<u>Learnings</u>

Internship Learning Summary — By Ramchandra Rane

During my internship at **Credenca Data Solutions**, I worked on building multiple AI-based chatbot and document-interaction apps using **LangChain**, **Streamlit**, **OpenAI**, and **Pinecone**. Below is a breakdown of the core concepts and skills I developed:

1. LangChain & OpenAI Integration

- Created multiple chatbot apps using **LangChain with GPT-3.5-turbo** via ChatOpenAI.

- Implemented **session memory**, chat summarization, and role-based system prompts for advanced conversational flows.

- Explored **Conversation Chains**, **Prompt Templates**, and **Memory Modules** (BufferMemory, SummaryMemory, etc.).
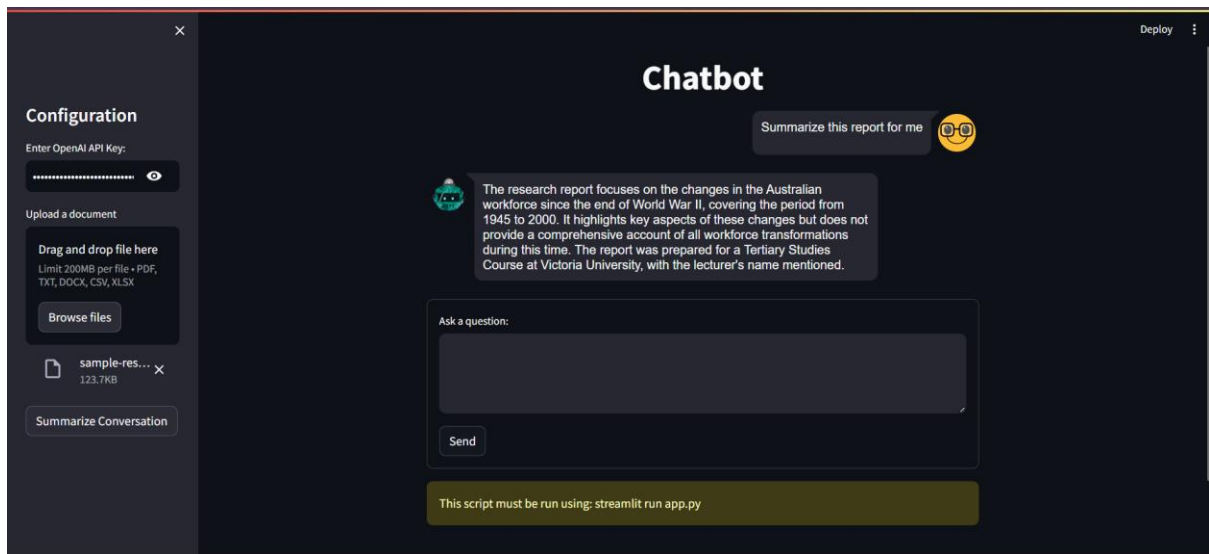
2. Streamlit App Development

- Built clean, interactive front-ends using **Streamlit**.

- Integrated **forms**, **chat-style UI**, **file uploads**, and **sidebar inputs**.

- Enabled secure API key handling and reusable components across projects.

3. Chatbot with Document Retrieval

- Developed chatbots that **understand PDFs, Word files, and text documents**.

- Used **FAISS vector store** and **OpenAI Embeddings** to retrieve relevant text chunks.

