Project Report

Programming for Artificial Intelligence

Submitted to:
Superior University

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To:
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AI-Powered Resume Evaluator

1 Introduction

In today's fast-paced job market, applicants must submit high-quality resumes that stand out to employers. However, many resumes suffer from structural issues, weak phrasing, or missing critical content. This project aims to build an AI-powered web application that analyses resumes, assigns performance scores based on various criteria, and offers improvement suggestions using Natural Language Processing (NLP) and machine learning techniques.

This project is learning based project in which we learned the concepts of NLP and Gen AI.

2 Objectives

The primary objectives of this project are:

- To develop an AI-based tool to analyse and evaluate resumes.
- To extract essential information like contact details, skills, and work experience.
- To generate a comprehensive evaluation score and grammar score.
- To provide AI-generated suggestions for improvement.
- To deliver a user-friendly web interface for resume upload and feedback presentation.

3 Tools and Technologies Used

Component	Technology/Tool
Programming Language	Python
Backend Framework	Flask
Frontend	HTML, CSS
NLP Libraries	spaCy, TextBlob
AI Suggestions Model	FLAN-T5 (via HuggingFace Transformers)
PDF Parsing	PyMuPDF (fitz)

4 System Architecture & Modules

4.1 System Overview

The system is divided into modular components to handle specific functionalities, allowing scalability and maintainability.

4.2 Module Descriptions

- **app.py:** The main Flask app handling HTTP requests, file uploads, and result rendering.
- **nlp_extract.py:** Handles parsing and extraction of email, phone, skills, experience, and grammar score.
- **scoring.py:** Assigns a score based on the quantity and quality of extracted features.
- **gpt_suggestions.py:** Uses a lightweight AI model to provide text-based suggestions for improvement.
- **index.html:** HTML template with Bootstrap for user interface to upload PDF and display results.

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5 Features and Functionality

- **Resume Upload:** Users upload resumes in PDF format.
- **NLP Extraction:** Extracts key resume features like:
    - Email and phone validation
    - Skills list identification
    - Experience entries detection
    - Grammar analysis
- **Evaluation Metrics:**
    - Contact Info (Email, Phone)
    - Grammar Score (0-10)
    - Experience Entries Count & Skills Found
    - Total Score
- **AI Suggestions:**
    - Provides content recommendations

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6 Sample Output

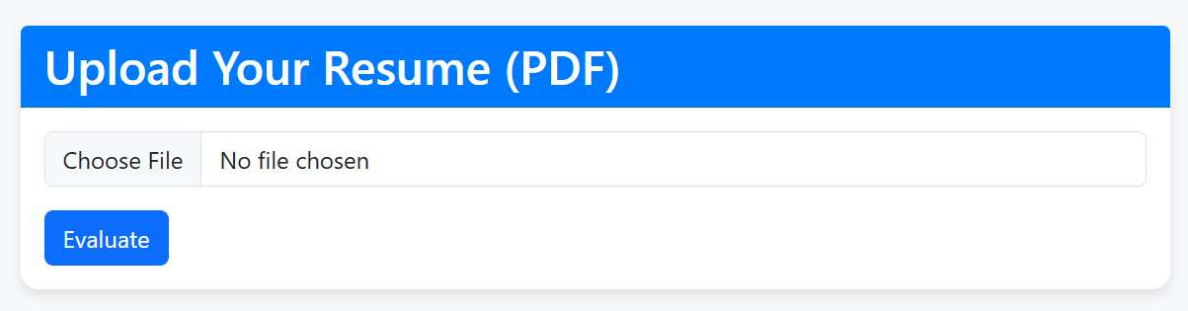
We checked the working of the project by uploading there are resume to check the working. We divided these resumes in three types:

No 1	Resume	Best
No 2	Resume	Normal

6.1 General Output:

The general output is shown the file uploading part in which the user provides the resume

