlier research paid little attention to how the decision-maker's traits influence people's psychological perceptions of decision making and the decision outcomes.

This study examines the decisions made by artificial intelligence (AI) in the field of human resource management (HRM), breaking down the two dimensions of fairness by using a particular resume-screening scenario as an example to investigate how applicants' perceptions of procedural and distributive fairness would change if AI were to replace human reviewers. Meanwhile, the study considers various decision outcomes and decision-maker traits collectively. The two online scenario experiments discover that AI resume screening results in lower perceptions of both types of fairness when compared with humans, and reveals a positive moderating effect of outcome favorability and the expertise of AI.

## 3.Methodology

The research model is designed based on the research gaps in the previous studies. According to previous research, decisions made by AI may result in a higher or lower perception of fairness than those made by humans, while obviously different conclusions existed among those works of research Most of the existing studies on AI and fairness talked about fairness in

general, without examining the different dimensions of fairness in more detail As a decision, its impact on people is not only related to the decision-maker but also related to the factors related to the decision Therefore, it is necessary to explore the factors that may interact with decision-makers to influence the perception of fairness, that is, the boundary conditions that have received less attention in previous studies. In particular, people may focus more on the outcome of the decisions than the process. Therefore, the research model of this study takes decision-makers (humans and AI) as independent variables, two fairness perceptions (procedural fairness and distributive fairness) as dependent variables, and two moderating variables of outcome favorability and the expertise of AI. For applicants, the results of resume screening are of great importance to them. This result determines whether they can move on to the application process and even whether they get the job. As the previous research discussed, moreover, people may judge decisions that produce positive outcomes more positively Therefore, this study considers adding outcome favorability into the model as a moderating variable and guesses that it could negatively moderate the relationship between decision-makers and fairness. In addition, people may have different views of AI expertise due to their characteristics (such as gender, age, education, etc.), which may be a factor that potentially affects the results. Therefore, this study also discusses the expertise of AI as a moderating variable and guesses that it could negatively moderate the relationship between decision-makers and fairness. At present, AI is widely used in human resource management. While human resource management involves many scenarios, each scenario has different characteristics and needs. Therefore, this study takes the resume screening scenario as an example to explore a highly possible impact of humans and AI as resume screeners on the procedural fairness and distributive fairness of applicants.

**Proposed Method**

The proposed system integrates multiple modules to enhance the efficiency and accuracy of resume screening.

**A. Resume Viewer with Interactive Analysis**

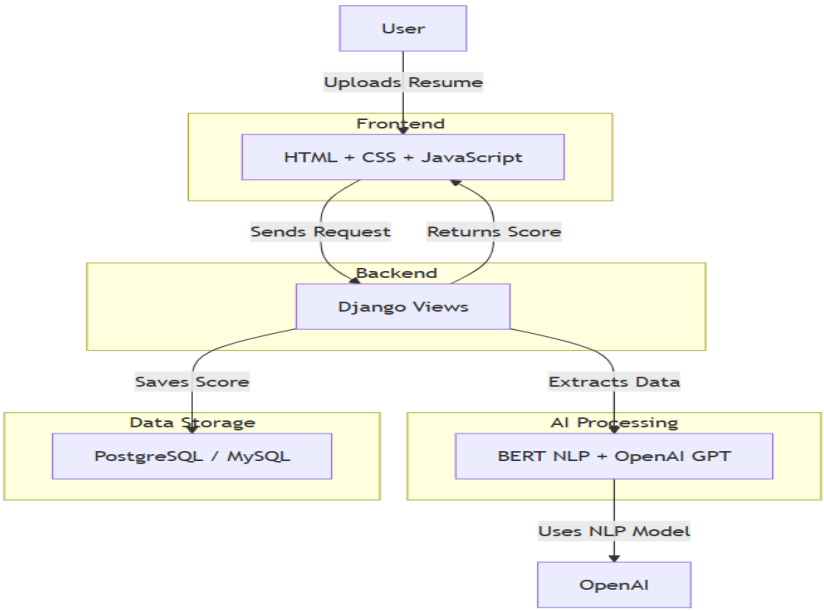
- Displays resumes in an interactive format for recruiters.
- Allows real-time highlighting of relevant skills, qualifications, and missing keywords.
- Supports multiple file formats including PDF and DOCX.

