International Journal of Science, Strategic Management and Technology
Volume **02** Issue **04** April-**2026** | ISSN: **3108-1762 (Online)** | Impact Factor: 3.8
An International, Peer-Reviewed, Open Access Scholarly Journal Indexed in recognized academic databases

AI-Powered Resume Screening and Ranking System

Jerin Samuvel[1] , **Mr. R. Vijay Anand**[2]

[1] Undergraduate Student [2] Associate Professor Department Of Computer Technology, Dr.N.G.P. Arts and Science College, Coimbatore, Tamil Nadu, India

https://doi.org/10.55041/ijsmt.v2i3.337

Cite this Article: Samuvel, J. (2026). AI-Powered Resume Screening and Ranking System. International Journal of Science, Strategic Management and Technology, *02*(04). https://doi.org/10.55041/ijsmt.v2i3.337

Abstract

Organizations often experience an influx of resumes when hiring for a given position. Reviewing hundreds or thousands of resumes to shortlist candidates is a labor-intensive and often tedious process for recruiters. Manual review can also slow down the hiring process and open up opportunities to introduce bias into the selection process. To help resolve these issues, this research presents an AI-Powered Resume Screening and Ranking System designed to streamline and make the recruitment process more efficient.

The proposed system employs a combination of Artificial Intelligence, Natural Language Processing (NLP), and Machine Learning techniques to analyze the resumes of potential candidates. By automatically extracting key information from each resume including relevant skills, education, work experience, and any additional information related to the candidate; the system compares all of those extracted details against the job description specified by the recruiter to provide a fare assessment of how each candidate fits the criteria for the job they applied to.

After a comparison of the job description to the resumes provided by the candidates, the system assigns each resume a score and ranks the candidates according to how well they match the requirements of the position. This process makes it easier for recruiters to identify the best candidates quickly when there are many resumes submitted. The time savings associated with using an AI-RSRS for screening candidates enables recruiters to minimize their time on manual screening, improves the accuracy of their evaluations, and provides for a more effective recruitment process overall.

Keywords

Artificial Intelligence, Resume Screening, Resume Ranking, Natural Language Processing, Machine Learning, Recruitment Automation, Job Matching.

INTRODUCTION

Currently, an organization receives flood of applications for positions they have posted electronically. Employers' recruitment or human resource departments must review hundreds, if not thousands, of resumes to determine which applicants would be acceptable for consideration. Manually reviewing this enormous volume of resumes is an extremely labor-intensive, time-consuming and error-prone undertaking. With so many applications received, recruiters may inadvertently miss out on qualified candidates because of how many applications they received, inconsistent evaluation criteria or the limited time allowed to review each resume. Because of these issues, the traditional, manual recruiting process is not efficient or effective for either employers or job applicants.

Due to the rise of digital recruiting and online job boards, the number of electronic resumes has soared. Manually managing this huge volume of information is nearly impossible. Therefore, there is an urgent need for an automated, intelligent system to assist recruiters in efficiently reviewing and filtering resumes.

Implementing automated methods for recruiting can significantly shorten the time needed to screen for candidates while improving the consistency and fairness of the overall employee selection process.

The recent developments in technologies such as Artificial Intelligence (AI), Machine Learning (ML), and Natural Language Processing (NLP) have created new opportunities to enhance and transform recruitment processes. With these new technologies, computers have the ability to process vast amounts of textual data and to analyze, recognize patterns in, and retrieve useful information from unstructured documents including resumes. An additional benefit of using NLP technology is the ability to convert unstructured text contained in resumes into a structured format for recognition of key details including skills, education, prior employment, and certifications. Once the resume has been converted into a structured format using NLP techniques, the resulting data can be analyzed using ML techniques to determine how well the candidates meet the requirements of the job.

The integration of AI and NLP into recruitment processes makes it possible for recruitment systems to automate the resume review process and produce a ranked list of candidates based on their qualifications. These intelligent recruitment systems not only help to lighten the load of recruiters, but also increase both the accuracy and the efficiency of candidate evaluation. Automated resume review systems provide the capacity to quickly identify and evaluate the most qualified candidates from a pool of thousands of applications, allowing organizations to make faster and better-informed hiring decisions.

