



Imagine • Innovate • Inspire

Geo-RAG Chatbot: AI-Powered Document Question Answering

Project Summary & Achievements

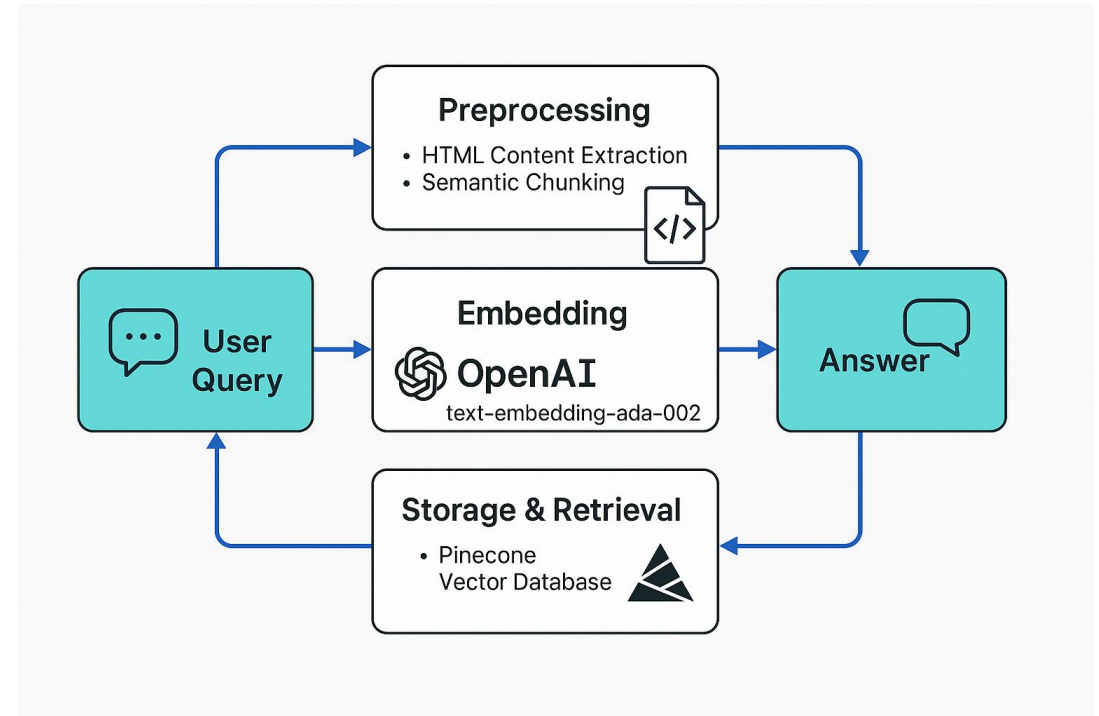
Haocheng Lin

Objectives

- **Challenge:** Difficult and time-consuming to perform manual search through the technical documents.
- **Requirement:** Users need accurate and prompt responses from Q & A sessions on large structured data.
- **Objective:** Build an AI chatbot for answering questions about domain-specific documents.