- Added functionality to support **CSV and Excel-based Q&A**, including basic data summarization.
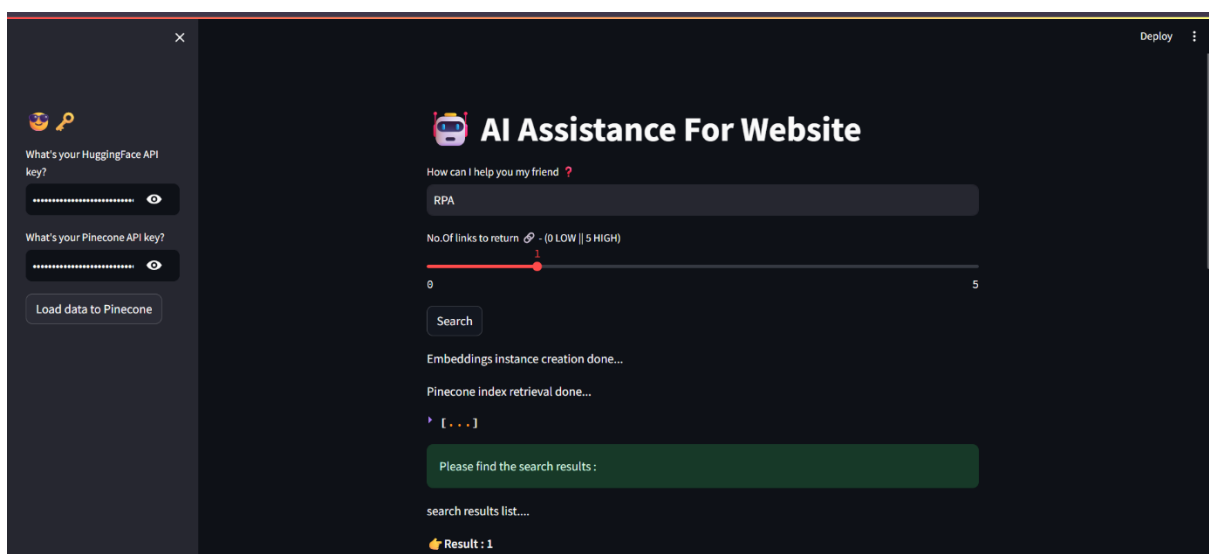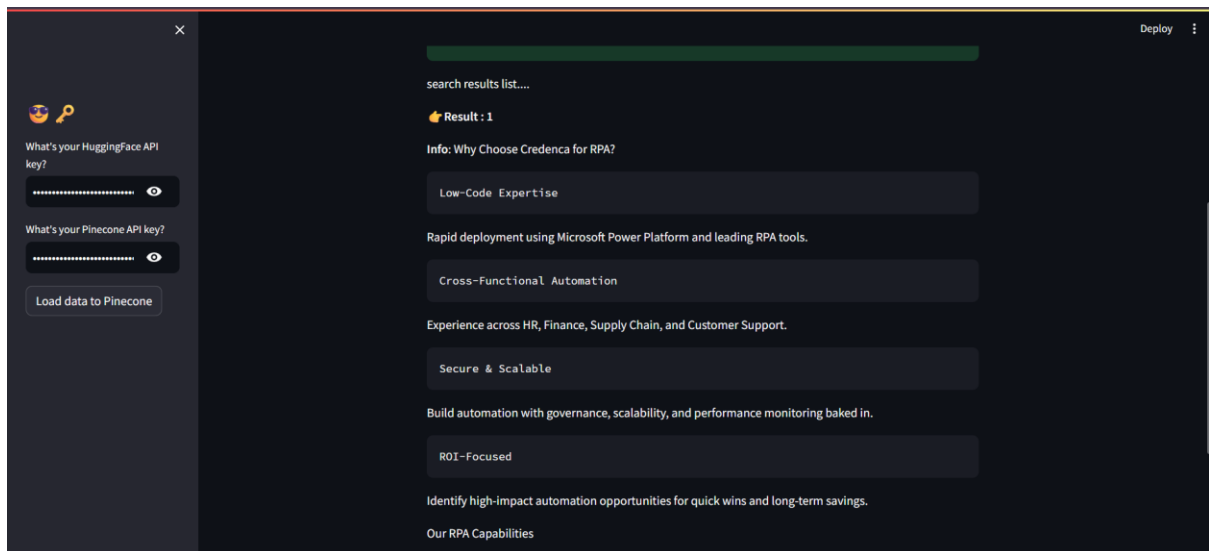
Screenshot:

4. Website Support Chatbot

- Designed a system to **scrape website data**, chunk it, convert to embeddings (via HuggingFace), and **store in Pinecone**.