This project aims to build an AI-based Resume Screening and Ranking System that would be capable of automatically processing and extracting relevant data from resumes and evaluating how well the candidates in that data match the qualifications required for the job. The objective of this research is to develop an AI-powered system that automatically analyzes resumes, matches them with job descriptions, and ranks candidates based on their suitability

LITERATURE REVIEW

Today, the recruitment process has changed dramatically due to digital advancements and growing use of AI technologies to manage human resources. Historically, screening resumes has taken considerable resources (time, effort) from recruiters. Studies on recruitment technologies have mostly focused on how to best match job candidates with available jobs using recommendation systems. For example, Malinowski and colleagues [1] proposed a two-dimension (bi-directional) recommendation approach that included both the needs of the employer and the preferences of the candidate; they created the groundwork for developing intelligent job matching systems in the future. Similarly, but from a different perspective, Paparrizos and colleagues [2] have studied machine learning based job recommendation systems to help increase efficiency in recruiting by analyzing candidate profiles against job descriptions.

As online recruitment sites and electronic resumes have become more common, recruitment agencies have had to handle a huge increase in the amount of incoming application materials. This has created a demand for automated systems that can process and evaluate large volumes of resumes quickly and accurately. Thomas and Prabhakar ([3]) proposed using machine-learning classification techniques to classify incoming resumes into appropriate job categories and skills/experience requirements. Their work demonstrated that using a machine learning model can significantly reduce the amount of time spent manually reviewing resumes by allowing for an easy way to identify potential candidates based on pre-defined criteria. Mishra and Singh ([4]) expanded on this idea by combining natural language processing (NLP) technologies with resume screening systems to automatically extract key pieces of information (i.e., skills, experience, education, awards) from unstructured format resumes.

Researchers have also begun investigating new ways to use advanced text processing and deep learning techniques to more effectively evaluate and rank candidates for employment. Li et al. [5] proposed a deep learning-based framework for matching job seekers with potential jobs based on a comparison of semantic meanings between the two groups of individuals, which provided support for the claim that deep learning could improve candidate rankings based on the contextual meaning of skills in relation to job expectations. Similarly, Rao and Reddy [6] developed an intelligent recruitment tool using a combination of artificial intelligence and text mining that automatically assessed and filtered resumes based on stated job requirements.

In addition to automating candidate screening, researchers have studied and enhanced the ranking and recommendation functions of candidate recruitment systems. Kaur and Kaur [7] created an artificial intelligence-based recruiting system capable of ranking candidates by assessing job-skilled relevance and how well the person being evaluated met the requirements of the job being evaluated. They created a machine learning algorithm to assign rank to a candidate based on their resume attributes and job parameters. Al-Otaibi and Al-Shammari [8] studied natural language processing-based systems that could automatically evaluate resumes for relevant job requirements to identify the competencies of an applicant and generate ranked lists of candidates for recruiters. These studies illustrate the impact that automatic ranking methodologies can have on improving decision making in recruiting and decreasing time to hire.

Another important component of resume screening systems is the application of Natural Language Processing (NLP) models for information extraction and semantic analysis. Research by Roth and others has demonstrated that NLP can effectively convert unstructured text into a structured format using various techniques (e.g., parsing). Fellow researchers including Mikolov also developed word embeddings that enable machines to understand word meanings by their relations, and they have effectively utilized these techniques for parsing resumes and matching skills. The BERT language model created by Devlin and his colleagues has increased the capabilities of NLP applications to accurately understand language; it is currently among the most frequently used models/techniques in modern resume assessment systems.

While these developments enhance the effectiveness of these technologies, challenges still exist for AI-based recruiting systems. Type of challenges within AI-based recruiting systems include algorithmic bias, incomplete resumes, and the inability to use automated assessment methods for evaluating candidates' soft skills. Goodfellows and his colleagues concluded that while deep-learning models may provide very good methods for analyzing a variety of data, there is still a need for well-designed and collected training data.

