

Problem Statement: Historical Figures Chatbot (with LangSmith)

Build a Historical Figures Chatbot using LangChain and a Retrieval-Augmented Generation (RAG) pipeline to answer questions about historical figures from a PDF knowledge base.

Requirements

- **PDF Ingestion:**
 - Load historical_figures.pdf using PyPDFLoader.
 - Split using CharacterTextSplitter (chunk_size=200, chunk_overlap=30).
- **Vector Store (choose one):**
 - Chroma or FAISS with OllamaEmbeddings (granite-embedding:latest).
 - Store under collection/index: historical_figures.
- **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 HistoryBot, your expert on historical figures. How can I assist you today?"
- **Deliverable:**
 - Submit a single history_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.