Resume Screening & Matching AI Agent

Problem Statement:

Hiring teams often receive a large number of resumes for a single job post, making it time-consuming to manually screen and shortlist suitable candidates. This AI Agent automates the screening process by comparing the relevance of resumes to a job description using NLP and machine learning techniques.

Objective:

To develop an AI-based tool that ranks uploaded resumes based on how well they match a given job description.

Tools & Libraries Used:

- **Python**
- **Google Colab**
- **scikit-learn** – for TF-IDF and cosine similarity
- **PyMuPDF** – to extract text from PDF resumes
- **pandas** – to manage and display results
- **Google Colab files** – to handle uploads and downloads

Methodology:

1. User uploads one or more resumes (PDF format).
2. The job description is entered manually into the system.
3. Text is extracted from each resume using PyMuPDF.
4. TF-IDF vectorization converts both resumes and job description to numerical form.
5. Cosine similarity measures how closely each resume matches the job description.
6. The system ranks and displays resumes in descending order of similarity.

Results:

The AI agent outputs a sorted list of resumes with similarity scores, highlighting the most relevant ones first. Users can export the results to a CSV file for further use.

Benefits:

- Saves manual effort in resume screening.
- Ensures consistent and unbiased scoring.
- Works with real-world PDF resumes.

Limitations:

- Works best with well-formatted PDF resumes.
- Does not evaluate resume design or layout (only text content).
- Limited to text-based matching (no image-based parsing).

Conclusion:

- This AI Agent provides a practical solution to automate resume screening and candidate shortlisting. It can be integrated into hiring workflows or enhanced with more NLP features like keyword highlighting or named entity recognition.