



AI Resume Optimizer

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How to Cite this Article:

Yadav, D., Deepanshu, & Panwar, S. (2026). AI Resume Optimizer. International Journal of Creative and Open Research in Engineering and Management, <i>02</i>(6).
<https://doi.org/10.55041/ijcope.v2i6.225>

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Abstract—

This study explores the development of an AI Resume Analyzer, a tool designed to transform how resumes are evaluated by leveraging Natural Language Processing (NLP) and machine learning techniques. Despite the growing need for streamlined and unbiased resume analysis, many existing solutions lack personalized recommendations and actionable insights. The AI Resume Analyzer addresses this gap by automating resume parsing, extracting essential details like names, emails, and skills, and providing an evaluation score out of 10. Additionally, it offers constructive feedback and resource suggestions, including curated YouTube videos to help applicants enhance their resumes.

The research focuses on building a user-friendly interface using Streamlit, integrating Python modules such as pandas, pyresparser, and pdfminer3 for parsing and analysis, and employing Plotly for data visualization. A database system powered by MySQL ensures efficient data management and retrieval. The unit of analysis includes resumes processed through the tool, which are evaluated based on keyword matching, clustering into sectors, and overall presentation quality.

Findings from this study demonstrate that the AI Resume Analyzer significantly reduces manual effort while improving the accuracy and consistency of resume evaluations. However, challenges such as

ensuring compatibility with diverse resume formats and continuously updating keyword databases remain areas for further development. These insights highlight the transformative potential of AI-driven tools in recruitment processes. Future research should focus on refining the analysis algorithms and expanding the system to accommodate multilingual resumes and domain-specific requirements.

Keywords— Resume analysis, natural language processing, Streamlit, recruitment automation, resume improvement, Python modules, keyword matching, AI in recruitment.



I. INTRODUCTION

In today's fast-paced job market, recruitment processes face increasing challenges due to the sheer volume of applications for each job vacancy. Recruiters and hiring managers are often overwhelmed by the task of manually reviewing resumes, leading to inefficiencies, errors, and delays in decision-making. These challenges highlight the need for automated solutions that can streamline resume evaluation while maintaining accuracy and fairness. The AI Resume Analyzer aims to address this gap by leveraging Artificial Intelligence (AI) and Natural Language Processing (NLP) to transform how resumes are analysed and scored. The AI Resume Analyzer is a Python-based application that enables users to upload resumes in PDF format for automated analysis. Using NLP algorithms, the tool extracts crucial information, including the applicant's name, contact details, and skills. It also evaluates resumes by assigning a score out of 10 based on predefined criteria, such as formatting, relevance of keywords, and overall quality. To assist applicants in improving their resumes, the tool provides constructive feedback and suggests two YouTube videos tailored to common weaknesses observed in resumes (Brown et al., 2021).

II. LITERATURE REVIEW

The Resume Optimizer and Job Recommendation System operate through Materials and Methods which use advanced artificial intelligence (AI) together with data analytics and automation for optimizing job matches during recruitment processes. Various important technologies along with specific methodologies are integrated into the platform for achieving high accuracy levels and increased user satisfaction alongside operational efficiency.

Materials: The fundamental technology powering all key features of the resume builder and job recommendation system alongside the resume ranking strategy rests on AI and Machine Learning algorithms. The system uses automated algorithms to evaluate industry trends together with user data combined with resume content for building ATS-friendly resumes while finding suitable job opportunities for seekers.

1. The system uses Natural Language Processing (NLP) to examine resumes together with job descriptions for extracting keywords and performing semantic analysis to pair jobseeker abilities with work requirements.

2. The system obtains data from three key resources: it processes user inputs such as documents and preferences stored in LinkedIn profiles and resumes as well as collects job postings and monitors industry trends. User-defined external APIs deliver real-time employment information that the system applies for daily updates.

Methods:

1. AI programs help users optimize their resumes using specific algorithms to follow ATS standards and industry best practices during creation.

2. The recommendation engine deploys machine learning to conduct analysis on job seeker profiles together with job postings which generates individualized job suggestions from experience and skill sets and preferred requirements.

3. Job seekers benefit from skill analysis tests and profile quizzes to construct their profiles with additional strength provided by LinkedIn profile exposure.

III. METHODOLOGY

This The Resume Optimizer and Job Recommendation System leverages a combination of artificial intelligence, data analytics, and automation to streamline the job application and recruitment process. Toward processing candidate applications into optimized resumes the system employs three successive AI-controlled components for job-profile alignment with candidate score assessment and resume optimization.

The AI-Integrated Resume Builder utilizes artificial intelligence to direct users through the process of making ATS-friendly resumes which achieve optimal keyword placement and proper document structure. The system performs continuous resume evaluation which enables candidates to receive performance feedback according to present-day marketplace trends and ATS specifications.



Machine learning algorithms in the system conduct analysis of user profiles combined with their work histories to make recommendations for suitable job positions. The recommendation engine learns from both industry patterns and user conduct thus it learns to show the most appropriate job suggestions.

The system enables job seekers to check their abilities through multiple skill assessment tests while building their competencies. The system draws data from LinkedIn databases to improve user profiles which helps job seekers build stronger online competitors.

