E-commerce Product Recommendation RAG

Problem Statement

Develop a RAG system for an e-commerce platform that combines product descriptions, user reviews, and specifications to provide personalized product recommendations and detailed comparisons.

Key Requirements

- Multi-source product data integration (descriptions, reviews, specifications)
- Personalized recommendation algorithms
- Detailed product comparison features
- User preference learning and adaptation
- Review sentiment analysis and integration

Technical Challenges

- Multi-modal product data processing
- User behavior pattern recognition
- Real-time recommendation updates
- Cross-category product relationships
- Review authenticity and relevance scoring

Deliverables

A fully working deployed demo (e.g., via Streamlit, Gradio, or HuggingFace Spaces)

A well-structured GitHub repository with clean code, documentation, and a README.md explaining the system

A public link to the working application

Project Scope & Guidelines

Each RAG project will focus on a specific domain such as law, healthcare, finance, education, or multimodal data processing (text, image, audio, video).

Students must:

- Use appropriate embedding models (e.g., OpenAI, HuggingFace Sentence Transformers)
- Implement retrieval using vector databases like **Chroma**, **Pinecone**, or **Weaviate**
- Design effective **chunking strategies** tailored to the data type
- Provide meaningful **retrieval-based responses** using context-aware generation
- Ensure their system has **clear UX**, **logical data flow**, and **relevance scoring**
- Evaluate with basic metrics (e.g., retrieval accuracy, latency, or RAGAS)

Submission Requirements

- GitHub repo link
- Deployed app link
- **Deadline: 3 days from the assigned day**