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AI Resume Builder System

Asmita S. Adamapure, Tanuja T. Ghugare, Shweta S. Jathar, Tejaswini K. Kumbhar

CO Student, Department of Computer Engineering, KPIT Engineering College, Mudal, Maharashtra India

Prof. P. K. Barkale

Professor, Department of Computer Engineering, KPIT Engineering College, Mudal, Maharashtra India

ABSTRACT: In today's dynamic job market, a well-crafted resume is paramount for securing employment opportunities. The AI Resume Builder System is a comprehensive platform designed to assist job seekers in optimizing their resumes and increasing their chances of success. This paper provides an in-depth overview of the services offered by the AI Resume Builder System the technologies utilized, and the benefits it brings to users. The services provided by the AI Resume Builder System include:

- **Resume Builder:** Users can input their details and preferences to create professional resumes efficiently. The platform offers customizable templates and formatting options to suit diverse career fields and individual preferences.
- **Resume Analyzer:** By uploading their resumes, users receive a detailed analysis and a resume score. This analysis covers aspects such as content relevance, formatting consistency, and keyword optimization, providing actionable insights for resume improvement.
- **Job Description Matching Score:** Users can compare job descriptions with their resumes to determine the matching rate. This feature evaluates the alignment between a user's skills, experience, and qualifications with the requirements specified in job postings, aiding in targeted applications.
- **Job Portal:** The platform features access to career portals of prominent companies, along with curated resources and tips for resume enhancement. Users can explore popular resume formats, industry-specific recommendations, and strategies for standing out in competitive job markets..

KEYWORDS: Resume Builder, Resume Analyzer, Job Description Matching, Job Portal, AI Technology, NLP, Personalized Resumes, Career Advancement This paper aims to showcase the innovative features, user benefits and technological foundations of the AI Resume Analyzer, highlighting its role in empowering job seekers and optimizing the job application process

I. INTRODUCTION

The contemporary job market is an arena of fierce competition, where job seekers must navigate a myriad of challenges to secure coveted positions. Central to this pursuit is the creation of a compelling resume that not only showcases one's skills and experiences but also resonates with recruiters and hiring managers. However, the process of crafting such a resume is often daunting, with candidates grappling with questions of formatting, content relevance, and keyword optimization.

1. **Resume Builder:** Our user-friendly interface allows job seekers to input their personal and professional details, career objectives, and accomplishments. With customizable templates, formatting options, and real-time previews, the Resume Builder ensures that users create impactful and visually appealing resumes that capture the attention of recruiters.
2. **Resume Analyzer:** Leveraging advanced AI and NLP technologies, our system conducts a deep analysis of uploaded resumes. It evaluates content relevance, keyword density, formatting consistency, and overall readability, providing users with a detailed resume score and actionable recommendations for improvement. From refining language to enhancing structure, the Resume Analyzer guides users towards creating resumes that stand out.
3. **Job Description Matching Score:** Our platform facilitates a seamless comparison between job descriptions and resumes. By analyzing the alignment between a candidate's skills, experiences, and qualifications with the requirements specified in job postings, the Job Description Matching Rate feature helps users tailor their resumes

to specific job opportunities effectively. This ensures that resumes are not only comprehensive but also targeted and relevant.

4. **Job Portal:** Aspiring professionals can access our curated Job Portal, featuring career portals of leading companies and industry-specific resources.

The technological backbone of the AI Resume Analyzer comprises HTML, CSS, JavaScript, Python, and a suite of advanced NLP libraries. This robust framework enables seamless integration, real-time analysis, and personalized user experiences, ensuring that job seekers can leverage the full potential of AI-driven insights to enhance their resumes and increase their competitiveness in the job market

Natural Language Processing (NLP) Techniques:

- **Text pre-processing:** Use libraries such as NLTK and spaCy for tokenization, stop word removal, lemmatization, and part-of-speech tagging. These libraries facilitate the transformation of raw text data into structured and analyzable formats.
- **Keyword Extraction:** Leverage NLP techniques to extract key phrases, skills, experiences, and education details from resumes using tools like Rake and TextBlob. Implement word frequency analysis and TF-IDF calculations using sklearn for feature extraction.

Feature Extraction:

- **Word Embeddings:** Utilize pre-trained word embeddings models like Word2Vec or GloVe from gensim or spacy libraries to represent resume text as dense numerical vectors capturing semantic relationships between words.
- **TF-IDF Vectorization:** Convert resume text into TF-IDF vectors using sklearn. `feature_extraction.text.TfidfVectorizer` to quantify the importance of words and phrases in resumes relative to the entire dataset. This enables meaningful comparison and analysis.

Algorithm:

- **Machine Learning Algorithm:** The authors built a model that assigns scores to resumes based on keyword matching and semantic analysis. They achieved promising results in resume evaluation accuracy.
- **Deep Learning :** The authors present two distinct approaches for resume matching: one based on the structured data and another on unstructured textual data. Their results demonstrate the potential of deep learning in enhancing resume matching accuracy
- **Natural Language Processing:** The paper presents a comprehensive NLP-based approach to extracting key information from resumes, such as skills, experience, and education. The authors achieved competitive parsing accuracy.

