

Project Initialization and Planning Phase

Date	Nov 2024
Team ID	Team-739663
Project Title	AI-Enabled Candidate Resume Screening using NLP
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

The proposed solution involves developing an AI-powered resume screening system that utilizes Natural Language Processing (NLP) and machine learning techniques to automate the shortlisting process. The system will extract key information from candidate resumes and compare it against job descriptions using semantic similarity measures. By leveraging contextual understanding and intelligent ranking algorithms, the tool will accurately match qualified candidates with job roles, significantly reducing manual effort and enhancing recruitment efficiency.

Project Overview	
Objective	The primary objective of the AI-enabled candidate resume screening system is to automate the process of evaluating and shortlisting resumes by leveraging Natural Language Processing (NLP) and machine learning. The system aims to accurately match candidate profiles with job descriptions, reducing recruiter effort and enhancing the speed and quality of the hiring process.
Scope	The scope of the AI-enabled candidate resume screening project using NLP includes designing and developing an intelligent system that can parse, analyze, and compare resumes with job requirements. The system will utilize NLP techniques to extract relevant information from resumes and job descriptions and use similarity algorithms to rank candidates based on their suitability for a given role. Integration with a user-friendly interface will allow HR professionals to upload documents and view ranked results.
Problem Statement	

Description	Design an AI-powered resume screening system that uses NLP to effectively extract and evaluate key information from resumes and match them against job descriptions. The solution should automate and streamline the screening process to ensure accuracy, fairness, and efficiency in candidate selection.
Impact	The implementation of an AI-enabled resume screening tool using NLP is expected to significantly improve recruitment efficiency by reducing manual effort, human bias, and screening time. It will enhance the precision of candidate-job matching, lead to better hiring decisions, and create a more effective and unbiased recruitment pipeline for organizations.
Proposed Solution	
Approach	The approach for this project involves several key steps. First, collect a diverse dataset of resumes and job descriptions. Then, preprocess the data using NLP techniques like tokenization, lemmatization, and stop word removal. The system will use Named Entity Recognition (NER), part-of-speech tagging, and similarity measures (like cosine similarity or BERT embeddings) to evaluate how well each resume matches the job description. A scoring and ranking mechanism will be implemented to highlight top candidates.
Key Features	<ol style="list-style-type: none"> 1. Resume and JD Parser: Extracts structured data from unstructured resumes and job descriptions. 2. NLP-powered Matching Engine: Uses similarity metrics to evaluate alignment between resumes and job requirements. 3. Automated Ranking: Ranks candidates based on relevance to the job description. 4. User Interface: Allows recruiters to upload resumes and view ranked candidates with visual indicators. 5. Bias Mitigation: Includes logic to ensure fairness in shortlisting across gender, age, and experience levels.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	e.g., 4-core CPU or 1 × NVIDIA GPU
Memory	RAM specifications	e.g., 16 GB

Storage	Disk space for data, models, and logs	e.g., 500 GB SSD
Software		
Frameworks	Python frameworks	e.g., Flask
Libraries	Additional libraries	e.g., Spacy, scikit-learn, NLTK
Development Environment	IDE, version control	e.g., Visual Studio Code, Git
Data		
Data	Source, size, format	e.g., Custom resume dataset, 500+ resumes in PDF and text formats