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INSTITUTE OF SCIENCE & TECHNOLOGY
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Department Of Computational Intelligence

18CSP111L - Major Project

Resume Screening Application Using Data PreProcessing and NLP

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Content

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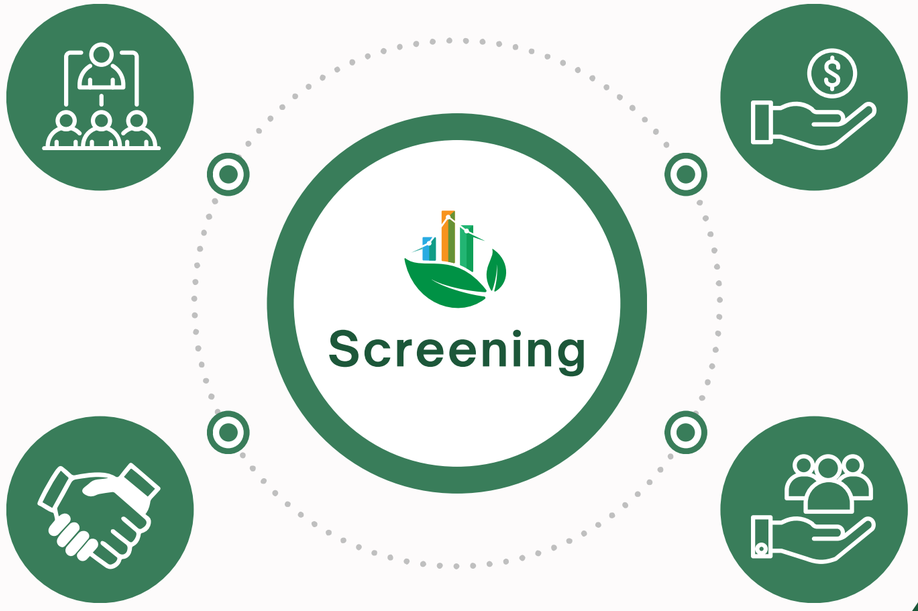
Abstract

In the contemporary recruitment landscape, the challenge of efficiently screening a large volume of resumes and accurately matching them to job descriptions is significant. This project introduces an innovative Resume Screening and Job Matching platform, harnessing the capabilities of natural language processing (NLP), machine learning, and data visualization to transform the recruitment process. The platform is engineered to aid HR professionals and recruiters in swiftly navigating through heaps of resumes, pinpointing candidates who are most apt for specific job roles through a detailed analysis of their resumes. This paper outlines the key features and functionalities of the platform, including advanced text processing, TF-IDF analysis, a resume ranking system, and interactive data visualization, all aimed at streamlining the recruitment workflow..



Introduction

The recruitment process, particularly the initial stages of resume screening and candidate shortlisting, is often labor-intensive and time-consuming. Traditional methods, while reliable, do not scale well with the increasing volume and complexity of job applications. To address these challenges, this project presents a cutting-edge Resume Screening and Job Matching platform.

The core of the platform is built on robust natural language processing and machine learning techniques. It begins with the parsing of resumes and job descriptions, transforming unstructured text into a structured format ready for analysis. The text data undergoes thorough cleaning and preprocessing, including tokenization, lemmatization, and the removal of stopwords, to ensure optimal data quality for analysis.

A key feature of the platform is the implementation of TF-IDF analysis, which assesses the significance of words in the resumes in relation to a corpus of documents, thereby enhancing the matching accuracy between resumes and job descriptions. The platform also introduces a sophisticated resume ranking system, which scores and ranks candidates based on the relevance of their profiles to the job description. This feature is pivotal in reducing the manual effort in candidate selection.

The user interface of the platform is developed using Streamlit, offering an intuitive and interactive experience. It allows users to easily navigate through job descriptions, select roles, and view a ranked list of candidates. Additionally, the platform incorporates advanced data visualization tools like Plotly, providing dynamic visual representations of data, such as score distributions and topic breakdowns in resumes.

Another significant aspect of the platform is the use of Latent Dirichlet Allocation (LDA) for topic modeling, which aids in clustering resumes into categories, further refining the matching process. The platform also features word cloud generation for a quick visual representation of key skills and job requirements.

In summary, this platform stands as a powerful tool for HR departments and recruitment agencies, significantly optimizing the hiring process. By automating the initial stages of resume screening, it not only conserves time but also enhances the precision of matching candidates to job roles. The platform's analytical capabilities ensure that recruiters can make data-driven decisions, thereby improving the quality of hires and contributing to the overall efficiency of the recruitment process.

MOTIVATION

Resume Screening

The motivation for developing a Resume Screening and Job Matching platform stems from the need to address the challenges associated with traditional resume screening methods. Manual review of resumes is a time-consuming and labor-intensive process that can lead to inconsistencies and biases in candidate evaluation. Additionally, as the volume and complexity of job applications continue to increase, traditional methods are becoming increasingly ineffective in managing the influx of resumes.

