



# AI Intelligent Based Resume Screening And Ranking System

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**Abstract** —The **AI Intelligent-Based Resume Screening and Ranking System** is an advanced recruitment support application designed to automate and improve the candidate selection process. Traditional resume screening is often time-consuming, labor-intensive, and prone to human bias when handling a large number of applications. This project addresses these challenges by utilizing Artificial Intelligence (AI) and Natural Language Processing (NLP) techniques to analyze, evaluate, and rank resumes based on their relevance to a given job description.

**Keypoints** — *Artificial Intelligence, Resume Screening, Natural Language Processing, Machine Learning, Recruitment Automation*

## I. INTRODUCTION

Recruitment is one of the most critical processes in any organization, as hiring the right candidate directly impacts productivity and organizational success. With the increasing number of job applications received for every vacancy, recruiters often face challenges in manually screening and evaluating resumes. Traditional resume screening methods are time-consuming, labor-intensive, and

susceptible to human errors and biases, making it difficult to identify the most suitable candidates efficiently.



## II. PROBLEM STATEMENT

Artificial Intelligence (AI) has emerged as a transformative technology capable of automating complex decision-making tasks. In the recruitment domain, AI-powered systems can analyze large volumes of resumes, extract relevant information, and compare candidate qualifications against job requirements with greater speed and accuracy. By leveraging Natural Language Processing (NLP), Machine Learning (ML), and data analytics techniques, organizations can significantly improve the efficiency and effectiveness of their hiring processes.

The proposed **AI Intelligent-Based Resume Screening and Ranking System** is designed to automate the resume evaluation process by intelligently matching candidate profiles with job descriptions. The system extracts key information such as skills, educational qualifications, work experience, certifications, and project details from uploaded resumes. It then applies AI-driven algorithms to assess the relevance of each resume to the specified job requirements and generates a ranking score based on candidate suitability.



## III. OBJECTIVES

The primary objective of the **AI Intelligent-Based Resume Screening and Ranking System** is to automate and optimize the recruitment process by using Artificial Intelligence techniques to analyze,

evaluate, and rank candidate resumes based on their suitability for a specific job role.

### 1. To automate resume screening

Reduce the manual effort required to review large numbers of resumes by automatically processing and analyzing candidate profiles.

### 2. To extract relevant information from resumes

Identify and extract important details such as skills, educational qualifications, work experience, certifications, and projects using Natural Language Processing (NLP) techniques.

### 3. To match resumes with job descriptions

Compare candidate profiles against job requirements and determine the degree of relevance and compatibility.

### 4. To rank candidates intelligently

Generate a ranking score for each applicant based on predefined criteria and AI-based similarity analysis, enabling recruiters to identify the most suitable candidates quickly.

### 5. To improve recruitment efficiency

Minimize the time required for candidate shortlisting and accelerate the overall hiring process.

### 6. To develop a scalable recruitment solution

Create a system capable of handling large volumes of resumes efficiently across different job roles and industries.

## IV. LITERATURE REVIEW (SUMMARY)

Several approaches use machine learning algorithms and text similarity techniques to compare resumes with job descriptions and rank candidates based on relevance. NLP techniques have been widely adopted to process unstructured resume data and improve matching accuracy. Recent studies indicate that AI-driven recruitment systems can significantly reduce screening time,



enhance candidate selection accuracy, and support data-driven hiring decisions.

Based on these findings, the proposed AI Intelligent-Based Resume Screening and Ranking System utilizes AI and NLP technologies to automate resume evaluation, improve ranking efficiency, and assist recruiters in identifying the most suitable candidates.

## V. SYSTEM ARCHITECTURE

The proposed system architecture consists of multiple interconnected modules that work together to automate resume screening. The process begins with the input module, where resumes and job descriptions are provided to the system.

The system consists of multiple modules that work together in a pipeline.

### 1. Input Layer

Accepts resumes in formats such as PDF, DOCX.  
Accepts job descriptions.

### 2. Preprocessing Layer

Converts documents into plain text.  
Removes noise such as symbols, formatting.  
Normalizes text (lowercase conversion, punctuation removal).

### 3. AI Processing Layer

Tokenization (splitting text into words).  
Stop-word removal (removing common words like “the”, “is”)  
Named Entity Recognition (NER) to identify skills, names, organizations  
Parsing for sentence structure

### 4. Feature Extraction Layer

Converts text into numerical vectors  
Uses techniques like TF-IDF or Word Embeddings

### 5. Machine Learning Layer

Trains classification models

Predicts candidate suitability  
Ranks candidates based on scores

## 6. Output Layer

Displays ranked candidates.  
Provides selection recommendations.

## VI. METHODOLOGY / ALGORITHM

### Methodology:

The system follows these steps:

1. Collect resume dataset
2. Convert resumes into text format
3. Perform preprocessing:
  - Tokenization
  - Stop-word removal
  - Stemming/Lemmatization
4. Apply NLP for data extraction
5. Convert text into features using TF-IDF
6. Train ML models (SVM, Logistic Regression)
7. Evaluate model performance
8. Rank candidates based on scores

### Algorithm:

- Step 1: Input resume dataset
- Step 2: Preprocess text
- Step 3: Extract features using AI
- Step 4: Apply TF-IDF vectorization
- Step 5: Train ML classifier
- Step 6: Predict candidate suitability
- Step 7: Rank candidates



## VII. ADVANTAGES

- Saves recruitment time.
- Reduces manual effort.
- Improves screening accuracy.
- Provides fair candidate evaluation.
- Ranks candidates automatically.
- Handles large numbers of resumes.
- Supports faster hiring decisions.
- Enhances recruitment efficiency.

## VIII . LIMITATIONS

The AI-based Resume Screening and Ranking System depends on the quality and completeness of the resumes and job descriptions provided. Inaccurate or incomplete information may affect the ranking results.

The system evaluates candidates based on predefined criteria and algorithms. It may not fully assess soft skills, personality traits, or cultural fit, making human review necessary for final hiring decisions.

## IX . RESULTS AND DISCUSSION

The AI Intelligent-Based Resume Screening and Ranking System successfully analyzed uploaded resumes and compared them with the given job description. The system generated matching scores for each candidate and ranked them according to their suitability for the job role.

- The system successfully accepted job descriptions and candidate resumes.
- Resume data such as skills, education, and experience were extracted correctly.
- Each resume was compared with the job requirements.
- Matching scores were generated for all candidates.

## X. FUTURE SCOPE

The proposed system can be enhanced by incorporating advanced AI and machine learning algorithms to improve ranking accuracy. Future versions may include interview performance analysis, skill assessment integration, and predictive analytics for candidate success.

The system can also be integrated with job portals and HR management platforms for seamless recruitment. Additionally, features such as multilingual resume processing, bias detection, and real-time candidate recommendations can further improve the hiring process.

## XI. CONCLUSION

The AI Intelligent-Based Resume Screening and Ranking System automates the process of evaluating and ranking candidate resumes.

It compares resumes with job requirements and identifies the most suitable candidates efficiently.

The system reduces manual effort and significantly saves recruitment time.

It improves the accuracy and consistency of candidate selection using AI techniques.

Overall, the project enhances the hiring process and supports better recruitment decisions.

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