Project Proposal: AI-Powered Resume Analyzer

1. Problem Statement

In today's competitive job market, students and professionals often struggle to understand how well their resumes align with industry requirements.

- Many resumes lack relevant skills or fail to match job descriptions, reducing selection chances.

- Manually reviewing resumes is time-consuming and subjective.

- There is a need for an AI-powered system that can analyze resumes automatically, provide feedback, and suggest improvements.

2. Proposed Solution

We propose **AI-Powered Resume Analyzer**, a web-based tool that:

1. Allows users to upload their resumes (PDF format).

2. Automatically extracts text from resumes using PyMuPDF.

3. Analyzes skills using Natural Language Processing (NLP) with SpaCy.

4. Generates AI-based feedback and improvement suggestions using Gemini AI.

5. Displays a resume score, skill match percentage, and visual charts to highlight strengths and weaknesses.

This solution will help students and job seekers optimize their resumes for better employability.

3. Project Objectives

- Develop a Flask web application for uploading and analyzing resumes.

- Implement PDF text extraction using PyMuPDF (fitz).

- Use SpaCy and PhraseMatcher to extract skills and experience.

- Integrate Gemini AI to generate resume improvement suggestions.

- Build a scoring system that evaluates the resume based on:
    - Skill match percentage

    - Number of experience statements

    - AI quality feedback

- Create a visual dashboard with charts and gauges to display results.

4. Technologies to be Used

- **Frontend:** HTML, Bootstrap 5, Plotly.js (for charts)

- **Backend:** Python, Flask

- **NLP & AI:** SpaCy, Gemini AI

- **PDF Processing:** PyMuPDF (fitz)

- **Visualization:** Plotly (Pie charts, Gauge charts)

5. Weekly Development Plan

Week 1: Setup and Core Features

- Initialize Flask project with file upload support.

- Implement PDF text extraction using PyMuPDF.

- Basic NLP skill extraction with SpaCy PhraseMatcher.

Week 2: AI Integration & Scoring

- Integrate Gemini AI for generating feedback.

- Add a scoring system for skill match and experience.

- Return results as JSON or in a simple HTML template.

Week 3: Frontend & Visualization

- Build modern frontend with Bootstrap for clean UI.

- Add Plotly charts for skill match (pie chart) and resume score (gauge chart).

- Display matched skills, experience summary, and AI suggestions.

Week 4: Final Enhancements & Presentation

- Improve visual design with clean, responsive layouts.

- Add a polished landing page with drag-and-drop resume upload.

- Optimize AI suggestions display with clear formatting.

- Prepare demo and presentation for project submission.

6. Expected Outcome

By the end of development:

- A web-based AI Resume Analyzer capable of analyzing resumes, generating feedback, and visualizing results.

- Helps students improve their resumes for better job opportunities.

- Demonstrates knowledge of Python, NLP, Flask, AI integration, and Web Development.