To summarize, current literature reveals how important AI, machine learning, & natural language processing technology will be for automating recruiting. While these advanced solutions can provide faster resume review, candidate selection, & placement based on job fit or relevancy, typically they're still too complex and resource-heavy; thus, creating a need for a single, easy-to-use, intelligent recruiting platform that provides automatic resume analysis and relevant information extraction as well as an efficient way to rank candidates based on their qualifications. The proposed AI-Powered Resume Screening and Ranking System will provide this type of solution by combining an NLP-based approach to resume parsing and a machine learning-based candidate evaluation and an automated mechanism for ranking within one scalable, straightforward recruitment framework.

METHODOLOGY

This AI-Powered Resume Screening and Ranking System uses an automated approach to evaluating resumes and selecting candidates. This system evaluates submitted resumes, extracts information, compares it to job requirements, and ranks candidates based on their evaluation. The methodology of this proposed system contains the following elements.

1. Data collection

The first method of the methodology is to collect resumes submitted by candidates for jobs. When candidates submit resumes through the recruitment system, they upload their resumes in a variety of formats including PDF or DOC. Resumes contain critical information about a candidate, such as the candidate's name, education, skills, work experience and certifications. The resumes collected and used in this evaluation will provide the first data input for the system..

2.Resume parsing

Resumes, once received, are processed by the application using Natural Language Processing (NLP). Resumes are generally stored as unstructured text so resume parsing is used to extract textual content from these documents and convert it into a structured form. This helps the application classify the major sections of resumes, such as Skills, Education, Experience, Projects, etc.

3. Future extraction

Once resumes have been parsed, the application carries out a feature extraction process to identify key attributes from each resume. Key attributes may include technical skills, Education, number of years of experience, certifications, and actual project work experience. By extracting these attributes, the application can represent the candidate profiles in a structured and analytically usable format.

4. Keyword Matching

The system compares extracted features from all resumes to the job description that was given to the recruiter during the job posting process. The job description will generally state all skills necessary to the job applicant; education; prior work experience; and duties associated with that position. Keyword matching techniques are used to determine how well the applicant's resume matches the requirements that were placed on the job description by the employer.

5. Resume Scoring

Once a candidate's resume has been matched with a job description, the system calculates a score for that individual based on the number of matches found between resumes and job descriptions with respect to these matching attributes. The score that an individual receives is dependent upon many factors; therefore, the more matching credentials (education, work experience) are reflected in your resume, they will positively impact your overall score.

6. Candidate Ranking

All candidates are then ranked in accordance with these scores at the end of the recruitment process from the highest based on their level of qualification to be hired to the lowest based on their level of qualification to be hired. Recruiters can use this ranking list to quickly locate qualified applicants for the next step in the hiring process.