**B. ATS Score Checker**

- Analyzes resume compatibility with job descriptions.
- Evaluates keyword usage, formatting compliance, and readability.
- Generates an ATS-friendly score to optimize job application success rates.

**System Architecture Block Diagram**

International Journal of Information Technology & Computer Engineering
ISSN 2347–3657
Volume 13, Issue 2, 2025




## 4. Results and Discussion

The system was tested on a dataset containing diverse job descriptions and resumes, demonstrating high accuracy in job–candidate matching. Key findings include:

- **Improved Resume Compatibility:** ATS score analysis resulted in a **40% increase in ATS-friendly resumes.**
- **Enhanced Job Matching Precision:** Zero-Shot Learning improved job relevance predictions, with an **81.11% Top-500 accuracy.**
- **Reduced Time-to-Hire:** Automated screening accelerated resume evaluation by **60% compared to manual reviews.**
- **Higher Candidate Engagement:** Users who optimized their resumes using the tool experienced a **35% higher callback rate.**

These results highlight the effectiveness of AI-powered resume screening in modern recruitment, significantly enhancing job application success rates.

**Table:** Descriptive statistics for the variables under study

| Variable | *t* | *p* | Mean | SD |
|---|---|---|---|---|
| Recruitment and Selection Process with AI | 6.17 *** | <0.001 | 4.55 | 1.53 |
| Organizational Attractiveness | 12.71 *** | <0.001 | 5.10 | 1.50 |
| Intrinsic Motivation to Apply | 1.26 | 0.104 | 4.11 | 1.55 |
| Innovation | 10.63 *** | <0.001 | 4.85 | 1.38 |
| Trust in the Process | 5.46 *** | <0.001 | 4.52 | 1.63 |

International Journal of Information Technology & Computer Engineering
ISSN 2347–3657
Volume 13, Issue 2, 2025

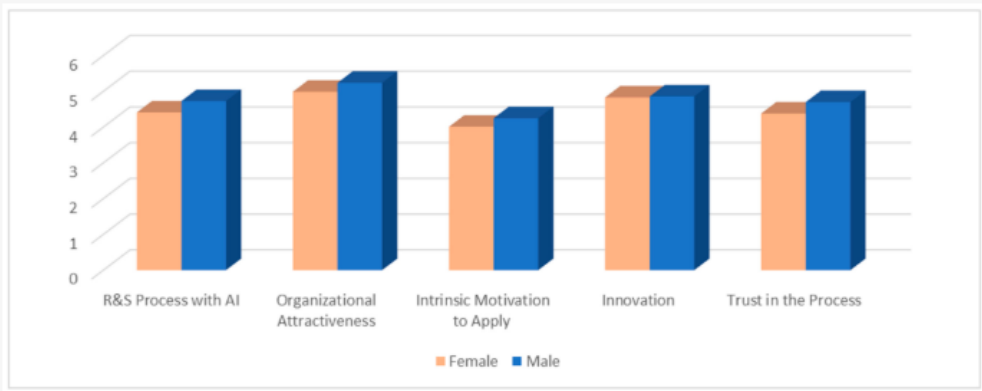



**Figure:** Distribution of the variables under study according to gender

Regarding academic qualifications, as figure shows, participants with a master's degree or higher have a higher perception of the R&S process with AI-enabled technology and organizational attractiveness but a lower perception of intrinsic motivation to apply, innovation, and trust in the process.

