

AI Career Copilot

Resume Analyzer Job Matcher Interview Coach

An AI-powered FastAPI application that analyzes resumes, compares them with job descriptions, and provides match scores, skill gaps, and interview insights.

This project demonstrates real-world AI + backend engineering, making it ideal for AI/ML, Python, SDET, and backend developer roles.

Features

- Resume PDF Parsing Extracts clean text from uploaded resumes
- NLP Skill Extraction Identifies technical skills using spaCy + fuzzy matching
- JD vs Resume Matching Semantic similarity using Sentence Transformers, Skill overlap scoring, Final match score (0100)
- Missing Skills Detection Highlights gaps for improvement
- FastAPI REST API Production-style backend with Swagger UI
- Modular architecture for easy extension

Project Architecture

ai-career-copilot/

app/

```
main.py          # FastAPI endpoints  
resume_parser.py    # PDF text extraction  
skill_extractor.py  # NLP skill detection  
matcher.py        # Similarity + scoring logic  
utils.py          # Helper functions (optional)  
sample_files/      # Sample resume & JD  
requirements.txt  
README.md
```

.gitignore

Tech Stack

Backend: Python, FastAPI, Uvicorn

AI / NLP: Sentence Transformers, spaCy, RapidFuzz

PDF Processing: pdfplumber, PyMuPDF

ML Utilities: scikit-learn, NumPy

Installation & Setup

1. Clone the repository
2. Create virtual environment
3. Install dependencies
4. Run the application with Uvicorn

API Usage

POST /match

Inputs: Resume PDF file, Job description text

Output Example:

```
{  
    "final_score": 79,  
    "overall_similarity": 0.81,  
    "skill_overlap": 0.71,  
    "matched_skills": ["java", "selenium", "junit", "docker"],  
    "missing_skills": ["jenkins", "cloud"]  
}
```

Example Workflow

- Upload resume PDF
- Paste job description

- AI extracts skills, computes similarity, calculates match score, shows missing skills

Real-World Use Cases

- Resume screening automation
- Career guidance tools
- HR tech platforms
- Interview preparation assistants

Future Enhancements

- Web UI (React dashboard)
- Interview question generation using LLMs
- Resume improvement suggestions
- Multi-resume comparison
- Cloud deployment (Render / AWS / Docker)

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Why This Project Matters

- AI + NLP + Backend Engineering
- Real business problem solving
- Production-ready API design