Resume Analyzer with ATS Score Using AI And ML

Shreya Anil Kokade[1], Prof. Yuvraj Nikam[2]

Student[1], MIT ADT University, Pune, Maharashtra

Assistant Professor,[2] MIT ADT University, Pune, Maharashtra

Abstract—This paper presents a **Resume Analyzer with ATS Score**, a tool designed to evaluate resumes by calculating an ATS (Applicant Tracking System) compatibility score. The system uses Natural Language Processing (NLP) to extract key information from resumes, such as skills, experience, and qualifications. It then compares this extracted data with job descriptions to generate a match score, indicating the likelihood of a resume being shortlisted by ATS. The paper also discusses how machine learning algorithms enhance the accuracy and efficiency of the system. The application is intended to assist job applicants in optimizing their resumes for ATS, thus improving their chances of securing job interviews. The system was tested with real-world datasets, showing promising results in improving resume relevance for specific job positions.

Index Terms—Applicant Tracking System (ATS), Machine Learning, Natural Language Processing (NLP), Resume Analyzer.

I. INTRODUCTION

The **Resume Analyzer with ATS Score** is a system developed to enhance the job application process. With the growing use of Applicant Tracking Systems (ATS) by recruiters, it has become increasingly important for applicants to ensure their resumes are optimized to pass through these automated filters. This paper introduces an automated tool that leverages Natural Language Processing (NLP) and Machine Learning (ML) techniques to assess and improve resume compatibility with ATS requirements.

The tool analyzes resumes by extracting key information such as skills, experience, and qualifications, comparing them with job descriptions. It then calculates an ATS match score, which represents the likelihood of the resume passing ATS filters. This tool aims to help job applicants optimize their resumes, thereby increasing their chances of securing job interviews.

The system utilizes a combination of NLP and machine learning algorithms to ensure accurate data extraction and matching. Through testing and refinement, the system has shown its potential to provide job seekers with valuable insights into how well their resumes align with specific job descriptions.

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

For the research project titled *"Resume Analyzer with ATS Score"*, the manuscript was initially prepared in a two-column format as per IJIRT guidelines. The paper includes various figures and tables such as data flow diagrams, system architecture, and result comparisons. In instances where visual elements like diagrams did not fit well within the column layout, they were expanded across both columns to ensure visibility and clarity.

The manuscript was submitted electronically for peer review. Prior to submission, the content was thoroughly checked for grammar, formatting consistency, and adherence to IJIRT's formatting standards. Special care was taken to maintain proper alignment of extracted resume data, algorithmic flow, and the presentation of the ATS scoring methodology using NLP.

B. Final Stage

After receiving reviewer feedback, necessary revisions were made to improve clarity and accuracy. The final version of the paper incorporates enhancements such as:

Improved explanation of the ATS scoring algorithm.

Refined diagrams and visuals that illustrate the NLP pipeline and result flow.

Clarification of the proposed system's use of artificial intelligence and its potential applications in recruitment.
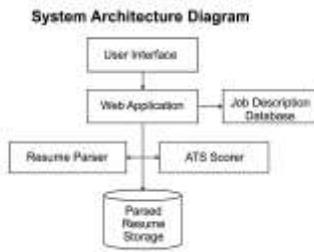
C. Figures

System Architecture Diagram

Fig 1.1

Data Flow Diagram

Fig 1.2

NLP Pipeline / ATS Scoring Workflow

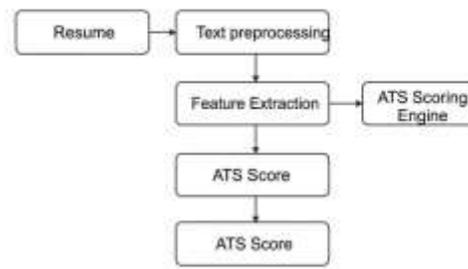**Fig 1.3**

III. MATH

The core computation of the Resume Analyzer system involves calculating the ATS (Applicant Tracking System) Score. This score determines how well a candidate's resume aligns with a specific job description based on skill matching.

Let:

- S_m: Number of skills matched between the resume and job description

- S_j: Total number of skills required in the job description

Then, the ATS Score is calculated as:

$$\text{ATS Score (\%)} = \left(\frac{S_m}{S_j} \right) \times 100$$

This equation gives a percentage-based score that can be used by recruiters to shortlist candidates efficiently. Higher scores indicate a better match between resume content and job requirements.

IV. HELPFUL HINTS

A. Figures

B. References

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C. AbbreviationsandAcronyms

NLP – Natural Language Processing

ATS – Applicant Tracking System

ML – Machine Learning   PDF – Portable Document Format

API – Application Programming Interface

CSV – Comma-Separated Values

V. Conclusion

The Resume Analyzer with ATS Score system represents a significant advancement in optimizing the job application process. By leveraging Natural Language Processing (NLP)

techniques, this tool efficiently analyzes resumes and compares them against job descriptions, providing valuable insights in the form of an ATS match score. This can greatly aid both job seekers and recruiters in streamlining the recruitment process.

This work highlights the importance of automated resume analysis, offering a solution that can potentially save time, reduce human bias, and improve the overall hiring process. Further improvements can include the incorporation of Machine Learning (ML) models to enhance the system's understanding of more nuanced and diverse resumes, as well as continuous updates to keep up with the evolving landscape of job market requirements.

Future work could explore integrating AI-driven feedback for job seekers, suggesting how they might improve their resumes based on the ATS score or even predicting job success based on resume features. By building on this foundation, the Resume Analyzer can be further expanded to create a more holistic tool for both job applicants and recruiters.

ACKNOWLEDGMENT

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