Problem Statement: Movie Trivia Chatbot (with LangSmith)

Build a Movie Trivia Chatbot using LangChain and a Retrieval-Augmented Generation (RAG) pipeline to answer questions about movies from a PDF knowledge base.

Requirements

PDF Ingestion:

- Load movies_trivia.pdf using PyPDFLoader.

- Split using CharacterTextSplitter (chunk_size=150, chunk_overlap=20).

Vector Store (choose one):

- Chroma or FAISS with OllamaEmbeddings (granite-embedding:latest).

- Store under collection/index: movie_trivia.

LLM Integration (choose one):

- HuggingFaceEndpoint (e.g., Menlo/Jan-nano-128k) or

- Local Ollama model (e.g., llama3, mistral).

Chat Logic:

- Use RetrievalQA with a custom prompt template.

- Track conversation with InMemoryChatMessageHistory.

LangSmith:

- Enable tracing with LangSmith.

- Use environment variables for API key and project name.

UI:

Gradio interface with:

- Text input and response area.

- Submit and Clear History buttons.

- Greeting: "Hello, I am MovieBot, your movie trivia expert. Ask me anything about films!"

Deliverable:

Submit a single movie_chatbot.py that:

- Loads and splits the PDF.

- Initializes Chroma or FAISS.

- Connects to Ollama or Hugging Face model.

- Implements LangSmith tracing.

- Runs Gradio UI with history support.