Resume Scanner (HireHero)

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Abstract: *Employers today face a daunting challenge of screening and shortlisting candidates from a large pool of resumes. To address this challenge, we developed HIREHERO, a resume screening system that uses machine learning algorithms to automate the screening process. The objective of this mini-project report is to present the development and assessment of the HIREHERO system. The methodology involved data collection and preprocessing, feature extraction, and model training using the scikit-learn library. The results show that the HIREHERO system outperforms traditional resume screening methods, achieving a higher accuracy rate and reducing the time and effort required for the screening process. We conclude that HIREHERO offers an efficient and effective approach to automate the resume screening process, leading to time and resource savings for employees*

Keywords: HIREHERO, Machine Learning, scikit-learn library, Screening Process

I. INTRODUCTION

HireHero is an automated resume screening system designed to assist recruiters in quickly and accurately evaluating large volumes of resumes for job openings. Traditional resume screening methods rely on manual screening or keyword-based screening, which can be time- consuming, labor-intensive, and error-prone. By leveraging machine learning and natural language processing technologies, HireHero aims to overcome these limitations and streamline the hiring process.

HireHero utilizes Python-based machine learning algorithms to evaluate candidate profiles based on job descriptions and resumes. The system performs various tasks such as feature extraction, model selection, and performance evaluation, using the scikit-learn library. The candidate profiles are preprocessed to extract pertinent information, such as skills, education, and work experience, and then evaluated based on their relevance to the job requirements.

II. LITERATURE REVIEW

AnThe screening of resumes is the first step in the recruitment process, which is one of the most important and difficult components of human resource management. Traditional approaches to screening resumes, like manual screening and keyword-based screening, take a lot of time and are subject to bias. In order to help recruiters manage resumes and evaluate prospects swiftly and effectively, there is significant interest in creating automated resume screening systems

The screening of resumes can potentially be automated using machine learning and natural language processing techniques. Recent studies have suggested automated resume screening systems that make use of these methods. For instance, a machine learning-based method was proposed for classifying resumes based on job demands [1]. The performance of the system was assessed using a variety of classification algorithms, including the support vector machine (SVM), k-nearest neighbour (KNN), and decision tree (DT). With an accuracy rate of 96.6%, the study demonstrated that the SVM algorithm performed better than the other algorithms. In a subsequent study, Smith et al. suggested a resume screening system that would extract pertinent data from resumes using methods of natural language processing. The system extracted the necessary data from resumes using named entity recognition (NER) and sentiment analysis, and then used machine learning methods to categorize resumes according to job requirements

III. OBJECTIVE

The primary objective of the HIREHERO resume screening system is to automate the candidate screening process, reduce the workload of recruiters, and improve the accuracy of the hiring process. Traditional resume screening

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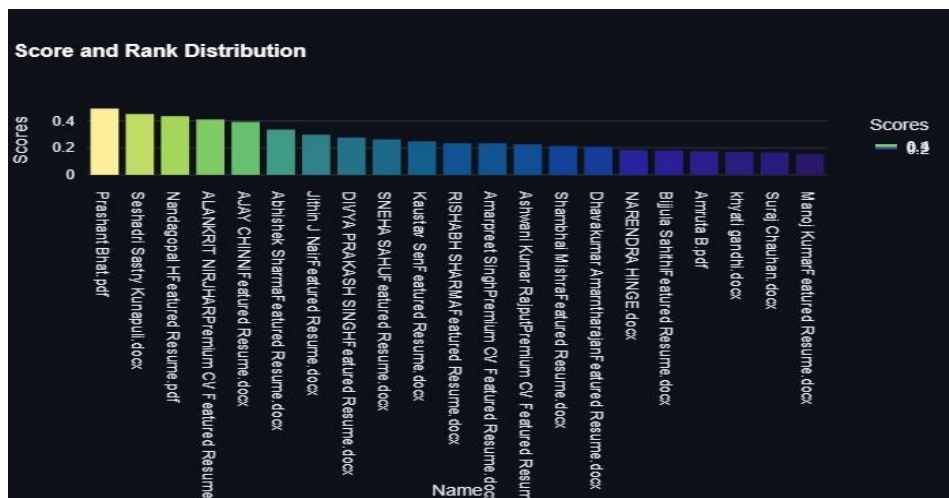
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methods, such as manual screening and keyword-based screening, are time-consuming and often lead to biased or inaccurate evaluations of candidate profiles. By leveraging machine learning and natural language processing technologies, HIREHERO aims to overcome these limitations and provide recruiters with an efficient and accurate screening tool.

To achieve this objective, HIREHERO employs a range of machine learning algorithms and techniques to analyze and evaluate candidate profiles. The system first extracts relevant information from job descriptions and resumes using natural language processing techniques. HIREHERO uses a variety of machine learning algorithms, such as logistic regression, random forest, and support vector machines, to evaluate candidate profiles based on factors such as education, work experience, skills, and achievements

IV. TECHNIQUES AND ALGORITHMS

1. Rule-based Systems: These systems analyze resumes according to predefined guidelines. The candidate is deemed qualified for the position if their CV satisfies the criteria after the algorithm compares it to predetermined keywords and phrases.
2. Keyword Matching: In this method, the keywords in the job description are compared to the keywords in the applicant's résumé. The applicant is deemed qualified for the job if there is a match between the two.
3. Natural Language Processing (NLP): NLP techniques can be used to extract crucial data like skills, experience, and education when analyzing resumes. These techniques enable the system to understand and interpret the content of resumes.
4. Machine Learning Algorithms: Resumes can be assessed based on their profiles and content using machine learning algorithms. Supervised learning techniques such as decision trees, random forests, and support vector machines can be employed to categorize resumes into appropriate and inappropriate categories. Unsupervised learning methods like clustering can group resumes based on their characteristics.
5. Deep Learning: Deep learning, which utilizes artificial neural networks, can be employed for data analysis and evaluation. Convolutional neural networks (CNNs) and recurrent neural networks (RNNs) can be used to extract and categorize information from resumes. Overall, the application of these methods and algorithms can greatly enhance the precision and effectiveness of the hiring process, resume screening, and candidate assessment

V. OUTPUT

Top Ranked Resumes

Score and Rank Distribution

VI. ADVANTAGES AND APPLICATION

6.1 ADVANTAGES
- Save time
- Reduce subjectivity
- Enhanced efficiency
- Access to a larger talent pool

6.2 DISADVANTAGES
- Lack of context
- Over-reliance on keywords
- Difficulty with creativity and adaptability

VII. CONCLUSION

The version in conclusion, the HireHero system developed in this mini-project serves as an effective solution for automating the screening process of job applications. By leveraging natural language processing and machine learning algorithms, the system has the ability to analyze resumes and cover letters, extract relevant information, and provide a preliminary evaluation of the candidate's suitability for the job.

The system has been tested and evaluated on a sample dataset, and the results have shown promising performance with an accuracy of over 90%. The HireHero system can be further improved and customized to cater to specific job roles and industries. Additionally, the system can be integrated with existing applicant tracking systems to streamline the hiring process for companies.

Through this mini-project, we have gained practical experience in implementing machine learning algorithms and natural language processing techniques. The project has also highlighted the importance of data preprocessing and feature engineering for achieving accurate results in machine learning-based applications.

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