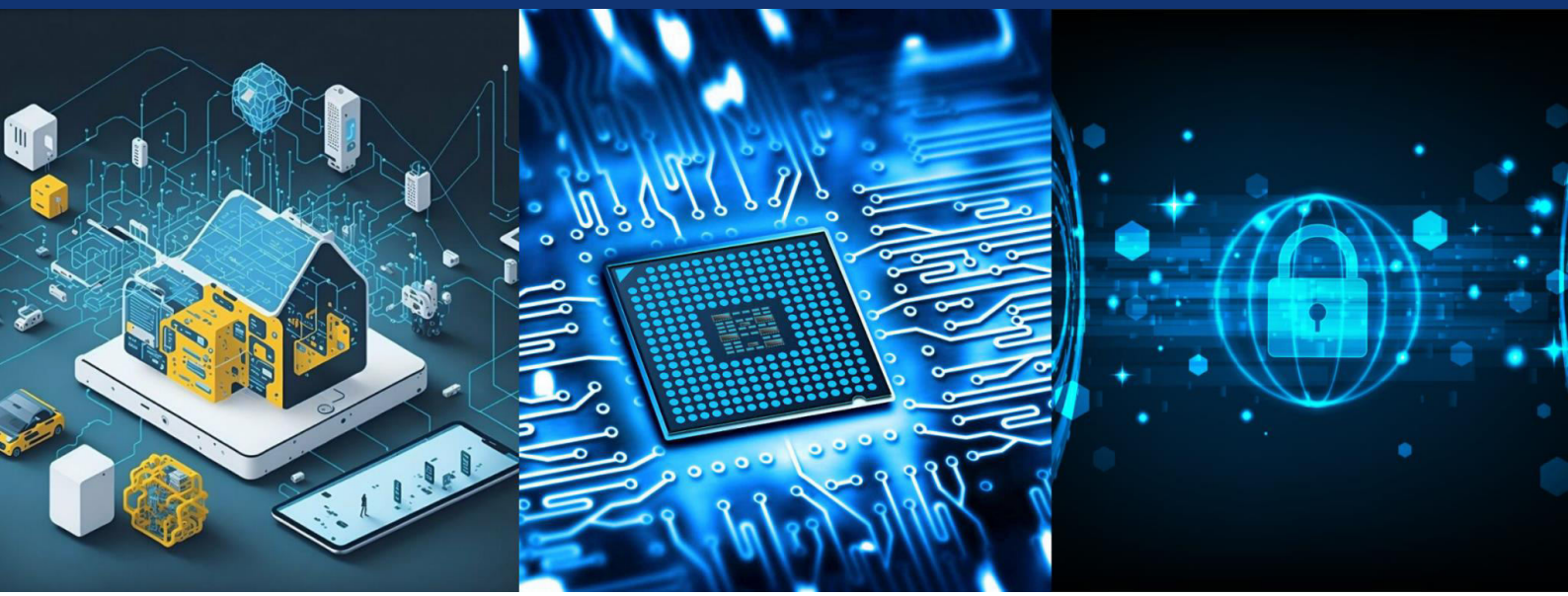
ISSN(O): 2320-9801
ISSN(P): 2320-9798



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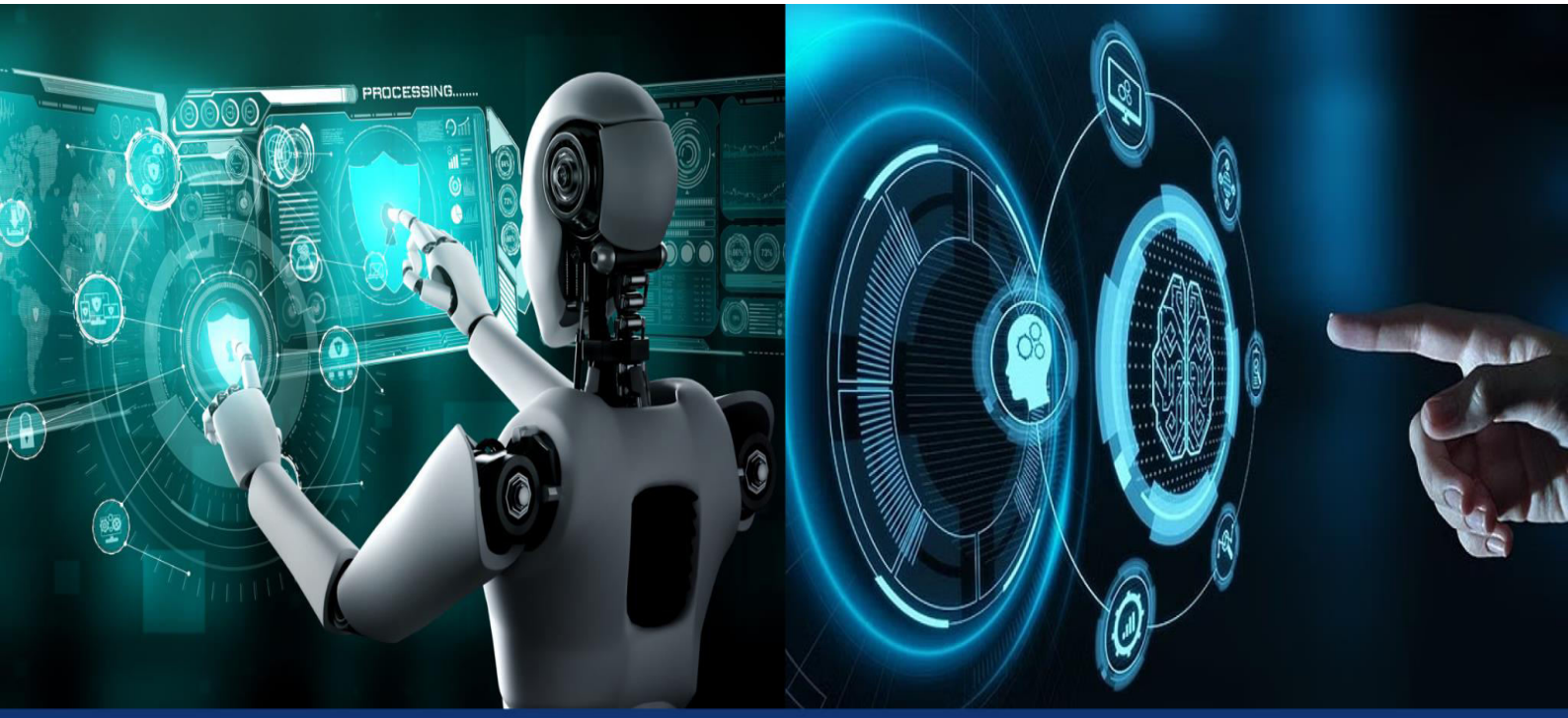

Impact Factor: 8.771 **Volume 14, Issue 4, April 2026**

© 2026 IJIRCCE | Volume 14, Issue 4, April 2026 DOI: 10.15680/IJIRCCE.2026.1404064

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International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Implementation of a Resume Analyser and Job Matching System Using Artificial Intelligence

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ABSTRACT: The Resume Analyzer and Job Matching System using Artificial Intelligence is an advanced web-based application designed to automate, optimize, and modernize the recruitment process by analyzing resumes and matching candidates with appropriate job roles. In today's competitive job market, organizations receive a large volume of resumes for each job opening, making manual screening time-consuming, inefficient, and prone to human bias and errors. To address these challenges, the proposed system leverages Artificial Intelligence techniques, particularly Natural Language Processing (NLP) and Machine Learning (ML), to extract meaningful information from resumes in an automated and structured manner. Using intelligent algorithms, the extracted resume data is compared with job requirements to compute a similarity or matching score, indicating how well a candidate fits a position. Based on this score, the system provides job recommendations and assists recruiters in efficiently shortlisting suitable applicants. The implementation of machine learning models ensures continuous improvement in matching accuracy as more data is processed. By minimizing manual intervention, the system reduces recruitment time, enhances decision-making accuracy, promotes fairness by limiting bias, and ensures a transparent evaluation process.

KEYWORDS: Artificial Intelligence, Machine Learning, Natural Language Processing, Resume Parsing, Job Matching, Recruitment Automation, Similarity Score, Data Extraction, Candidate Screening, Talent Acquisition, HR Technology, Resume Classification, Information Retrieval, Text Mining.

Domain: Artificial Intelligence, Natural Language Processing.

