Enterprise-Level AI Internship Recommendation System

This document explains the high-level architecture, workflow steps, AI models, and evaluation approach used in the AI Internship Recommendation System. The design follows industry-grade AI system patterns similar to production recommendation engines.

System Workflow Steps

Step	Component	What Happens
1	User (React Frontend)	User uploads resume through Dashboard.
2	FastAPI Backend	Receives resume via POST API.
3	PDF Parser (pdfplumber)	Extracts raw text from resume.
4	Semantic AI Model (Sentence-BERT)	Converts resume into numerical embeddings.
5	Embedding Database	Precomputed internship embeddings are loaded.
6	Cosine Similarity Algorithm	Calculates similarity between resume and internships.
7	Ranking Engine	Top matches are sorted based on similarity score.
8	Recommendation API	Returns best internships with Match %.
9	Frontend Display	Dashboard shows AI recommendations instantly.

Enterprise Architecture

Architecture Overview:

• Frontend Layer: React Dashboard handles user interaction.
• API Layer: FastAPI manages requests and AI inference.
• AI Layer: Sentence-BERT generates semantic embeddings.
• Similarity Engine: Cosine similarity ranks internships.
• Data Layer: Internship dataset with precomputed embeddings.

This architecture mirrors modern AI products such as LinkedIn job matching and Netflix recommendation pipelines where embeddings + similarity search drive intelligent suggestions.

AI Model & Algorithm

AI Model Used: Sentence-BERT (all-MiniLM-L6-v2)

Why this model?
• Understands meaning, not just keywords.
• Industry standard for semantic search.
• Extremely fast for real-time recommendations.

Algorithm: Cosine Similarity
Measures angle between vectors to determine semantic closeness.

Expected Accuracy Range: 70% – 90% relevance depending on resume quality.

Recruiter Value

Why This Impresses Recruiters:
• Uses real semantic AI instead of keyword matching.
• Demonstrates production-ready architecture.
• Shows understanding of embeddings and vector search.
• Built with scalable backend design.

This is considered an ENTERPRISE-GRADE AI PROJECT for freshers.