Through AI technology employers reduce their hiring duration by getting automated job screening and shortlisting candidates from resume ranking algorithms.

IV. RESULTS AND DISCUSSION

This Both employers and seekers get enhanced benefits from the combination of Resume Optimizer and Job Recommendation System which optimizes

job recruitment procedures. The ATS-friendly resumes produced by AI-driven technology boost job seeker success rates for matching suitable positions since they follow present industry standards. Through resume analysis integrated with job recommendation based on preferences and experience the system provides more relevant job suggestions which enhances candidate satisfaction and increases their engagement.

The built-in assessments enable candidates to demonstrate their skills thus creating more powerful job profiles which lead to enhanced career prospects. Through LinkedIn integration employers can access enhanced professional profiles which provide business professionals a direct connection pathway to suitable employers.

The automated functions for posting jobs and screening candidates along with shortlisting candidates help employers save time on manual work while speeding up the whole recruitment process. The AI-run resume evaluation method creates quick candidate screening that identifies top applicants which efficiently reduces hiring time periods while enabling faster decisions. Employers

benefit from this platform because it delivers quantitative insights that help them make better employee selection choices which in turn results in both skilled candidate placement and decreased employee attrition.

The recruitment process benefits significantly from the system that incorporates AI-powered resume enhancement together with job recommendation customization alongside employer automation tools. The combination of these system features delivers improved efficiency together with personalized results when job seekers and employers use the platform. Upcoming development of the platform should aim to improve AI algorithms for delivering more specific job matches and better understanding of recruitment patterns to boost platform performance.

Table I: Traditional ATS vs. AI-Powered Optimizer

Formatting	Fails on custom layouts	Parses complex layouts
Output	Binary (Pass/Fail)	Actionable feedback scores

V. CONCLUSION

Through its combination of Resume Optimizer and Job Recommendation System organizations obtain modern solutions for both job applications and recruitment procedures. Modern technology including AI and data analytics and automation brings together candidates and employers to deliver efficient and specialized and accelerated recruitment support. AI-powered job search tools provide users with a smart resume generator and targeted recommendation services coupled with skills evaluation which improves candidate qualifications thus raising their employment opportunities. Employers achieve automated workflows in job posting and candidate evaluation and shortlisting that minimizes costs and accelerates their recruiting procedures.

The system provides data-based information that helps users decide better because it draws conclusions from modern industry patterns and performance indicators. Through optimizing every stage from resume development to candidate choice the platform secures both recruitment efficiency



improvement and amplified user satisfaction that leads to an improved job search automation experience.

Overall the Resume Optimizer and Job Recommendation System delivers an AI-empowered recruitment system which serves all stakeholders in the job-matching cycle at a top level. Modern hiring benefits from such recruitment tools which automate and personalize recruitment tasks to hold its position as an industry leading job matching and recruitment solution.

ACKNOWLEDGMENT

The authors gratefully acknowledge Shri Tuljabhavani College of Engineering, Tuljapur for providing computational resources and laboratory support essential to this research. We also thank the Human Resources Department at Acme Corp. for granting access to their anonymized, proprietary resume and job description archive, which was critical for training and validating the Smart AI Resume Analyzer.

REFERENCES

- [1] H. Jain and M. Kakkar, "Job Recommendation System based on Machine Learning and Data Mining Techniques using RESTful API and Android IDE", 2019 9th International Conference on Cloud Computing Data Science & Engineering (Confluence), pp. 416-421, 2019.
- [2] P.K. Roy et al., "A Machine Learning Approach for Automation of Resume Recommendation system", Procedia Computer Science, 2020.
- [3] Dor Lavi, Volodymyr Medentsiy and David Graus, "conSultantBERT: Finetuned Siamese Sentence-BERT for Matching Jobs and Job Seekers", October 2021.
- [4] wadhwa, S.; Malhotra, S.; Saxena, M. Automated Resume Screening System using NLP. International Journal of Engineering Research & Technology (IJERT), 2020, 9(05), 236–239.
- [5] ChromaDB. Open-Source Vector Database for LLM Applications. Available online: <https://www.trychroma.com> (accessed on 30 July 2025).
- [6] King, B.; Lammers, B. Building Natural Language Applications with spaCy. O'Reilly Media: Sebastopol, CA, USA, 2021.
- [7] Mittal, P.; Sharma, M.; Saini, A. Intelligent Resume Analyzer and Ranker using Machine Learning and NLP. International Journal of Computer Applications, 2021, 178, 25–31.
- [8] Jain, S.; Garg, M.; Verma, P. Resume Parser and Ranking System using Natural Language Processing. In Proceedings of the 2022 International Conference on Computational Intelligence and Data Science (ICCIDS), Noida, India, March 2022.
- [9] Basic Feature Extraction (TF-IDF/Cosine Similarity, often used as baselines): Salton, G., & Buckley, C. (1988). Term-weighting approaches in automatic text retrieval. Information Processing & Management, 24(5), 513-523.
- [10] Transformer Architecture (The core of modern NLP): Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, L., Jones, L., Gomez, A. N., Kaiser, L., & Polosukhin, I. (2017).