WORKFLOW

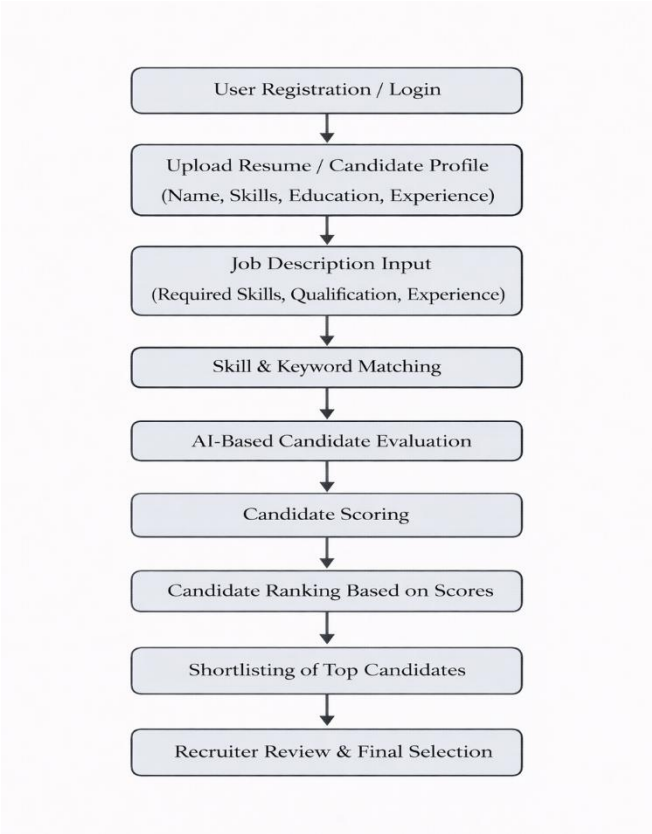

Figure1: Workflow of Proposed Methodology

The proposed AI Powered Resume Screening and Ranking System has a defined workflow for automating the recruitment process by turning unstructured resume information into structured evaluations of candidates' suitability and ranking of their qualifications, as demonstrated in Fig. 1. The first step in the workflow involves users registering themselves on the recruitment platform: the recruitment administrator or recruiter can access the system via a password-protected authentication. This ensures that only authorized users will manage job postings and candidates' records in the platform.

Once they have logged into the system, candidates can upload their resumes (or profiles) containing numerous pieces of information (i.e., name, skills/technical expertise, education, certificates, work history). Most candidates will upload their resumes using PDF and/or DOC formats. The uploaded resume will then be parsed to extract relevant information and data using Natural Language Processing (NLP), which turns the

unstructured resume into a structured data set that can be processed by the system.

After the previous steps are completed, recruiters form an input to the system based on a job description that includes all the important skills, qualifications, and experience levels that the position requires. The next step is called Skill/Keyword Matching. This means that when the system extracts information from resumes, it matches it to specific job requirements to determine how closely each applicant's profile meets the job's requirements.

As illustrated in Figure 1, after completion of the matching process, the system utilizes AI-Based Evaluation using machine learning algorithms to evaluate the candidate's qualifications as they relate to the position for which they applied. The resulting degree of match between each applicant's profile and the job's requirements will produce a candidate score, which indicates how relevant each of the applicants is to that job.

The scores produced serve as a basis for ordering candidates. Using the suitability score from the system, candidates will be ordered from highest to lowest suitability. This process allows the system to quickly find relevant candidates out of a large applicant pool. Once the appropriate candidates have been ordered, they will be shortlisted for additional consideration. This allows recruiters to concentrate their attention on the most ideal candidates.

After receiving the shortlist, the recruiter will examine the candidates and make their final determination based on both the recommendations of the system-generated score and any other measures that are part of the assessment process. By automating the resume screening, scoring, and ranking of candidates as outlined, the proposed system has improved the efficiency of the recruitment process by reducing the amount of time recruiters spend on these activities and enhancing the accuracy of their selection decisions.

RESULTS AND DISCUSSION

The AI-Powered Resume Screening and Ranking System is an automated tool that helps evaluate incoming resumes, and find candidates that fit a job. The system processes each resume as it gets uploaded from the job seeker, pulls out applicable information (e.g., skills, education, work experience) using Natural Language Processing techniques to read language contained within documents, and compares the extracted data against the requirements outlined in the job description supplied by the Employer. Each candidate's resume is given a score based on how well their skill sets match.

The implementation of this system support the fact that automated resume screening can save both time and effort from manually reviewing resumes. This system functions as designed by being able to analyze multiple resumes very quickly in a short amount of time, and identify candidates that have the closest match to the Employer's job specifications. By using keyword matching techniques and feature extractions methods, this system will correctly identify qualifications of applicants based off keywords contained within unstructured documents that have been submitted to the recruiter as a resume.

In this scoring process each user's resume will be assigned a numeric score based upon how relevant their skill sets, education, and experience are to the position being sought. Each of those numeric scores will then be used to rank that User against all other Users for consideration for the position that was being hired for. As such, the recruiter will have a ranked list of candidates from which to concentrate their efforts during the interview phase of hiring for the given position that was listed in their offer to the public.