I. INTRODUCTION

In today's competitive job market, the recruitment process has become more challenging due to the large number of applications received for every job opening. Traditional resume screening methods are time-consuming, error-prone, and require significant manual effort from recruiters. To overcome these challenges, the Resume Analyzer and Job Matching System is developed using advanced technologies such as Artificial Intelligence, Machine Learning, and Natural Language Processing. This system automates the process of analyzing resumes by extracting relevant information such as skills, experience, and qualifications, and matches them with job requirements. It helps recruiters to efficiently shortlist suitable candidates and reduces the overall hiring time. The system also improves accuracy by minimizing human errors and ensures better decision-making. With a user-friendly interface and intelligent matching capabilities, this project provides an effective solution for modern recruitment needs.

II. LITERATURE REVIEW

"Automated Resume Screening using Natural Language Processing" focuses on extracting key information like skills and experience from resumes using NLP techniques. It helps in reducing manual effort and improves the speed of candidate screening.

"AI-Based Recruitment and Job Matching System" uses machine learning algorithms to match candidate profiles with job descriptions. It improves accuracy and helps recruiters in selecting suitable candidates efficiently.

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"Resume Classification using Machine Learning Techniques" classifies resumes into different domains using algorithms like SVM and Naïve Bayes. This helps in organizing large amounts of data and speeds up the recruitment process.

III. METHODOLOGY

A. EXISTING SYSTEM

In the existing system, recruiters manually review resumes to shortlist candidates, which is a time-consuming and inefficient process, especially when handling a large number of applications. Traditional recruitment systems rely heavily on keyword matching, which fails to understand the context and meaning of skills, leading to the rejection of qualified candidates. These systems do not provide accurate matching between resumes and job descriptions, often ignoring experience relevance and skill relationships, resulting in poor candidate selection. Additionally, manual screening increases the overall hiring time and requires significant organizational resources, reducing efficiency and productivity. The evaluation process also depends on individual recruiter judgment, leading to inconsistencies and unreliable results in candidate selection.

B. DISADVANTAGES

1. **Manual dependency:** Recruiters manually review resumes to shortlist candidates, which is time-consuming and reduces efficiency**.**
2. **Lack of automation:** There is no proper system to automatically analyze and match resumes with job requirements.
3. **Limited personalization:** Existing systems do not adapt to different job roles or candidate profiles effectively.
4. **No intelligent analysis**: Systems fail to deeply analyze resumes, such as understanding skills, experience, and their relationships. Personalized learning **experience:** Adapts content and recommendations based on individual strengths and weaknesses.
5. **Absence of predictive capability:** There is no machine learning-based prediction to identify the most suitable candidates.

C. PROPOSED SYSTEM

The proposed system introduces an automated Resume Analyzer and Job Matching System using Artificial Intelligence, Machine Learning, and Natural Language Processing techniques. It efficiently extracts important information such as skills, experience, and qualifications from resumes and compares them with job descriptions to provide accurate candidate matching. The system uses intelligent algorithms to understand the context of skills and improve the quality of shortlisting. It reduces manual effort, minimizes human errors, and speeds up the recruitment process. Additionally, the system ensures consistent and reliable evaluation of candidates, helping recruiters make better hiring decisions while improving overall efficiency and productivity.

D. ADVANTAGES

1. **Automation of recruitment:** The system automatically analyzes resumes and shortlists candidates.
2. **Accurate job matching**: It uses AI and NLP techniques to match skills with job requirements, improves the accuracy of candidate selection.
3. **Improved efficiency:** The system can handle a large number of applications quickly.It speeds up the overall hiring process**.**
4. **Better decision making:** Provides consistent and data-driven evaluation of candidates. This helps recruiters make more reliable hiring decisions**.**
5. **Intelligent analysis:** The system understands context, skills, and experience effectively.It goes beyond simple keyword-based filtering**.**
6. **Reduced human error**: Automation minimizes mistakes during resume screening. It ensures more accurate and fair candidate selection**.**
7. **Scalability:** The system can be used across different industries and job roles. It can handle increasing data without affecting performance**.**
8. **User-friendly system:** Provides a simple and easy-to-use interface for users. Both recruiters and candidates can interact with the system efficiently**.**

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E. DESIGN OF THE SYSTEM

The design of the Resume Analyzer and Job Matching System focuses on creating an efficient and structured architecture for processing resumes and matching them with job requirements. The system is divided into multiple modules, including resume upload, data extraction, skill analysis, and job matching. When a user uploads a resume, the system processes the document using Natural Language Processing techniques to extract key details such as skills, education, and experience. These extracted details are then analyzed and compared with job descriptions using machine learning algorithms to determine the best match.