II. METHODOLOGY

- **Data Collection:** Gather a diverse datasets of resumes from various sources such as job seekers, career portals, and industry databases using Python libraries like requests and BeautifulSoup for web scraping. Utilize APIs from job search platforms for structured data extraction.
- **Data Cleaning and Pre-processing:** Employ libraries like pandas and numpy for data cleaning tasks such as removing duplicates, handling missing values, and standardizing formats. Anonymize personal information using techniques from faker library to ensure data privacy.

Workflow diagram of the Resume Analyzer:

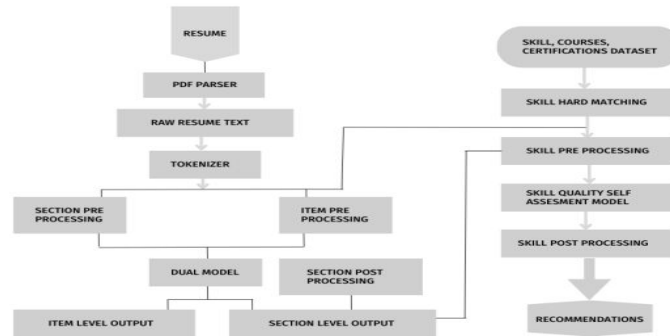
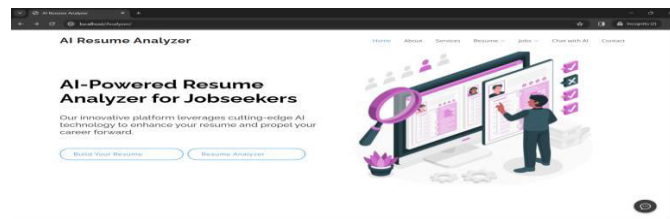


Fig.1. Workflow of the Resume Analyzer

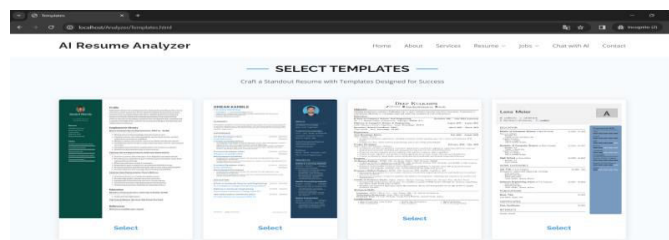
III. RESULTS

The below image illustrates a homepage featuring user-friendly navigation options, designed to streamline task completion and enhance user experience.



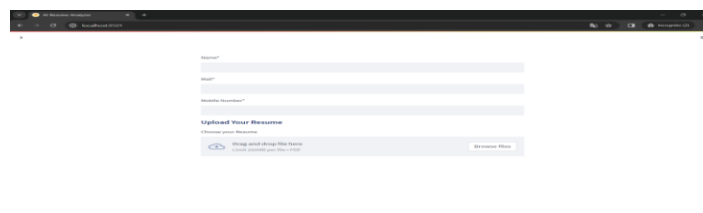
Img 1. Homepage

The following image showcases a resume builder page where users can select a template to create their resumes



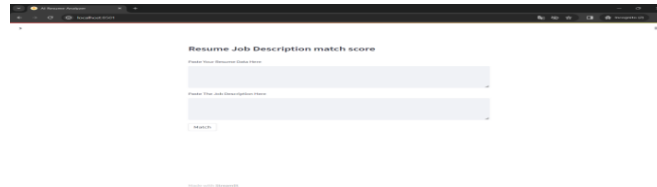
Img 2.Resume builder template.

The image below displays a resume analyzer tool that provides an analysis of your resume.



Img 3.Resume Analyzer page

The image below illustrates a job description matching score tool, allowing users to input both the job description and resume data to obtain a matching score.



Img 4. Job description matching score

IV. CONCLUSION

The AI Resume Builder System presented in this research represents a significant advancement in the field of talent acquisition and recruitment. By harnessing the power of artificial intelligence (AI) and machine learning (ML) technologies, this system offers a cutting-edge solution to the challenges faced by both job seekers and employers in the modern job market.

The methodology employed in developing the AI Resume Builder System involved a systematic approach that encompassed study design, data collection, and analytical techniques. By utilizing supervised learning methods and training the system with annotated data, we ensured its accuracy in identifying key elements such as skills, qualifications, and experiences from resumes. This rigorous methodology not only enhances the system's predictive capabilities but also ensures its reliability in matching resumes with job requirements accurately.

In conclusion, the AI Resume Builder System has the potential to revolutionize how job seekers craft their resumes and how employers evaluate candidate profiles. Its scalability, feedback mechanisms, and analytical prowess make it a valuable tool for organizations of all sizes, facilitating a more streamlined and data-driven recruitment process. As AI continues to evolve, the AI Resume Builder System represents a glimpse into the future of talent acquisition, where technology plays a pivotal role in bridging the gap between job seekers and employment opportunities.

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