Output

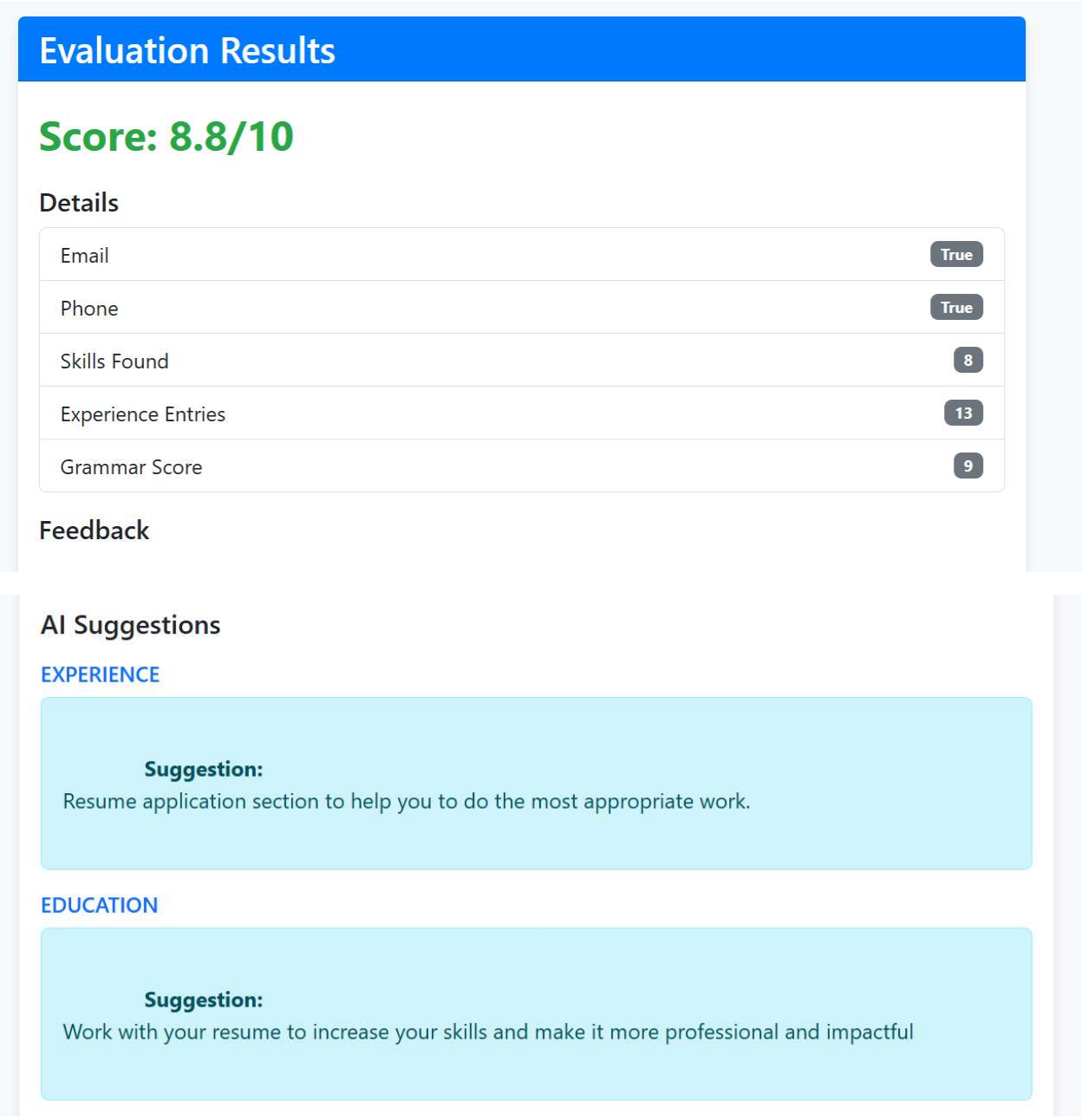


Output

6.2 Output of 1st Resume:

The 1st Resume is best considered due to few reasons the details in first resume is much better than the other resume we show the theoretical and graphical data of 1st output.

