

Resume Analyzer with a Mentor

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Abstract:

Resume Analyzer with Mentor is designed to analyse resumes and provide recommendations to users. By analysing the resume, it offers personalized suggestions for improvement. Additionally, we provide a mentor for users to receive the right guidance. We use various machine learning libraries to enhance the accuracy of the analysis. For the mentor system, we created a chat application using the MERN stack, allowing users to interact with mentors. We offer two plans for users: free and paid. In the free plan, users receive accurate analysis and recommendations. In the paid plan, users receive both the analysis and access to a mentor for further guidance.

1. INTRODUCTION:

In today's competitive job market, having a strong resume is crucial requirement. Because it makes first impression. Many job seekers find it hard to know how to improve their resumes. To help with this, we created a Resume Analyzer using Python. This tool checks resumes for important elements like structure, keywords, and readability, and offers personalized feedback. Our tool provides various kind of features using that user's build a strong resume. To make the experience even better, we add a Chat Web Application to the Resume Analyzer. Built using the MERN stack (MongoDB, Express.js, React, Node.js), this chat feature allows users to talk directly with mentors or career advisors. Users can click an icon in the Resume Analyzer to start a chat and get instant advice on improving their resumes. User can chat with mentor in real time this helps user a lot.

2. OBJECTIVE:

The primary objective of this project is to develop an intelligent Resume Analyzer with Mentor system that helps job seekers enhance their resumes and receive guidance from industry mentors. The system

leverages Natural Language Processing (NLP) to extract key details from resumes and analyze them using predefined criteria. It evaluates resumes based on various factors, assigns a score, and provides constructive feedback to improve them. Additionally, the platform includes a real-time chat application, enabling job seekers to connect with mentors for career advice. The collected data is stored securely in a database, allowing recruiters to access and analyze candidate profiles efficiently. This project aims to streamline the recruitment process by offering automated resume analysis and personalized mentorship, ultimately bridging the gap between job seekers and employers.

3. PROBLEM STATEMENT:

To provide a quick, efficient and personalized solution of resume building suitable for budding engineers and other job seekers using a state of art technological tools.

4. METHODOLOGY:

The methodology section of the Resume Analyzer system encompasses multiple phases in the creation and execution of the system. This section aims to elucidate the research framework, methods of data gathering, and analytical processes employed during the development of a Resume Analyzer system.

1. Resume Parsing and NLP Integration: Implement advanced Natural Language Processing (NLP) techniques for in-depth parsing of uploaded resumes, enabling the extraction of critical information such as skills and experience. Accurate resume analysis is foundational for precise user categorization and the provision of highly relevant job recommendations.
2. Machine Learning for User Categorization: Develop and train machine learning models, using label data, to categorize users as either "freshers" or "experienced" professionals based on their resume content. Accurate user categorization forms the bedrock for the generation of personalized job

recommendations, ensuring the alignment of users with suitable career opportunities.

3. **Dynamic Job Recommendation Engine:** Construct a dynamic recommendation engine that utilizes collaborative filtering, content-based filtering, and hybrid recommender systems. Ensure that it continuously adapts to the evolving job market landscape. The recommendation engine is the cornerstone of the system, delivering job opportunities tailored to each user's skills and experience, thus enhancing the job-seeking process.
4. **Data Security and Privacy Measures:** Implement stringent data security measures, encompassing encryption, access controls, and compliance with data protection regulations, to safeguard user information. Data security and privacy are of utmost importance, fostering user trust and ensuring adherence to legal and ethical standards.
5. **User Data Analysis for Continuous Enhancement:** Analyse user data to gain insights into user behaviour and preferences. Utilize data analytics techniques to iteratively refine the recommendation engine and enhance the overall user experience. Continuous data analysis facilitates system improvement and the delivery of more relevant and timely job recommendations.
6. **Requirement Analysis:** The primary goal was to enable seamless communication between job seekers and mentors. Key requirements included real-time messaging, user authentication, a chat history feature, and a scalable backend to handle multiple conversations simultaneously. The requirement analysis phase for the Mentor Chat Application was critical in identifying the needs of job seekers, mentors, and administrators to ensure the system's functionality and effectiveness.

5. LITERATURE REVIEW:

[1] Natural Language Processing (almost) from Scratch by Ronan Collobert, Jason Weston L'eon Bottou, Michael Karlen, Koray Kavukcuoglu, Pavel Kuksa.

