Assignment Report

Only for course Teacher					
	Needs Improvement	Fair	Good	Excellent	Total Mark
Level of Content					
Content Development					
Spelling & Grammar					
Format					
Comments					

Semester: Spring 2025

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Course Code: DS 423
Course Name: Machine Learning Driven Data Analysis and Communication
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"ATS BREAKER"- A System for Comparing Candidate Resume and Company Requirements

Introduction

In today's competitive job market, job seekers face numerous challenges in securing employment. One of the key hurdles is optimizing their resumes to meet employer requirements. Many companies use Applicant Tracking Systems (ATS) to filter resumes based on specific job criteria, which often results in applicants being rejected before human recruiters review their profiles. To bridge this gap, the ATS Breaker system is proposed as a solution to help candidates enhance their resumes by comparing them with job requirements and suggesting modifications accordingly.

Problem Statement

The job application process is highly dependent on automated resume screening systems, commonly known as Applicant Tracking Systems (ATS)**.** These systems are designed to filter and rank resumes based on predefined criteria such as skills, experience, education, and keywords mentioned in job descriptions. However, many applicants struggle with ATS rejections due to the following challenges:

1. **Lack of Resume Optimization** – Many candidates fail to tailor their resumes according to job descriptions, leading to automatic rejections.
2. **Grammatical and Formatting Errors** – Resumes containing grammatical mistakes or improper formatting are often discarded.
3. **Mismatch Between Skills and Job Requirements** – Candidates may have the required skills but fail to highlight them effectively in their resumes.
4. **No Prior Feedback Mechanism** – Job seekers lack tools that provide instant feedback on their resumes before submission.

To address these issues, this project introduces an AI-driven system based on Natural Language Processing (NLP) that analyzes resumes and job descriptions, provides a similarity score, and offers constructive suggestions to improve the candidate's chances of passing ATS filters.

Objectives

The primary objective of this project is to develop an intelligent ATS Breaker system that assists job seekers in improving their resumes by providing detailed feedback and optimization suggestions. The specific objectives include:

3.1 Resume and Job Description Comparison

- Extract and compare relevant information from resumes and job descriptions using NLP techniques.
- Identify gaps between candidate skills and job requirements.

3.2 Suggestion System for Resume Improvement

- Provide candidates with suggestions to modify their resumes based on the comparison results.
- Highlight missing skills, experience, or certifications that could improve job suitability.
- Offer grammar correction to enhance readability and professionalism.

3.3 Automation of the Resume Screening Process

- Develop an automated model capable of processing resumes in various formats (PDF, DOCX, TXT)**.**
- Implement Named Entity Recognition (NER) using spaCy to extract important entities such as skills, experience, and education.
- Use regular expressions and machine learning to detect unlisted but relevant skills in job descriptions.

3.4 User-Friendly Interface and Data Storage

- Create an interactive web-based interface using React.js and Flask.
- Enable users to upload resumes, receive feedback, and track progress over time.
- Securely store user data and previous results for future reference.

3.5 Enhancing Future Job Applications

- Allow users to iteratively refine their resumes based on past recommendations.
- Implement a module to generate ATS-friendly resumes using predefined templates.

Conclusion

The ATS Breaker system aims to bridge the gap between job seekers and employers by ensuring that resumes meet the ATS screening criteria. By leveraging Natural Language Processing (NLP) and machine learning, the system provides actionable insights, helping candidates to optimize their resumes and increase their chances of securing interviews. Future enhancements may include AI-generated resume templates and real-time job matching.