Output



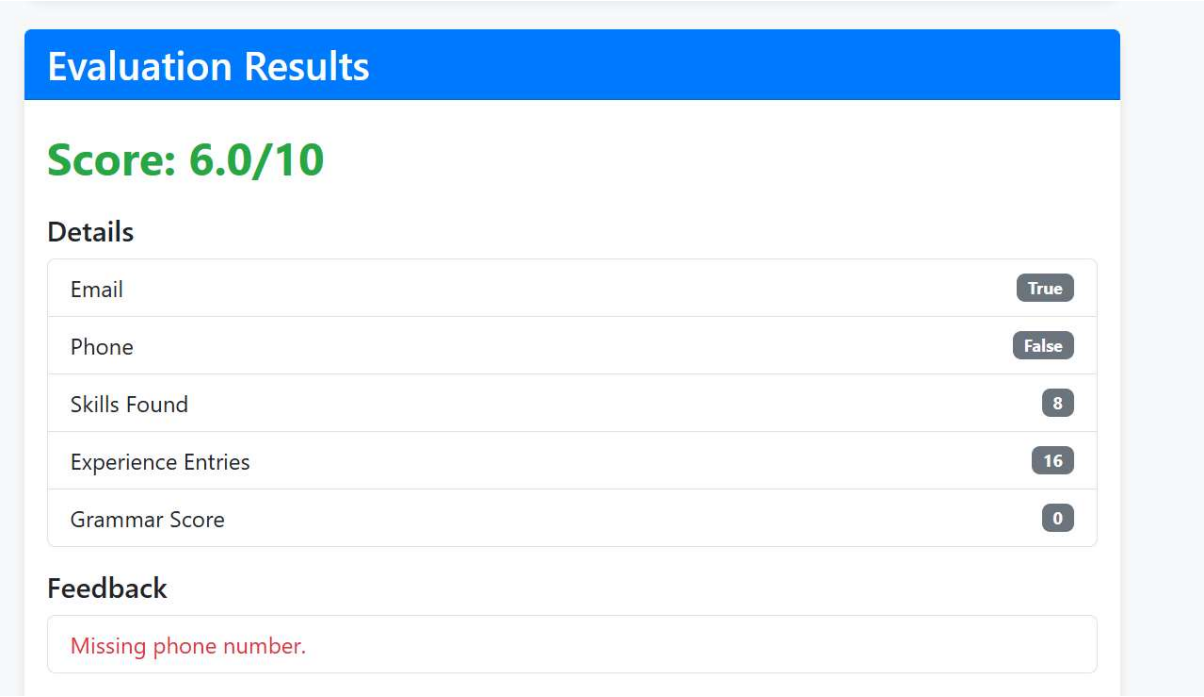
Theoretical Output

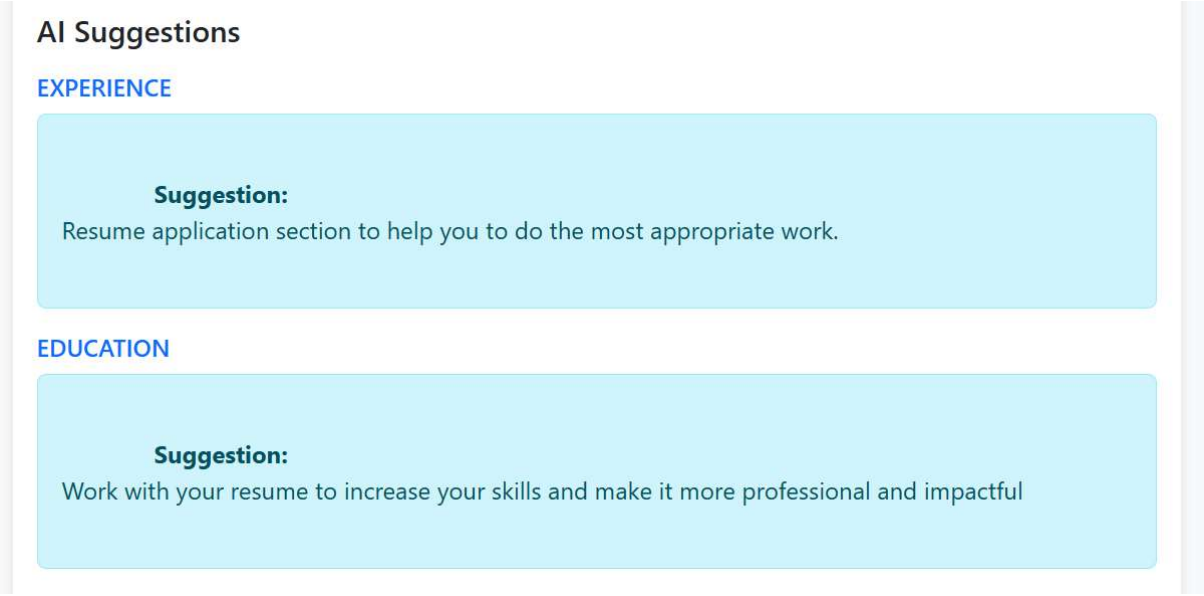
Score: 8.8 / 10	**Email:** Found	**Phone:** Found
Skills Found: 8	**Experience Entries:** 13	**Grammar Score:** 9

6.3 Output of 2nd Resume:

The 2nd Resume is normal considered due to few reasons the details in 2nd resume is normal than the other resume we show the theoretical and graphical data of 1st output.

Output





Theoretical Output

Score: 6.0 / 10	**Email:** Found	**Phone:** Not Found
Skills Found: 8	**Experience Entries:** 16	**Grammar Score:** 0

7 Conclusion

This project effectively combines traditional NLP techniques with modern AI capabilities to create a smart resume evaluator. The platform provides users with actionable feedback, enabling them to enhance their resumes efficiently. Its modular architecture ensures flexibility for future expansions, such as LinkedIn profile analysis or job-role targeting suggestions.

This project not only fulfills academic learning goals but also aligns with real-world industry demands, making it suitable for integration into HR tech solutions or online job portals.

Also, this project is for learning purpose that are using simple and basic NLP concepts and Generative AI.

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8 Future Work

- Integration with databases for user login and resume history.
- Export feedback and suggestions as downloadable PDF reports.
- Add multilingual support for global accessibility.
- Implement job-specific resume targeting suggestions.
- Deploy this project for all use.

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