To address these challenges, a Resume Screening and Job Matching platform offers several compelling advantages:

1. Automation
2. Accuracy
3. Scalability
4. Objectivity
5. Data-driven decision-making
6. Improved hiring efficiency
7. Enhanced candidate experience

The adoption of a Resume Screening and Job Matching platform can significantly enhance the recruitment process, leading to better hiring decisions and improved efficiency for organizations.

Objectives

The Ultimate Goal Of Resume Screening is To identify and match qualified candidates with relevant job openings efficiently and objectively.

4th Quarter

Optimize the hiring process and Gaining valuable insights into candidate profiles and job requirements

3rd Quarter

Enhance the candidate experience and Improving the quality of hires

2nd Quarter

Improve matching accuracy and Reducing bias in candidate evaluation

1st Quarter

Reduce Manual Effort and Save Time

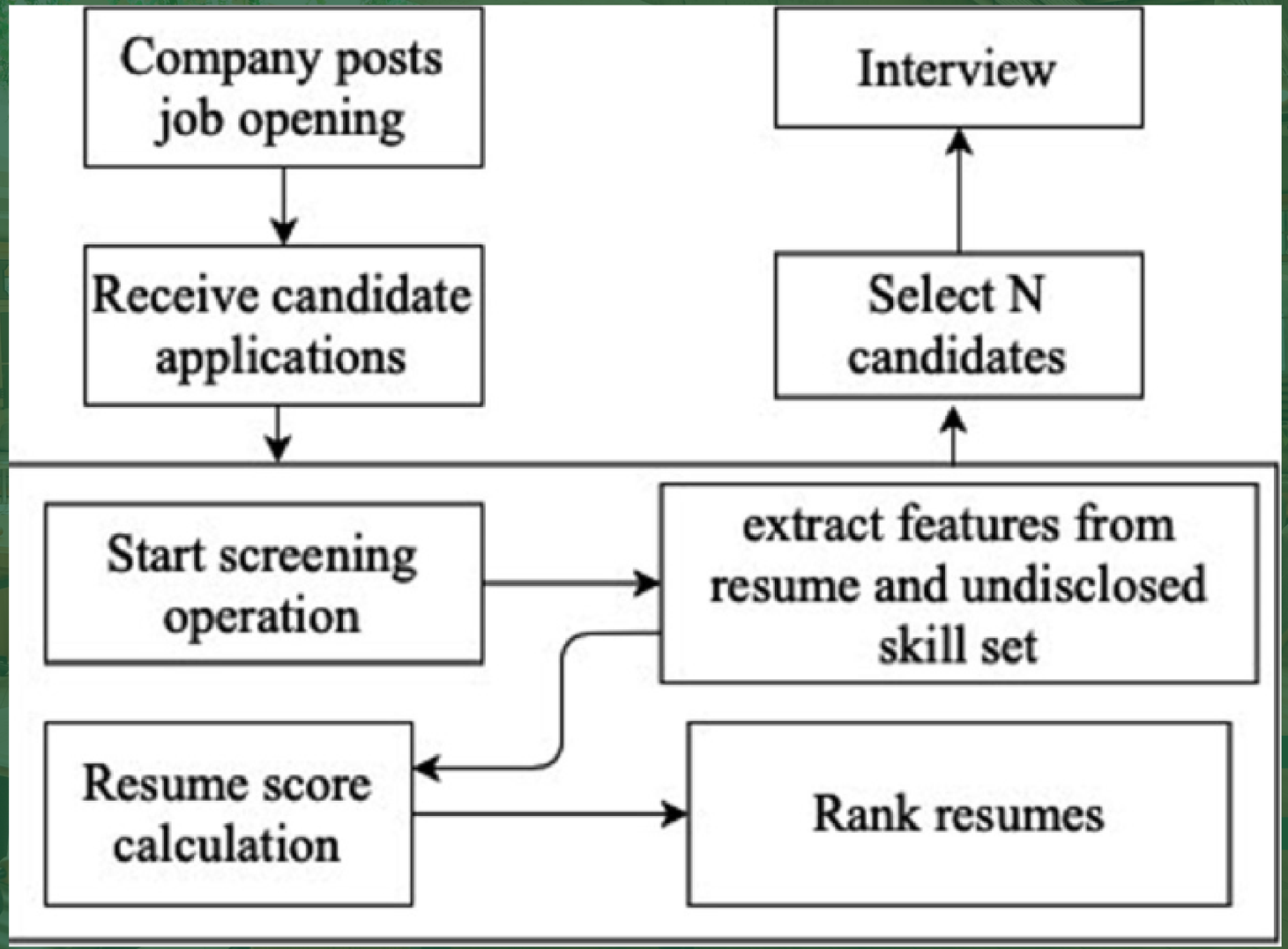
Problem Statement

Due to the increasing volume and complexity of job applications, traditional methods of manual resume screening are becoming ineffective and time-consuming. This leads to:

