AI BASED RESUME SCANNER

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ABSTRACT

The recruitment process often involves manually screening large volumes of resumes, which is time-consuming, inconsistent, and prone to human bias. To address these challenges, this project proposes an "AI-Based Resume Scanner" capable of automatically extracting, analyzing, and ranking candidate profiles with improved accuracy and efficiency. The system uses Natural Language Processing (NLP) and Machine Learning techniques to parse resumes, identify key skills, classify experience levels, and match candidate qualifications with job requirements. It also evaluates resume quality using predefined metrics such as relevance, keyword density, and skill-job alignment. By automating the initial screening stage, the proposed system significantly reduces recruiter workload, enhances decision-making, and ensures a more objective and data-driven selection process. This AI-driven approach not only accelerates hiring but also improves the overall reliability of talent acquisition.

Keywords:
Artificial Intelligence; Resume Screening; Natural Language Processing; Machine Learning; Skill Extraction; Candidate Ranking; Automated Recruitment; Applicant Tracking System.

1. INTRODUCTION

The rapid growth of digital recruitment platforms and online job applications has transformed how organizations search for talent. However, with increasing applicant numbers, manually reviewing resumes has become a complex and time-consuming task. Recruiters often struggle to sort through large volumes of applications, leading to delays, inconsistency, and the possibility of overlooking qualified candidates. Traditional filtering methods also depend heavily on human judgment, which may introduce unintentional errors or bias into the selection process.With advancements in Artificial Intelligence (AI), automated resume screening has emerged as an effective solution to overcome these limitations. An AI-based resume scanner uses techniques such as Natural Language Processing (NLP), Machine Learning (ML), and text analytics to interpret resume content similarly to human evaluation but with greater speed, accuracy, and consistency. The system is capable of extracting key information, identifying relevant skills, matching candidate profiles with job requirements, and ranking applicants based on predefined criteria. By standardizing resume interpretation and eliminating repetitive manual tasks, the AI-based resume scanner supports faster hiring decisions and improves the overall efficiency of the recruitment workflow. AI-powered tools like resume scanners represent a significant step toward smarter, more reliable, and future-ready hiring practices.

1.1 Background

Recruiters today receive large numbers of resumes, making manual screening slow and inconsistent. With advancements in AI, automated resume scanners now help extract information, match skills to job roles, and speed up the hiring process. This technology improves accuracy, reduces workload, and supports fair candidate evaluation. AI-based resume scanners help extract key information, match candidate profiles with job requirements, and reduce human effort.

1.2 Motivation

This project is motivated by the need to simplify and speed up the hiring process. Manual resume screening takes time and may lead to missed talent or biased decisions. By using AI to analyze and filter resumes automatically, the process becomes faster, fairer, and more accurate. This encourages efficient recruitment and helps

organizations select suitable candidates with confidence.

2. SYSTEM ARCHITECTURE

The system architecture consists of several main components working together. First, the user uploads resumes, which are then converted into readable text. The NLP module extracts key information such as skills, experience, and education. A Machine Learning model compares this extracted data with job requirements and generates a relevance score. Finally, the results are displayed to the recruiter in a sorted and easy-to-read format. This structure ensures accurate processing, efficient comparison, and quick candidate selection.
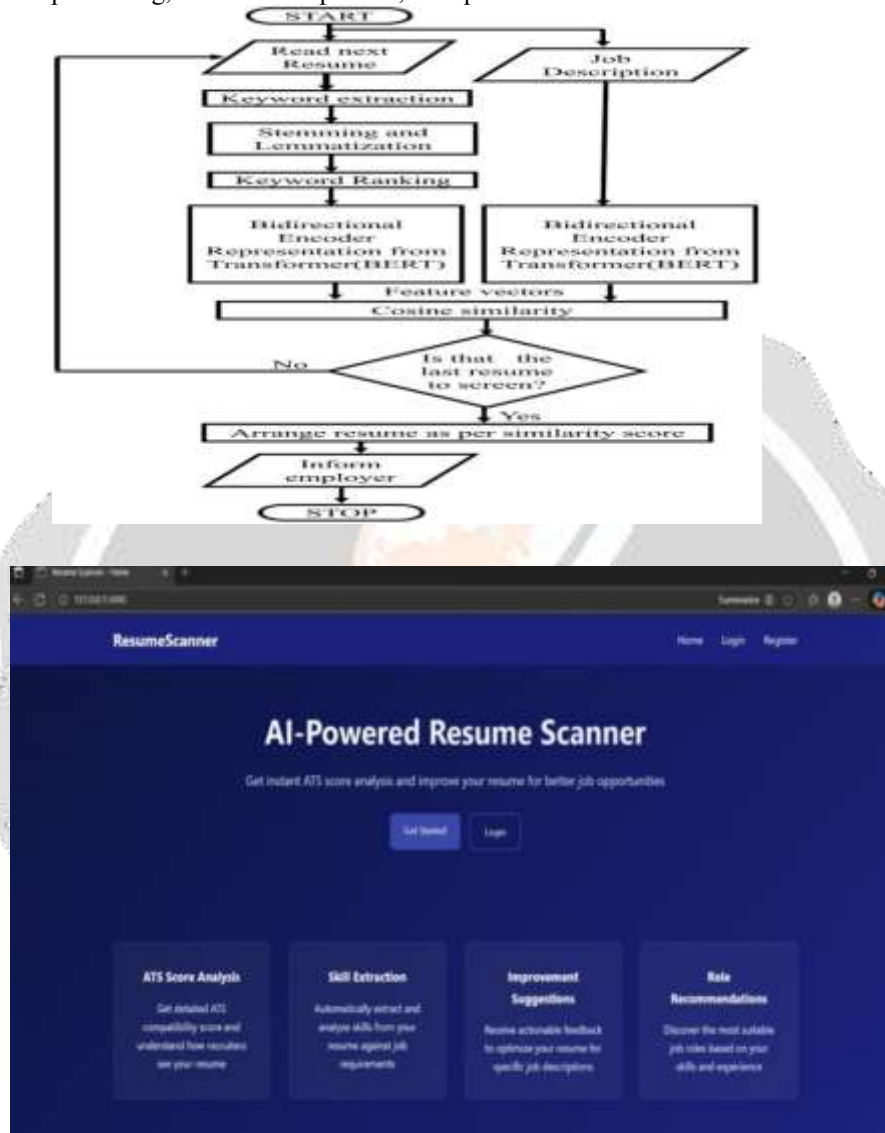