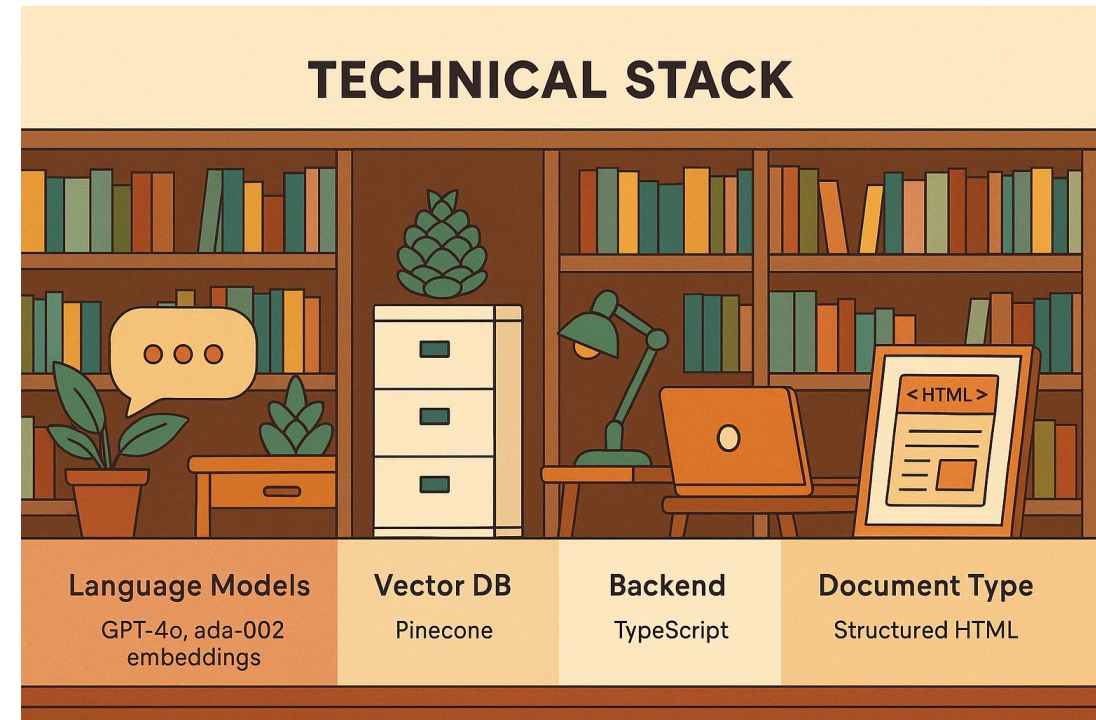
An End-to-End System Design

- **Input:** User Query
- **Preprocessing:** HTML content extraction and chunking
- **Embedding:** text-embedding-ada-002
- **Storage & Retrieval:** Pinecone vector database
- **Response:** GPT-4o-mini generates an answer.



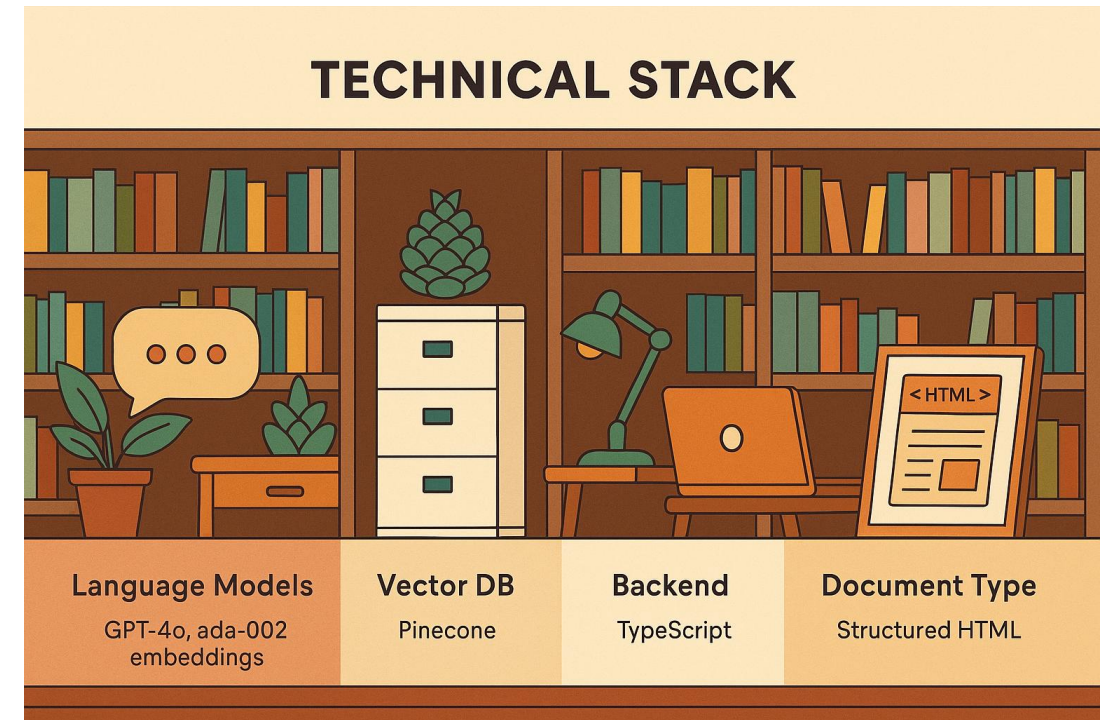
Technologies Used

- **Language Models:** GPT-4o-mini
- **Vector DB:** Pinecone
- **Backend:** Typescript
- **Frontend:** HTML & CSS
- **Document Type:** Structured HTML (e.g., GEO_Limits)



What I have achieved:

- Functioning prototype with full document-querying capabilities.
- Performed semantic search to retrieve relevant extracts.
- Modularized architecture for ensuring future scalability.
- Fine-tuned and optimized RAG model for accuracy and performance.



Future Improvements

1. Improve front-end UI layout.
2. Support querying across multiple documents.
3. Cache previous interactions to improve user experiences.
4. Integrate user feedback to improve the model's performance.

GeoRAG Chatbot

How do I submit a materials modification request?

Send

Generated Response

To submit a materials modification request, follow these steps:

1. Navigate to the "Help" tab.
2. Click on "GEO Help Desk".
3. Click the "Materials Modificati" button.
4. Fill out the required information.
5. Submit the request.

User

How do I submit a materials modification request?



Imagine • Innovate • Inspire

Thank You