International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 10 Issue: 10 | Oct - 2026 SJIF Rating: 8.659 ISSN: 2582-3930

AI-Resume Analyzer and Job Matcher

Analyze Your Resume, Match Your Skills, Find Your Perfect Job

Mrs.Sudiksha Somanth Jadhav, Mrs. Asmita Mohan Phatangare,

Department of Master of Computer Application,
JCEI's Jaihind Institute of Management and Research, Vadgaon Sahani Email: sudikshajadhav104@gmail.com, asmitaphatagare41@gamil.com

---

Abstract - The AI Resume Analyzer and Job Matching System is an intelligent solution designed to streamline recruitment by using artificial intelligence and natural language processing (NLP) to extract, interpret, and evaluate information from resumes and job descriptions, enabling more accurate and efficient candidate–job matching.

Such an instrument extracts vital skills, including education, experience, technical, and other qualifications, and compares them with targeted vacancies, examining the degree of match between the applicants' credentials and the job requirements. t then scores and ranks the best positions that are suitable for the applicants based on their competencies and skill set. Thus, the tool is valuable for enhancing the screening process because it reduces the amount of work when manually reviewing resumes. As a result, it can save time for the recruiters by analyzing hundreds of documents and narrowing the options for the best candidates for the vacancies. analyzing hundreds of documents and narrowing the options for the best candidates for the vacancies. The applicants benefit from the tool in identifying the best opportunities and skills to improve their qualifications further. In general, the proposed solution is ideal for recruitment processes that intend to adopt a smart and organized manner in screening and providing recommendations for both the recruiters and the applicants. The system can be used to screen multiple resumes against a job description to identify the best candidates or the best opportunities for an applicant based on the experience and qualifications required

***Key Words*:** Artificial Intelligence (AI), Resume Analysis, Job Matching, Natural Language Processing (NLP), Machine Learning, Resume Screening, Semantic Similarity, Candidate Ranking, Skill Extraction, Job Recommendation System, Applicant Tracking System (ATS), Recruitment Automation, Text Mining, Deep Learning, and Career Recommendation.

1. INTRODUCTION

Finding the right job is one of the most challenging tasks for candidates and recruiters worldwide. At the same time, recruiters face the tedious task of screening through hundreds of documents to find the best match for open positions. In addition, recruiters must spend a lot of time going through a candidate's profile to determine whether they meet the required qualifications and fulfill the prerequisites for a specific vacancy.

The AI Resume Analyzer and Job Matching System is an innovative solution that utilizes advanced artificial intelligence and natural language processing algorithms to scan, process and analyze a candidate's resum. The system extracts the relevant information and matches it to the most relevant vacancies. The extracted information includes skills, knowledge, qualifications, and experience. Moreover, the system analyzes the information and determines the degree of relevance to the target positionThe results help the recruiter identify the best fit according to the given criteria. Moreover, the system can recommend relevant positions and score each vacancy based on the information found in the candidate's resume. The primary advantage of this technology is its ability to process and analyze data to help candidates find the most relevant job opportunities while eliminating the need to go through tedious piles of documents for recruiters.

1.1 Problem Statement

A lot of people are applying for jobs today without knowing if they're a fit. People don't know if their skills, previous work experience and education are what companies are looking for.

"Hiring managers see resumes all the time. To solve this problem we are building an AI-Based Resume Analyzer and Job Matching System. This AI-Based Resume Analyzer and Job Matching System uses Artificial Intelligence and Natural Language Processing to simplify the process. This AI-Based Resume Analyzer and Job Matching System pulls out details such as education background, technical skills, certifications, previous jobs and project experience.1.2 Objectives

1) To develop an automated system that analyzes the resume and extracts important information from it such as skills, education, experience, and certificates. To implement Natural Language Processing (NLP) for the analysis of the resume and job description to obtain the meaning of the text.
2) To find the necessary skills and qualifications needed for different job profiles. To find the compatibility between a candidate's resume and job opportunities offered to him/her based on his/her skills, qualifications and experience.

3) To rank the jobs based on the degree of compatibility of the candidate with those jobs.
4) To give valuable recommendations which will assist the candidate to improve his/her resume and career decisions.
5) To measure the efficiency of our proposed system in the job recommendation process.

1.3 Contributions

AI Based Resume Analysis: The proposed system uses artificial intelligence and natural language processing to detect and analyze important aspects of resumes such as skills, qualifications, education, experience, and certifications.

