Skill-to-Job AI Matcher - Project Report

Title: Skill-to-Job AI Matcher

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Objective:

To build an intelligent AI-powered system that ranks job listings based on how well they match a candidate's resume using SBERT (Sentence-BERT) embeddings and cosine similarity. This project mimics modern HR platforms like Personio, SAP, and Delivery Hero in talent-job matching.

Tools & Libraries:

- Python, Google Colab
- pandas, numpy, sklearn
- sentence-transformers (SBERT)
- PyMuPDF (PDF parsing)

Dataset:

- Resume: Cheva_Kavitha_Resume.pdf (realistic)
- Job Descriptions: job_descriptions.csv (10 sample listings from top companies in Germany)

Step-by-Step Workflow:

1. Upload resume PDF
2. Upload job_descriptions CSV file
3. Extract resume text using PyMuPDF
4. Use all-MiniLM-L6-v2 from sentence-transformers to create embeddings
5. Compute cosine similarity between resume and each job description
6. Rank jobs based on similarity score

7. Display top 5 matching jobs with details

Results (Top 5 Matching Jobs):

job_title	company	match_score
Data Analyst	Delivery Hero	0.50
ML Engineer	Siemens	0.51
Data Scientist	Zalando	0.49
BI Analyst	SAP	0.48
AI Product Manager	N26	0.44

Impact:

This AI system can be extended to:

- Build HR recommender systems
- Match resumes at scale for large applicant pools
- Provide career navigation suggestions

Future Enhancements:

- Build Streamlit frontend
- Add visual similarity graphs
- Suggest skill improvements for better matches
- Add resume tailoring tips

Conclusion:

Skill-to-Job AI Matcher offers an innovative solution to bridge the gap between candidate skills and job market demand. It demonstrates the potential of NLP and AI in real-world HR use cases and serves as a powerful addition to any machine learning portfolio.

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