800-AS2

Subject: Group Project Proposal - [Yaohui Zhang(Tomie)] & [Wei Xie(Brand)]

1. Proposed project title

JobFit AI: An Intelligent Resume Optimization Agent

2. Short project summary

In the competitive job market, candidates often struggle to tailor their resumes to specific Job Descriptions (JDs) and Applicant Tracking Systems (ATS). This project aims to develop "JobFit AI," a web-based application that leverages Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) to automate resume customization.

Users will upload their existing resume (PDF) and a target JD. The system will employ an agentic workflow to:

1. Parse and analyze the JD for key technical skills and soft skills.

2. Retrieve relevant experiences from the user's resume using vector similarity search.

3. Rewrite bullet points to align with the JD's keywords and tone, ensuring higher ATS compatibility.

4. Provide a gap analysis report highlighting missing skills.

Unlike generic rewriting tools, JobFit AI focuses on context-aware optimization, helping users present their most relevant qualifications effectively.

3. Tools and technologies to be used for development

- **Frontend:** Next.js (React), TypeScript, Tailwind CSS (for a responsive UI).

- **Backend:** Python, FastAPI (High-performance API).

- **AI & Orchestration:** LangChain & LangGraph (for Agentic workflows), OpenAI API or DeepSeek (LLM provider).

- **Data & Storage:** FAISS or ChromaDB (Vector Store for RAG), PyPDF2 (Parsing).

- **DevOps & Deployment:** Docker (Containerization), AWS EC2 (Hosting), GitHub Actions (CI/CD pipeline).

4. Expected outcomes / goals

- **Functional MVP:** A deployed web application where users can upload a resume and receive an optimized version along with a modification report.

- **Agentic Pipeline:** A robust backend pipeline that successfully extracts entities from JDs and rewrites resume content with high relevance.

- **System Architecture:** A scalable microservices architecture using Docker, demonstrating industry-standard DevOps practices.

- **User Experience:** An intuitive interface allowing side-by-side comparison of the original and optimized resume.