- Enabled real-time search and Q&A on scraped content using **Retrieval-Augmented Generation (RAG)**.

- Integrated document links and metadata for contextual responses.
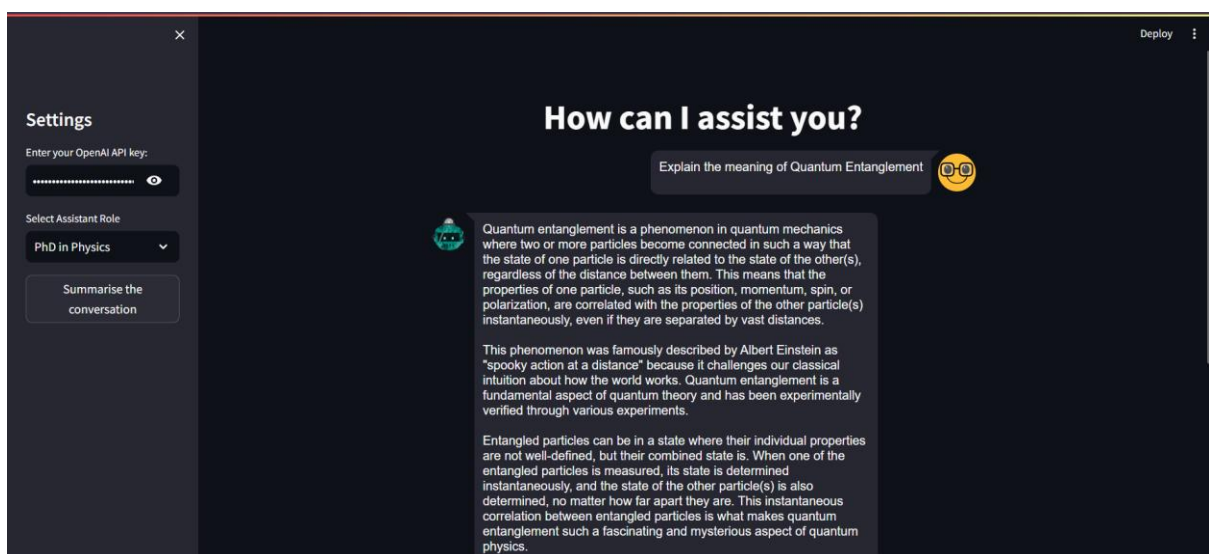
Screenshot:

5. Role-Based Conversational Bots

- Built a chatbot that could dynamically change its behavior based on selected **roles** (e.g., Doctor, Lawyer, Researcher).

- Customized system prompts and memory initialization based on user-selected roles.

Screenshot:

6. Concepts Learned

- Transformers vs GANs: Gained clarity on architecture, training styles, and use cases.

- Vector embeddings & cosine similarity for semantic search.

- Importance of prompt engineering, temperature tuning, and chaining tools with agents.

- Worked with Pinecone for vector search and FAISS for document retrieval.

Tools & Libraries Used

- LangChain, OpenAI, Streamlit, Pinecone, FAISS, HuggingFace, NumPy, Pandas, Altair

Projects Worked On

1. Basic GPT Chatbot App

2. Memory-Powered Chat App

3. Website Support Chatbot (with Pinecone)

4. Chatbot with Document & Data Retrieval

5. Role-Based Expert Chatbot

6. Text Embedding Similarity Analyzer

Outcome

This internship significantly enhanced my ability to:

- Design AI apps end-to-end, from frontend UI to backend logic.

- Deploy scalable, context-aware chatbots for real-world use cases.

- Think critically about user experience, accuracy, and performance when building intelligent systems.

Github Repository Link: https://github.com/RamchandraRane-1/llm-chat-apps-portfolio