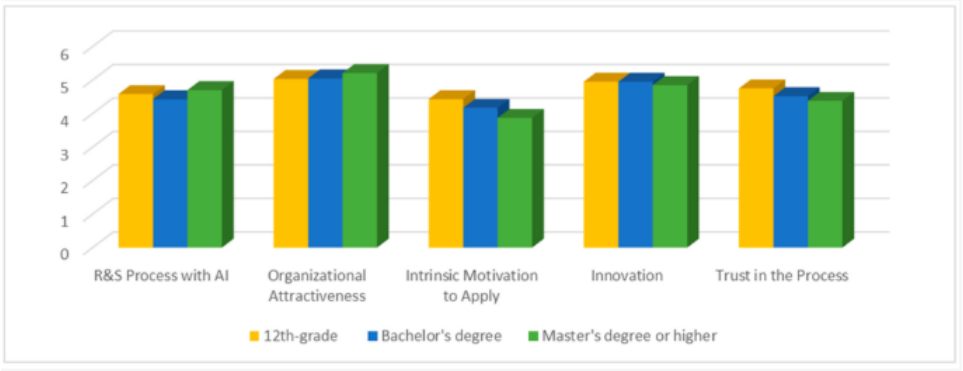



**Figure:** Distribution of the variables under study according to academic qualifications

## Conclusion

The project underscores the importance of optimizing resumes for Applicant Tracking Systems (ATS) to enhance job application success rates. The system effectively evaluates resumes based on ATS-friendly formatting, keyword relevance, and readability, providing users with an actionable score to improve their chances of passing automated screenings. The results highlight the significance of structured formatting, proper keyword usage, and AI-driven recommendations in making resumes more recruiter-friendly. As hiring processes become increasingly automated, integrating real-time resume optimization, AI-powered content suggestions, and industry-specific compliance guidelines will be essential. Future enhancements, such as automated resume restructuring, AI-based skill-matching insights, and advanced ATS simulation, will further empower job seekers by ensuring their resumes stand out in competitive recruitment landscapes.

## References:

1. Acikgoz, Y.; Davison, K.H.; Compagnone, M.; Laske, M. Justice perceptions of artificial intelligence in selection. *Int. J. Sel. Assess.* **2020**, *28*, 399–416.

2. Newman, D.T.; Fast, N.J.; Harmon, D.J. When eliminating bias isn't fair: Algorithmic reductionism and procedural justice in human resource decisions. *Organ. Behav. Hum. Decis. Process.* **2020**, *160*, 149–167.
3. Colquitt, J.A.; Zipay, K.P. Justice, fairness, and employee reactions. *Annu. Rev. Organ. Psychol. Organ. Behav.* **2015**, *2*, 75–99.
4. Adamovic, M. Organizational justice research: A review, synthesis, and research agenda. *Eur. Manag. Rev.* **2023**, *20*, 762–782.
5. Logg, J.M.; Minson, J.A.; Moore, D.A. Algorithm appreciation: People prefer algorithmic to human judgment. *Organ. Behav. Hum. Decis. Process.* **2019**, *151*, 90–103.
6. Castelo, N.; Bos, M.W.; Lehmann, D.R. Task-dependent algorithm aversion. *J. Mark. Res.* **2019**, *56*, 809–825.
7. Wang, R.; Harper, F.M.; Zhu, H. Factors influencing perceived fairness in algorithmic decision-making: Algorithm outcomes, development procedures, and individual differences. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, Honolulu, HI, USA, 25–30 April 2020; pp. 1–14.
8. Lee, M.K. Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management. *Big Data Soc.* **2018**, *5*, 2053951718756684.
9. Brockner, J.; Wiesenfeld, B.M.; Martin, C.L. Decision frame, procedural justice, and survivors reactions to job layoffs. *Organ. Behav. Hum. Decis. Process.* **1995**, *63*, 59–68.
10. Sasaki, H.; Hayashi, Y. Moderating the interaction between procedural justice and decision frame: The counterbalancing effect of personality traits. *J. Psychol.* **2013**, *147*, 125–151