The paper "Natural Language Processing (Almost) from Scratch" by Ronan Collobert, Jason Weston, Léon Bottou, Michael Karlen, Koray Kavukcuoglu, and Pavel Kuksa presents a novel approach to handling various Natural Language Processing (NLP) tasks using a unified deep learning model. Traditionally, NLP tasks required manually designed features and linguistic resources, but this study explores a method where a single deep neural

network is trained to process raw text input without relying on handcrafted features. The authors propose a multi-task learning framework using a convolutional neural network (CNN) to handle multiple NLP applications, such as part-of-speech tagging, named entity recognition, chunking, and semantic role labeling. Unlike conventional models that rely on pre-defined linguistic structures, this approach learns feature representations directly from unprocessed text. By training on large corpora, the system can automatically derive relevant syntactic and semantic information.

[2] Resume Information Extraction with A Novel Text Block Segmentation Algorithm by Shicheng Zu, Xiulai Wang and Seth Darren.

The research paper "Resume Information Extraction with a Novel Text Block Segmentation Algorithm" by Shicheng Zu, Xiulai Wang, and Seth Darren presents an innovative approach to extracting relevant details from resumes. The study addresses the challenges posed by varying resume formats and unstructured data by introducing a Text Block Segmentation Algorithm (TBSA) that improves accuracy in information retrieval. The authors highlight that traditional methods struggle to extract structured data due to differences in resume layouts, fonts, and alignment. To overcome this, the proposed TBSA method segments resume into meaningful text blocks, allowing for more precise identification of key sections such as personal details, work experience, education, and skills. This segmentation process enhances data extraction by minimizing errors caused by inconsistent formatting.

[3] A Few Shot Approach to Resume Information Extraction via Prompts by Chengguang Gan, Tatsunori Mori.

The research paper "A Few-Shot Approach to Resume Information Extraction via Prompts" by Chengguang Gan and Tatsunori Mori explores an innovative method for extracting structured information from resumes using a minimal amount of label data. Traditional resume parsing methods often rely on rule-based techniques or machine learning models trained on extensive datasets. However, these approaches may struggle with variations in resume formats and language structures. The study introduces a few-shot learning framework that utilizes prompt-based methods to efficiently extract key resume details such as name, contact information, skills, education, and work experience with significantly less training data. By leveraging pre-trained language models, the approach improves accuracy and adaptability across different resume styles and formats. The model is designed to understand natural language queries and extract relevant information, reducing dependency on manually annotated datasets.

6. APPLICATION INFORMATION:

The Resume Analyzer with Mentor system has various real-world applications that benefit job seekers, recruiters, and mentors. It automates the resume evaluation process by analyzing key aspects such as skills, experience, and formatting, helping candidates improve their resumes to align with industry standards. The system also facilitates personalized career guidance by allowing job seekers to connect with mentors who provide valuable insights and suggestions for career advancement. Additionally, it assists recruiters by maintaining a structured database of applicants, enabling efficient shortlisting based on skill matching and resume scores. By streamlining the resume assessment and mentoring process, the system enhances job search efficiency, improves candidate preparation, and bridges the gap between job seekers and employers.

7. CONCLUSIONS:

Our project combines a powerful Resume Analyzer with a helpful chat feature to assist job seekers. The Resume Analyzer, built with Python, reviews resume and provides feedback on how to improve them. The chat feature, developed using the MERN stack, lets users connect with mentors in real-time for personalized advice. By integrating these tools, we make it easier for users to get both automated feedback and expert guidance in one place. This approach helps job seekers improve their resumes and get the support they need to succeed in their job search. Overall, our project aims to simplify the resume-building process and increase users' chances of landing their desired jobs.

8. FUTURE WORK:

1. The Resume Analyzer with Mentor system has the potential for further enhancements to improve its functionality and user experience. One key area of future development is the integration of Artificial Intelligence (AI) and Machine Learning (ML) to provide more accurate and dynamic resume analysis. AI-based algorithms can offer advanced recommendations by comparing resumes with successful profiles in various industries.
2. Another significant improvement would be the addition of automated job recommendations, where the system suggests suitable job openings based on a candidate's skills and experience. This can be achieved by integrating job portals and analyzing market trends.

3. To enhance user interaction, the chat module can be expanded to support voice and video mentoring, allowing job seekers to have direct conversations with mentors for better guidance. Furthermore, implementing a resume builder with customizable templates would enable users to create professional resumes directly within the system.

9. REFERENCES:

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