Smart Job Recommendations: The system compares the candidate's profile against the job requirements and recommends jobs according to skills, qualifications, and experience of the candidate.

Identification of Skill Gap: This system identifies gaps in skills of a candidate compared to the required skills of different jobs.

2. LITERATURE REVIEW

2.1 Review of Existing Literature

2.1 .1Resume Parsing and Information Extraction

The process of resume parsing is crucial for Automated Hiring since the data contained in the resumes is parsed and structured into the following categories: personal data, education, skills, work experience, certifications, and completed projects. The problem of information extraction from resumes arises due to the fact that various templates, fonts, layouts, and document formats are used in resumes.

2.1.2 Extraction of Information and Features

The process of text processing is one of the key elements for transformation of resumes and job offers into a form for further comparison. Such operations include removal of unnecessary characters, normalization of text, identification of words, identification of skills and qualifications.

2.1.3 Semantic Similarity and Job Matching

The job matching can be defined as the assessment of correspondence between the resume of a particular candidate and the certain job having regard to skills, education, work experience and qualifications of the applicant. The traditional process of recruitment implies the comparison of resumes and job descriptions based on keywords. However, in some cases it might happen that necessary skills or experience are not mentioned due to difference in terminology used by employers.

2.1.4 Machine Learning in Candidate Ranking

Candidate ranking can be improved with the help of machine learning. Depending on availability of data, classification

2.1.5 Artificial Intelligence for Recruitment and Automated Screening

Automated recruitment software is being used a lot to help with tasks like looking at job applicants suggesting people, for jobs and putting up job postings. This kind of software can take care of jobs and help people who are hiring by handling lots of applications.

2.2 Research Gap

As far as the analysis of literature is concerned, it can be seen that all the technologies associated with the document retrieval, semantic similarity, document understanding, and classification have developed very much. It appears difficult to combine these technologies into an efficient and understandable resume analyzer.

This research focuses on developing an AI-powered system that extracts information from resumes, identifies suitable job opportunities through semantic matching, and evaluates candidates based on the skills and qualifications required for each position.

The system would need to understand the content of resumes in a way. It would also have to compare job descriptions with candidate profiles. This would involve identifying skills, experience and qualifications from both sides. The goal is to find the fit between job needs and candidate profiles. The process would use natural language processing techniques. It would also benefit from an understanding of job market trends. A good system would reduce bias. Improve hiring efficiency. It could help recruiters save time and make decisions. The research could explore ways to measure candidate suitability. It might also examine how well the system performs across industries. The focus would be on accuracy and fairness, in matching. In addition to keywords and similarity score generated by AI, the system will analyze other aspects like skills, qualifications, work experience, etc., of the candidates in order to evaluate the level of their compliance with the requirements stated in the job posting.

The main purpose of the suggested system is to provide the explanation for the match score.

- Job–Resume Matching: Compares resumes with job descriptions using keyword analysis and semantic similarity to identify relevant candidates for specific roles.
- Skill-Gap Analysis: Identifies missing or underdeveloped skills by evaluating a candidate's existing abilities against the requirements of a target job.
- Candidate Ranking: Organizes applicants according to their compatibility scores, helping recruiters identify candidates whose qualifications best align with the job requirements.
- Job Recommendations: Suggests relevant job opportunities to candidates based on their skills, qualifications, experience, and career interests.

2.3 Proposed System Based on the Literature

1. Resume and Job Description Input

PDF/DOCS resume and requirements of the job

2. Text Processing and Preparation

Text cleaning, normalizing and identification of sections

3. Resume Data Extraction

Skills, education, experience and certifications

4. Matching and Scoring Engine

Matching by skills and weighted scoring

3. METHODOLOGY

The below methodology is written in authentic academic language for the report of a project on an AI-Based Resume Analyzer and Job Matching System. The format is created to help you describe the system without plagiarism while writing your report. You are also supposed to refer to all other research papers, datasets, or algorithms used in your project.

3.1. Introduction to the Methodology

In the proposed system, AI, NLP, and machine learning techniques can be used to analyze resumes and provide suitable job opportunities to the applicants. The proposed system will be extracting required information from the resumes and matching the candidate's credentials with the requirements of the job to produce a matching score. The overall objective is to reduce manual efforts in the screening process and help job seekers in finding suitable jobs.