Fig -1 Home Page

2.1 Input Processing Layer

This layer is responsible for receiving resumes from the user in different file formats such as PDF, Word, or plain text. Once uploaded, the system converts the document into machine-readable text using text extraction techniques. Unnecessary symbols, formatting issues, and repeated content are removed to ensure clean and usable data. The processed text is then structured into predefined categories such as personal details, skills, education, and work experience. By standardizing the content at this stage, the system prepares the resume data for accurate AI-based analysis in the next steps.

2.2 AI Analysis and Decision Layer

Once the cleaned text is prepared, it moves to the AI analysis stage. In this layer, Natural Language Processing (NLP) techniques identify important information such as skills, keywords, experience duration, and educational background. The Machine Learning model compares these extracted details with the job requirements and calculates a relevance score for each resume. The system may also apply classification or ranking algorithms to sort candidates based on suitability. This automated evaluation ensures consistent and fair screening while reducing the time required for manual review. The final output from this layer is a structured and prioritized list of applicants ready for recruiter review.The translation module removes unnecessary stop words, identifies tense, performs lemmatization, and maps each processed word to a corresponding animation file. When no matching animation exists, the system shifts to fingerspelling.

3. RESULTS AND DISCUSSION

The AI-Based Resume Scanner was tested on multiple resume in PDF format. It successfully extracted key information like skills, education, and work experience, and ranked candidates based on job relevance. The system reduced manual screening time and improved consistency in candidate evaluation. Accuracy increased as more data was added, showing the model's ability to learn over time. Challenges arose with unusual formatting or unstructured resumes, requiring extra preprocessing. Overall, the system proved effective and reliable for standard recruitment workflows.
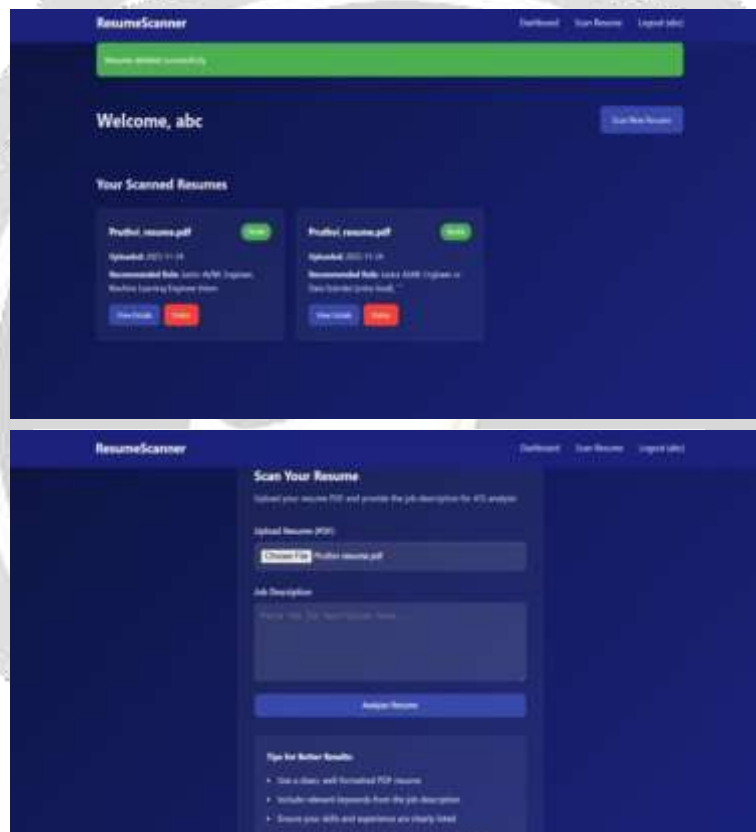

The performance of the system improved as more resumes were processed, demonstrating that the machine learning model can continuously learn and provide better results over time. Users reported that the ranking and matching of candidates with job descriptions were highly useful in streamlining the recruitment workflow. However, challenges were noted when handling resumes with unconventional formatting, images, or unstructured layouts.

