Internship Project Report

Title: AI-Powered Resume Ranker

1. Abstract

This project aims to automate the resume screening process using Artificial Intelligence (AI) and Natural Language Processing (NLP). The developed system analyzes resumes, extracts key information such as name, email, and skills, and compares them against a job description to assign a relevance score. The system then ranks the resumes accordingly and generates a downloadable report for HR use. The solution improves hiring efficiency by reducing manual effort, saving time, and increasing fairness in candidate evaluation.

2. Introduction

Recruitment is a crucial but often time-consuming process. Traditional methods require HR personnel to manually read and evaluate a large number of resumes, which can lead to inconsistencies and delays. To address this, we developed an AI-powered Resume Ranker. The system uses NLP techniques to extract relevant data from resumes, evaluate them against a job profile, and provide an automated ranking. This project is intended to assist HR teams in making faster and more data-driven decisions during the shortlisting phase.

3.Tools and Technologies Used

The following tools and technologies were utilized in the development of the project:

Python: Core programming language

Flask: Web framework for building the user interface

SpaCy: Used for NLP tasks like tokenization, lemmatization, and Named Entity Recognition

Scikit-learn: Used for TF-IDF vectorization and similarity scoring

PyPDF2 / pdfminer: Libraries for extracting text from PDF resumes

Regex (re module): Used to extract emails and names

FPDF: Used to generate HR reports in PDF format

HTML/CSS: Used to build the frontend interface

4. Steps Involved in the Project

- **Resume Upload:**

  The user (HR) uploads multiple resumes in PDF format through the web interface.

- **Text Extraction:**

  The system extracts raw text from each PDF using parsing libraries.

- **Text Preprocessing:**

  Using SpaCy, the extracted text is cleaned (lowercased, stopwords removed, and lemmatized).

- **Information Extraction:**

  Name and email address are identified using regex and NLP.

- **5. Skill Matching:**

  Key skills mentioned in the job description are matched against content in each resume.

- **6. TF-IDF Vectorization:**

  Each resume and the job description are converted to TF-IDF vectors for scoring.

- **7. Scoring and Ranking:**

Cosine similarity is computed between each resume and the job description. Scores are used to rank the resumes.

- 8. Result Display and Report Generation:

  The system displays ranked resumes along with extracted information and allows the HR to download a PDF report with candidate details and scores.

5. Conclusion

The AI-Powered Resume Ranker significantly enhances the efficiency of the recruitment process by automating the evaluation and ranking of resumes. It reduces manual workload, introduces consistency, and improves decision-making by providing objective score-based rankings. The system is scalable and adaptable to various job profiles, making it a valuable tool for modern HR departments. Further improvements such as integrating OCR for scanned resumes, authentication systems, and analytics dashboards can make the system even more robust.