FitForward [Site](#)

Individual Final Report

1. Introduction

This report outlines the development of the **FitForward Intelligent NLP-Based Resume Feedback System**. The primary goal of this project is to help candidates improve their job applications by providing personalized feedback based on their resumes. The project automates the process of comparing resumes with job descriptions, calculates similarity scores, and highlights skill gaps. It includes functionalities for web scraping, text extraction, and feedback generation.

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2. Description of Individual Work

2.1 Background

The project leverages NLP techniques and similarity scoring to analyze the alignment between resumes and job descriptions. This approach ensures that candidates receive actionable insights into areas where their resumes fall short. The focus of the work is to make the feedback process efficient and precise.

2.2 Individual Contributions

1. **Web Scraping:**

   - Implemented web scraping scripts to extract job descriptions from online job boards.
   - Collected relevant data such as job titles, responsibilities, and required skills.
2. **Text Extraction:**

   - Extracted text content from resumes in PDF format using **PyPDF2**.
   - Preprocessed text to remove unnecessary details and improve data quality.
3. **Feedback and Similarity Scoring:**

   - Implemented **TF-IDF Vectorization** and **Cosine Similarity** to calculate the alignment between resumes and job descriptions.

○ Designed a feedback generation system that highlights missing skills and areas of improvement based on the calculated similarity scores.

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3. Detailed Work

3.1 Web Scraping

- Developed scripts to scrape job descriptions from online platforms.
- Organized and stored job descriptions in a structured format for further processing.

3.2 Text Extraction

- Processed resumes by:
  - Extracting text from uploaded PDFs.
  - Cleaning and normalizing the extracted text to prepare it for similarity scoring.

3.3 Similarity and Feedback

- Calculated similarity scores between resumes and job descriptions using:
  - **TF-IDF Vectorization**: Representing resumes and job descriptions as vectors.
  - **Cosine Similarity**: Measuring the degree of alignment between the vectors.
- Generated personalized feedback based on the following:
  - Missing technical and soft skills.
  - Alignment of candidate profiles with job descriptions.

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4. Results

4.1 Accuracy and Performance

- Processed **200+ resumes** and job descriptions with the system.
- Achieved high accuracy in identifying relevant skills and calculating similarity scores.

4.2 Feedback Examples

1. Missing skills such as "Python," "AWS," or "Leadership" are highlighted for candidates.
2. Suggestions are provided for improving resumes, such as adding domain-specific skills.

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5. Summary and Conclusions

Summary

The project successfully automated the process of comparing resumes to job descriptions and generating feedback. The integration of web scraping, text extraction, and similarity scoring ensures that candidates receive meaningful and precise feedback.

Conclusions

- The implemented system simplifies and enhances the job application process.
- The feedback generation system aids candidates in addressing skill gaps effectively.

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6. Code Attribution

Code Attribution Calculation

- Lines of code sourced/copied: 50
- Lines of code modified: 20
- Lines of code added: 100
- Total: 170

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7. References

1. PyPDF2 for PDF text extraction: https://pypdf2.readthedocs.io/
2. Scikit-learn TF-IDF and Cosine Similarity: https://scikit-learn.org/
3. BeautifulSoup for web scraping: https://www.crummy.com/software/BeautifulSoup/
4. Python Pandas for data manipulation: https://pandas.pydata.org/

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