The system follows a layered architecture consisting of a user interface, processing layer, and database layer. The frontend provides an interactive platform for users to upload resumes and view results, while the backend handles data processing, analysis, and matching operations. The database stores resume data, job details, and matching results for future reference. Overall, the system design ensures smooth data flow, high performance, and accurate results, making the recruitment process faster and more reliable.

The system is designed to ensure scalability, flexibility, and ease of maintenance. It supports handling large volumes of resumes and job data without affecting performance. The modular design allows new features to be added easily, such as advanced AI models or additional analysis tools. Proper validation and error-handling mechanisms are implemented to ensure smooth system operation and avoid failures during data processing. Security measures are also considered to protect user data and maintain privacy. Overall, the design provides a robust and adaptable framework that can be enhanced in future to meet evolving recruitment needs.

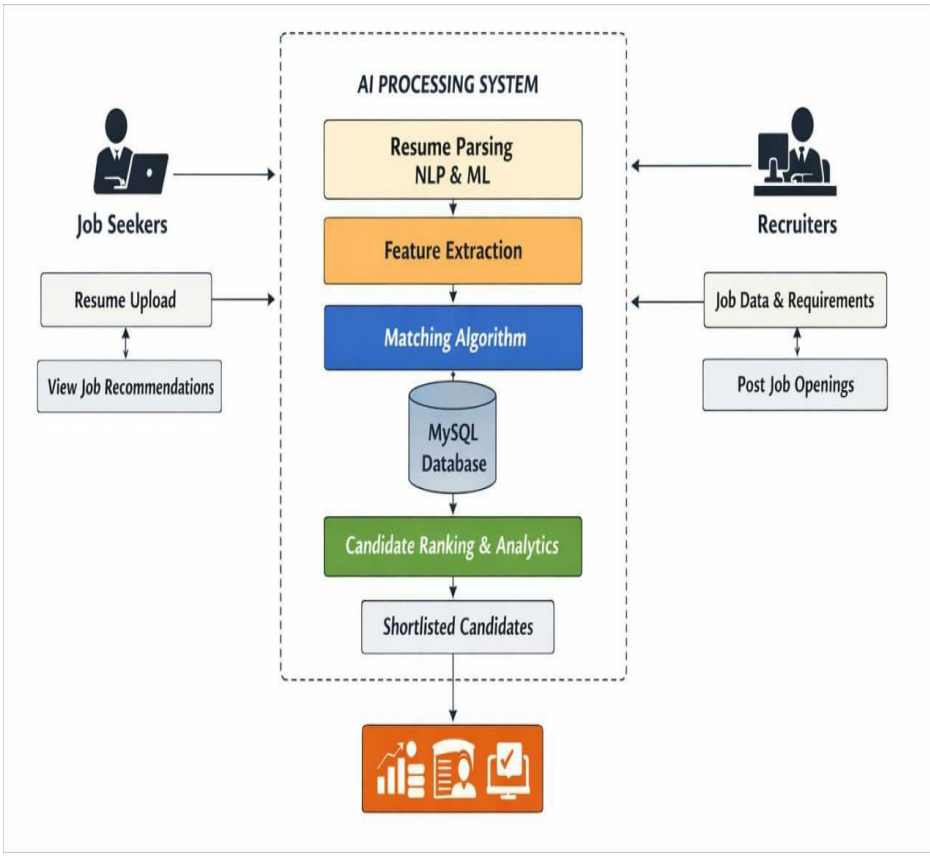

Fig.1 The AI Processing System workflow illustrates the technical backbone of the project, detailing how data moves between Job Seekers and Recruiters. The diagram outlines a sophisticated pipeline involving NLP-based Resume Parsing, Feature Extraction, and a custom Matching Algorithm backed by a MySQL database. This architecture concludes with Candidate Ranking and Analytics, demonstrating how raw resume data is transformed into actionable shortlists for hiring managers.

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IV. IMPLEMENTATION

MODULE DESCRIPTION

1. USER INTERFACE MODULE

This module acts as the communication layer between the user and the system. It is developed using web technologies such as HTML, CSS, and JavaScript to provide a responsive and user-friendly interface for uploading resumes and viewing results.

2. AUTHENTICATION MODULE

The authentication module ensures secure access to the system by validating user credentials. It uses secure techniques such as password encryption and session management to prevent unauthorized access and protect user data.

3. RESUME UPLOAD MODULE

This module allows users to upload resumes in various formats such as PDF or DOCX. It handles file validation and ensures that the uploaded data is properly transferred to the system for further processing.