These cases required additional preprocessing to ensure accurate data extraction. Despite these limitations, the AI-based approach proved effective, reliable, and practical for standard recruitment processes. Additionally, users highlighted its ability to reduce human bias, ensure fair evaluation, and scale efficiently to manage large volumes of applications without compromising speed or accuracy.

3.1 User Evaluation

The AI-Based Resume Scanner was tested and evaluated by HR professionals and recruiters to measure its practical effectiveness. Users appreciated the system's ability to quickly extract key information such as skills, education, and work experience, which significantly reduced the time spent on manual screening. The candidate ranking feature helped recruiters identify the most suitable applicants efficiently, improving decision-making consistency. Participants also noted that the system's accuracy improved as more resumes were processed, reflecting the machine learning model's ability to learn and adapt over time.
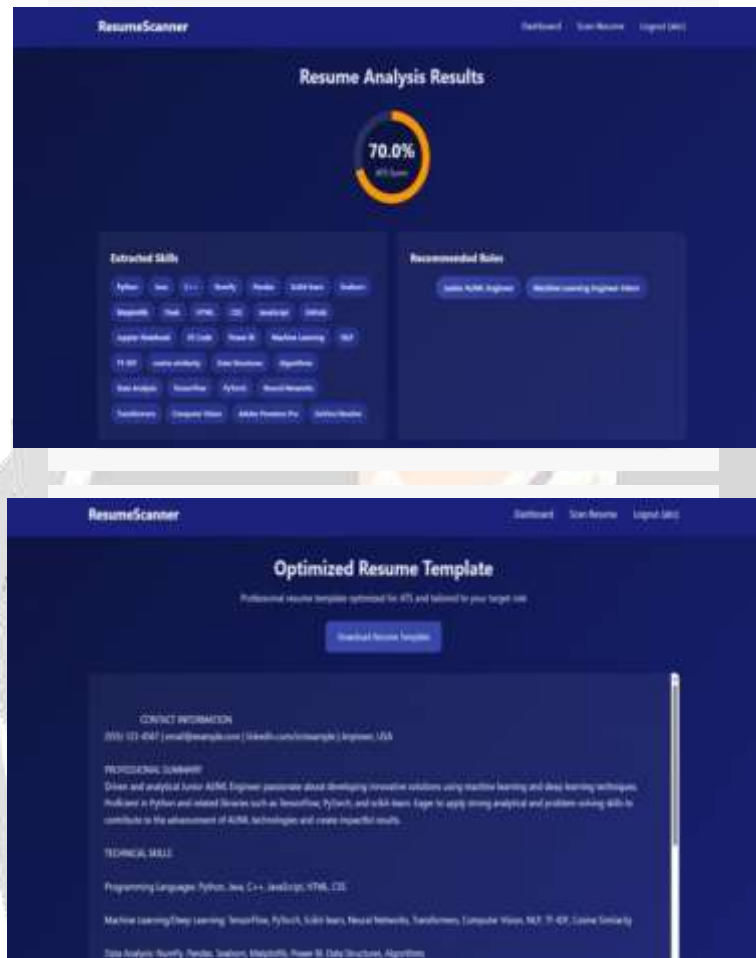
Some challenges were observed with resumes containing unusual formatting, images, or unstructured layouts, which occasionally required manual intervention. Despite this, users found the interface intuitive, the workflow smooth, and the overall tool highly valuable for accelerating recruitment processes in a modern hiring environment.

Users also noted that the system helps make the recruitment process more consistent and reduces human bias during initial screening. The automated evaluation of candidates based on set criteria was seen as fair and transparent. Additionally, the tool is scalable, enabling organizations to manage a large number of applications efficiently without losing accuracy. Overall, feedback indicated that the AI-Based Resume Scanner is practical, effective, and valuable for real-world hiring.

4. CONCLUSIONS

The AI-Based Resume Scanner provides an efficient solution for automating the resume screening process, significantly reducing the time and effort required for manual evaluation. It accurately extracts essential candidate information, such as skills, education, and work experience, and ranks applicants according to job requirements, ensuring consistent and unbiased assessments. The system's performance improves over time as it processes more data, demonstrating adaptability and learning capability. Overall, this tool enhances recruitment efficiency, supports better decision-making, and offers a practical and reliable solution for modern hiring challenges.

5. ACKNOWLEDGEMENT

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