CONCLUSION

The AI-Powered Resume Screening and Ranking System was created to develop an intelligent way to help organizations meet the increasing challenges they face when attempting to recruit and hire individuals for job openings. The typical agency receives many applications when it has one job opening, and the traditional method of having a human being scan each application to determine who to interview is time-consuming and inefficient. Recruiters using traditional methods may take weeks to review all applications, which may result in inconsistent candidate selection and delays in hiring due to human bias. The proposed automated solution allows organizations to analyze large volumes of resumes by using an automated resume evaluation process to identify applicants who best meet the criteria established in the job descriptions for each position. This will provide the applicants with a user-friendly, structured, and standardized way to evaluate themselves against the qualifications established in the job description prior to submitting their application so that

applicants who do not qualify do not waste their time on applications that will not be considered by the recruiter.

This proposed system is designed to drastically transform the way that recruitment works through the utilization of AI, ML, and NLP to address challenges identified in the recruitment workflow. Traditionally, recruitment has relied heavily on keyword searches and manually screened resumes; however, this system will provide an automated means of identifying candidates who are qualified based upon the quality of their resume. First, candidate resumes will be reviewed, and key data such as skills, education, work history, certifications, and other information relevant to the job description will be extracted. The candidate will then be evaluated against the job description for suitability. Finally, an automated scoring/ranking mechanism will be employed that allows each candidate to be evaluated/ranked based upon their ability to perform successfully in that particular job. Upon implementing structured resume parsing, similarity analysis, and automated scoring, the recruiter will quickly have access to the best-qualified candidates and may spend their resources on the candidates with the largest likelihood of success. Overall, implementing the proposed system will significantly enhance the efficiency and accuracy of the recruitment and selection process.

The A.I. Resume Screening and Ranking System is designed to provide meaningful data insights on candidate characteristics and recruitment trends. By streamlining the evaluation process, this automated evaluation system reduces the likelihood of missing qualified candidates, providing a more reliable and consistent evaluation method. As a modularly built recruitment solution, the A.I. Resume Screening and Ranking System offers future scalability and flexibility to add new features or enhancements as desired. Additionally, there are built-in security and protection measures to ensure all candidate information is protected and kept confidential during the recruitment process.

When viewed in a larger context, the A.I. Resume Screening and Ranking System demonstrates how AI technology is evolving traditional recruitment methods into a more efficient, evidence-based system. Automating the resume analysis process and ranking, organizations can save time in recruitment, improve the accuracy of their hiring, and have more effective processes for acquiring talent. Future enhancements to the system could include enhanced integration with additional AI models, real-time job portal connections, automated interview scheduling, and intelligent chatbots to assist candidates. When these enhancements have been made, the A.I. Resume Screening and Ranking System has the potential to become an all-inclusive automated recruitment system.

REFERENCES

1. S. Malinowski, J. Keim, O. Wendt, and T. Weitzel, “Matching people and jobs: A bilateral recommendation approach,” Proc. Hawaii Int. Conf. System Sciences, 2006.

2. J. Paparrizos, B. Cambazoglu, and A. Gionis, “Machine learned job recommendation,” Proc. ACM Conf. Recommender Systems, 2011.

3. S. G. Thomas and M. R. Prabhakar, “Automated resume classification using machine learning techniques,” International Journal of Computer Applications, vol. 178, no. 7, 2019.

4. A. Mishra and D. Singh, “Resume screening using natural language processing and machine learning,” International Journal of Advanced Computer Science and Applications, vol. 11, no. 4, 2020.

5. S. Li, J. Zhao, and Y. Zhang, “Deep learning based job-resume matching system,” IEEE Access, vol. 8, 2020.

6. K. R. Rao and P. V. Reddy, “An intelligent recruitment system using artificial intelligence and text mining,” International Journal of Engineering Research & Technology, 2020.

7. M. J. Kaur and P. Kaur, “AI-based recruitment system for resume filtering and candidate ranking,” Proc. Int. Conf. Artificial Intelligence and Data Engineering, 2021.
8. R. B. Al-Otaibi and M. Al-Shammari, “Automated resume screening system using natural language processing,” Journal of Information Technology and Software Engineering, 2021.