AI-Powered Resume Ranker Project Report

1. Introduction

The AI-Powered Resume Ranker is a web application designed to assist recruiters and hiring managers in efficiently evaluating and ranking job applicants' resumes. By leveraging natural language processing (NLP) and machine learning (ML) techniques, the application analyzes the similarity between uploaded resumes and a given job description, providing a ranked list of candidates based on relevance.

2. Abstract

This project implements a Flask-based web application that processes multiple PDF resumes, extracts relevant textual content and entities, and ranks the resumes according to their similarity to a user-provided job description. The ranking is performed using TF-IDF vectorization and cosine similarity metrics. The results are displayed on a user-friendly web interface and can be downloaded as a CSV file for further use.

3. Tools Used

- Python 3.7+

- Flask: Web framework for building the application.

- SpaCy: NLP library used for entity recognition.

- scikit-learn: Machine learning library used for TF-IDF vectorization and similarity computation.

- PyPDF2: Library for extracting text from PDF resumes.

- HTML/CSS: For building the front-end interface.

4. Steps Involved in Building the Project

- Setting up the Flask application with routes for uploading resumes and job descriptions.

- Implementing helper functions to extract text and identify entities (names, emails) from PDF files.

- Using SpaCy to load the English language model for NLP tasks.

- Vectorizing the job description and resume texts using TF-IDF vectorizer.

- Calculating cosine similarity scores between the job description and each resume.

- Sorting resumes based on similarity scores to generate a ranked list.

- Displaying the ranked results on the web page with relevant details.

- Providing functionality to download the ranked results as a CSV file.

- Adding UI features such as dark mode toggle for better user experience.

5. Conclusion

The AI-Powered Resume Ranker streamlines the recruitment process by automating the evaluation of resumes against job requirements. It reduces manual effort and helps identify the most suitable candidates quickly. The project demonstrates the effective integration of NLP and ML techniques in a practical web application.