3.2. Proposed System Architecture

Step 1: Data Collection

Candidate resumes and job descriptions
Step 2: Text Extraction
Extract text from PDF, DOCX, and other supported formats
Step 3: Text Preprocessing
Cleaning, normalization, tokenization, and keyword processing
Step 4: Information Extraction
Skills, education, work experience, certifications, and projects
Step 5: Resume–Job Matching
Skill matching, semantic similarity, and experience comparison
Step 6: Score Calculation and Ranking
Calculate compatibility scores and rank relevant job openings
Step 7: Results and Recommendations
Display matched jobs, missing skills, and improvement suggestions

3.3 Data Gathering

The first step is gathering resumes and job descriptions from appropriate sources. Resumes could be uploaded by candidates, whereas job descriptions can be acquired either from a job database, recruitment website, or a sample data set created manually.
The gathered data might include:
1) Candidate name and contact information, if necessary.
2) Education qualifications and certifications.
3) Skills.
4) Experience and previous positions held.
5) Internship and projects.
6) Job titles, skills required, qualifications, and experience required.
7) Personal information needs to be protected, and processing will be done only for the data necessary for the matching process.

4. RESULTS

The AI Resume Analyzer and Job Matching System provides an automated approach to evaluating resumes and identifying suitable job opportunities based on candidates' skills, qualifications, education, and experience. The system processes the information available in a resume and compares it with the requirements specified in job descriptions to determine the level of compatibility between a candidate and a particular role.

The system's expected results include the following:

1. Resume Analysis: The system extracts relevant information from uploaded resumes, including educational qualifications, technical skills, work experience, and other important details.

2. Skill Identification: It identifies the skills mentioned in a candidate's resume and compares them with the competencies required for a selected job position.

3. Job Matching: The system evaluates the relationship between candidate profiles and job descriptions to recommend positions that align with the candidate's qualifications and abilities.

4. Match Score Generation: A matching score or percentage can be displayed to indicate how closely a resume corresponds to a job description, depending on the algorithm implemented.

6. Reduced Manual Effort: Automating resume analysis and preliminary candidate matching can reduce repetitive screening tasks and make the recruitment process more organized.

7. Improved Candidate Recommendations: By considering relevant skills and qualifications, the system can help job seekers discover appropriate vacancies and assist recruiters in shortlisting potentially suitable applicants.

Overall Result

It can simplify resume evaluation, support faster candidate screening, and provide useful insights into the alignment between candidate profiles and job requirements. The usefulness of the results depends on the quality of the input documents, the matching technique, and the completeness of the job descriptions. Human review remains important to ensure that suitable candidates are not overlooked.

5. DISCUSSION

The AI Resume Analyzer and Job Matching System aims to improve the recruitment process by using artificial intelligence and Natural Language Processing (NLP) to analyze resumes and identify suitable job opportunities.

One of the main advantages of the proposed system is its ability to process resume information and compare it with job descriptions in a consistent manner. By identifying relevant skills and qualifications, the system can recommend job positions that are more closely related to a candidate's professional profile. A matching score can also help users understand the degree of compatibility between their resumes and specific job requirements. However, this score should be interpreted as an indication of similarity rather than a guarantee that a candidate is suitable for the position.

The system can also assist job seekers by identifying skills that are mentioned in job descriptions but are missing from their resumes. This information may help candidates improve their resumes, develop relevant competencies, and prepare for future employment opportunities. For recruiters, automated resume analysis can support the initial screening stage by organizing candidate information and highlighting profiles that may deserve further consideration.

Despite these benefits, several challenges must be considered. Resume formats differ significantly, and information extraction may become less accurate when documents contain complex layouts, tables, images, or inconsistent formatting. Similarly, candidates may describe the same skill using different words, which can affect matching results when the system relies heavily on keyword comparison. Using semantic analysis and contextual language models may help address these limitations by identifying relationships between terms with similar meaning

6. CONCLUSION AND FUTURE WORK

The AI Resume Analyzer and Job Matching System demonstrates the potential of artificial intelligence, Natural Language Processing (NLP), and machine learning to improve the efficiency of modern recruitment and job searching. Traditional resume screening methods often require considerable time and manual effort, making it difficult to evaluate large numbers of applications consistently. The proposed system addresses these challenges by extracting relevant information from resumes, identifying candidate skills and qualifications, and comparing them with job descriptions to recommend suitable employment opportunities.

Previous research supports the use of automated text analysis and similarity-based techniques for improving resume screening and candidate-job matching. For example, Vaishampayan et al. A study published in 2025 investigated how assessments of resume suitability produced by large language models compare with evaluations made by human reviewers. The research highlights potential differences between AI-generated recommendations and human judgments, emphasizing the need for human oversight when using AI tools to support recruitment decisions.. Similarly, research on semantic similarity-based job matching has demonstrated the value of understanding contextual relationships between resume content and job requirements rather than relying exclusively on exact keyword matches.