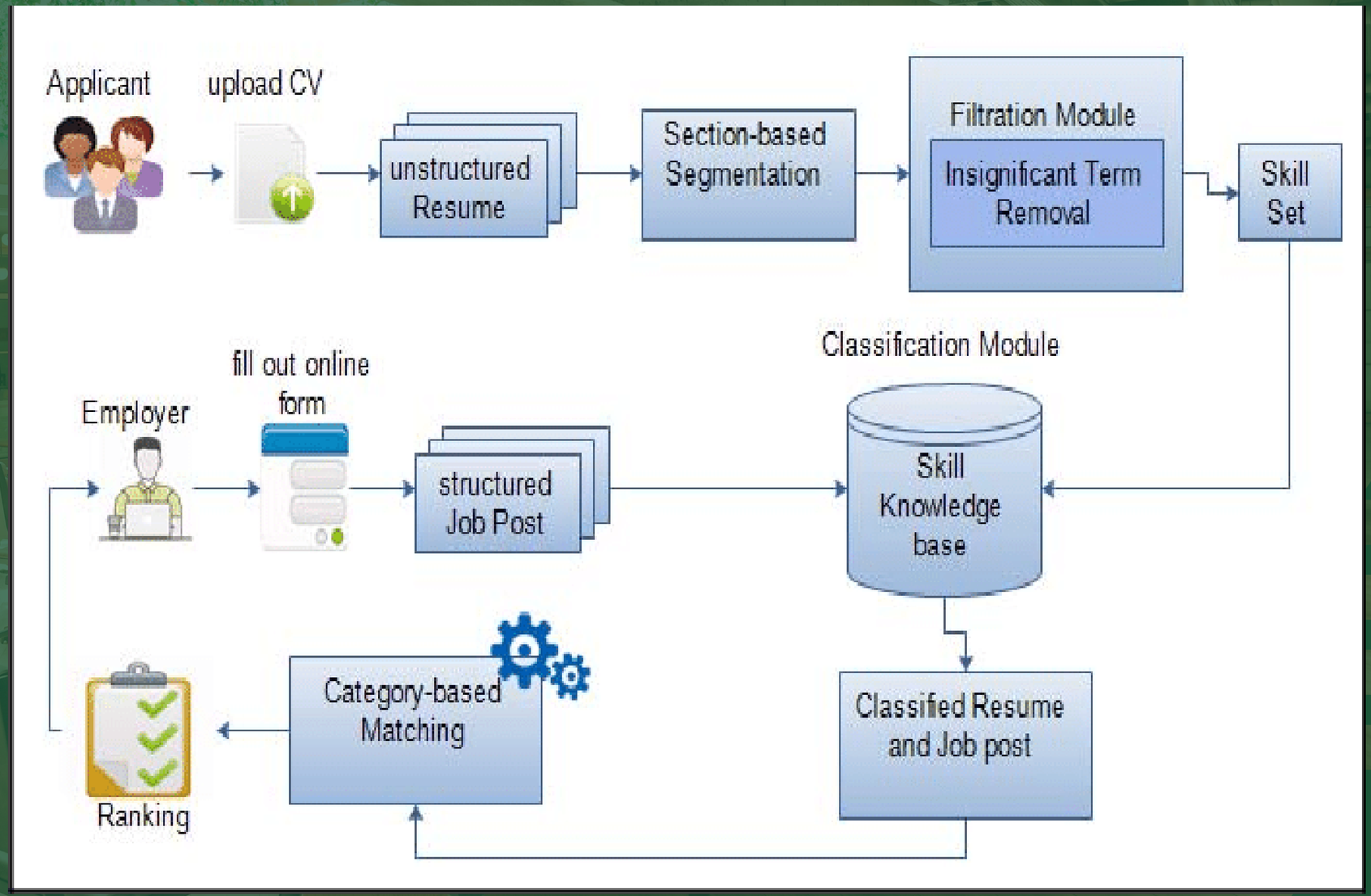
- Delays in the hiring process: HR professionals are overwhelmed by the sheer volume of resumes, resulting in delays in screening and shortlisting candidates.
- Inconsistent evaluation: Manual resume screening is prone to human biases and inconsistencies, leading to unfair and inaccurate assessments of candidates.
- Overlooking qualified candidates: Relevant and qualified candidates may be missed due to the limitations of manual screening methods.
- Inefficient use of resources: HR professionals spend valuable time on repetitive tasks that could be automated, reducing their productivity and focus on strategic recruitment initiatives.

85%

FLOW DIAGRAM



ARCHITECTURE DIAGRAM



Resume
Screening

THANK YOU

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