4. RESUME PARSING MODULE

The resume parsing module uses Natural Language Processing techniques to extract key information such as skills, education, and experience from the uploaded resumes. It converts unstructured data into structured format for analysis.

5. JOB MATCHING MODULE

This module compares extracted resume data with job descriptions using machine learning and similarity algorithms. It identifies the best matching candidates based on skills, experience, and relevance.

6. DATABASE MODULE

The database module stores all user data, resumes, job descriptions, and matching results. It ensures data integrity, security, and efficient retrieval of information when required.

7. RESULT DISPLAY MODULE

This module presents the matching results to users in a clear and understandable format. It displays candidate rankings, matching scores, and relevant job recommendations.

V. RESULT

The implementation of the Resume Analyzer and Job Matching System using AI demonstrates significant improvements in the recruitment process. The system efficiently parses candidate resumes, extracts relevant information, and matches them accurately with job requirements using AI and NLP techniques. Candidates receive personalized job recommendations, while recruiters are provided with ranked lists of suitable applicants, saving time and reducing manual effort. Real-time processing ensures immediate feedback for both users, and analytics dashboards provide insights into candidate skills, experience, and job alignment. Overall, the system enhances the accuracy, fairness, and efficiency of recruitment, making the hiring process faster, more transparent, and data-driven.

Figure No: .1. Login Page

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Figure No: 2. Login Page

Figure No: 3. Dashboard

Fig:1 The Student Login screen offers a user-friendly entry point designed specifically for job seekers. With a bright, intuitive layout, it encourages new users to register and existing students to access their personalized dashboards. This interface is the starting point for the user journey, where candidates can manage their profiles and track the status of their applications in a simplified, accessible environment.

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Fig:2 The Admin Login interface serves as the primary gateway for system overseers to manage the backend operations of the platform. Featuring a secure, dark-themed UI, this module allows administrators to monitor user activity, oversee the parsing database, and manage global settings. The design prioritizes security and professional oversight, ensuring that the high-level data processing within the system remains protected and accessible only to authorized personnel.

Fig:3 The Candidate Dashboard serves as the central hub for user interaction, providing a streamlined interface for document submission and real-time status updates. It features a dedicated PDF upload module that initiates the system's analytical pipeline upon submission. To enhance user experience, the dashboard incorporates a visual progress tracker that highlights the four key stages of the application lifecycle: Upload, Processing, Wait for Result, and Result. By displaying explicit status feedback—such as "Pending (Waiting for admin review)"—the interface ensures transparency, allowing candidates to monitor the transition from automated AI parsing to final human-in-the-loop validation.

VI. CONCLUSION

The Resume Analyzer and Job Matching System using AI provides a comprehensive solution for modern recruitment challenges. By leveraging **Artificial Intelligence, Natural Language Processing, and machine learning techniques**, the system automates resume parsing, skill extraction, and candidate-job matching, significantly reducing manual effort and human bias. It ensures accurate, data-driven, and efficient recruitment by generating ranked candidate lists, personalized job recommendations, and detailed analytics for recruiters and candidates alike. The system is scalable, user-friendly, and adaptable to different industries, providing real-time processing and insights. Overall, it improves the speed, reliability, and transparency of the hiring process, enhancing both organizational efficiency and candidate experience. Additionally, the system ensures scalability and can be adapted for various industries with minimal modifications. It also lays a strong foundation for future enhancements, making it a reliable and efficient solution for modern recruitment processes.

VII. FUTURE ENHANCEMENT

The Resume Analyzer and Job Matching System can be further enhanced by incorporating advanced technologies and additional features to improve its efficiency and accuracy. Future improvements may include the integration of deep learning models to achieve better resume parsing and understanding of complex skill relationships. The system can be extended with AI-based interview prediction to assist recruiters in identifying the most suitable candidates. A skill gap analysis feature can also be added to help candidates identify missing skills and receive recommendations for improvement. Integration with real-time job portals such as LinkedIn and Naukri can provide up-to-date job opportunities. Additionally, the system can be developed as a mobile application to enhance accessibility and user experience. Multi-language support can be introduced to allow resumes in different languages. The use of cloud platforms can improve scalability, storage, and system performance. Advanced data analytics dashboards can help recruiters analyze hiring trends and candidate performance. Furthermore, security features such as data encryption and authentication can be implemented to ensure data privacy. Future enhancements may also include the use of advanced NLP models like BERT for more accurate matching and the introduction of video resume analysis for better candidate evaluation.

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