Based on these research directions, the proposed system can help job seekers identify relevant vacancies, understand missing skills, and improve their resumes according to specific job requirements. It can also assist recruiters by organizing candidate information and reducing the effort required for preliminary screening. Nevertheless, the reliability of the results depends on the quality of resume data, the effectiveness of the matching algorithm, and the accuracy of the extracted information. Therefore, the system should support rather than completely replace human judgment, particularly when making important employment decisions.

In conclusion, the AI Resume Analyzer and Job Matching System offers a practical approach to creating a more efficient, accessible, and data-driven recruitment process. Future improvements may include advanced semantic matching models, explainable AI techniques, bias detection mechanisms, multilingual resume processing, and personalized career recommendations. These enhancements could improve matching quality, transparency, and fairness, helping establish a stronger connection between candidates' capabilities and employers' requirements.

REFERENCES

1. S. Vaishampayan, H. Leary, Y. B. Alebachew, L. Hickman, B. Stevenor, W. Beck, and C. Brown, “Human and LLM-Based Resume Matching: An Observational Study,” in Findings of the Association for Computational Linguistics: NAACL 2025, pp. 4823–4838, 2025. [Online]. Available:
2. H. Iso, P. Pezeshkpour, N. Bhutani, and E. Hruschka, “Evaluating Bias in LLMs for Job-Resume Matching: Gender, Race, and Education,” in Proceedings of the 2025 Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics: Human Language Technologies (Industry Track), pp. 672–683, 2025. [Online]. Available:
3. “AI-driven semantic similarity-based job matching framework for recruitment systems,” Information Sciences, vol. 724, Art. no. 122728, 2026. [Online]. Available:
4. “Optimizing Job Matching Through Automated Resume Screening with NLP and Machine Learning,” in Proceedings of the 2024 IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies (INSPECT), 2024. [Online]. Available:
5. T. Kulkarni, Y. Pardeshi, Y. Shah, V. Sakat, and S. Bhirud, “App for Resume-Based Job Matching with Speech Interviews and Grammar Analysis: A Review,” arXiv preprint arXiv:2311.14729, 2023. [Online]. Available:
6. “Nexus: A Multi-Modal Framework for Semantic Job Matching and AI-Driven Resume Analysis,” Procedia Computer Science, vol. 283, pp. 922–935, 2026. [Online]. Available:
7. J. Devlin, M.-W. Chang, K. Lee, and K. Toutanova, “BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding,” in Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, pp. 4171–4186, 2019. [Online]. Available:
8. N. Reimers and I. Gurevych, “Sentence-BERT: Sentence Embeddings Using Siamese BERT-Networks,” in Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and the 9th International Joint Conference on Natural Language Processing, pp. 3982–3992, 2019. [Online]. Available:
9. G. Salton and C. Buckley, “Term-Weighting Approaches in Automatic Text Retrieval,” Information Processing & Management, vol. 24, no. 5, pp. 513–523, 1988. [Online]. Available:

10. C. D. Manning, P. Raghavan, and H. Schütze, Introduction to Information Retrieval. Cambridge, U.K.: Cambridge University Press, 2008. [Online]. Available:
11. B. Sarwar, G. Karypis, J. Konstan, and J. Riedl, "Item-Based Collaborative Filtering Recommendation Algorithms," in Proceedings of the 10th International Conference on World Wide Web, pp. 285–295, 2001. [Online]. Available:
12. F. Ricci, L. Rokach, and B. Shapira, Eds., Recommender Systems Handbook, 2nd ed. New York, NY, USA: Springer, 2015. [Online]. Available:
13. M. T. Ribeiro, S. Singh, and C. Guestrin, "'Why Should I Trust You?' Explaining the Predictions of Any Classifier," in Proceedings of the 22nd AMD SIGKDD International Conference on Knowledge Discovery and Data Mining, pp. 1135–1144, 2016. [Online]. Available:
14. J. Raghavan, S. Barocas, J. Kleinberg, and K. Levy, "Mitigating Bias in Algorithmic Employment Screening: Evaluating Claims and Practices," in Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, pp. 469–481, 2020. [Online]. Available:
15. J. Bogen and A. Rieke, Help Wanted: An Examination of Hiring Algorithms, Equity, and Bias. New York, NY, USA: Upturn, 2018. [Online]. Available: