Smart Lightweight Medical Query System (SLiMQ)

Documentation

Introduction

Smart Lightweight Medical Query System (SLiMQ) is a sophisticated medical response system designed to assist doctors and medical professionals. Unlike conventional chatbots, SLiMQ is tailored for specific medical queries, ensuring accurate and informed responses. This system operates efficiently on off-the-shelf machines and edge devices, making it highly accessible.

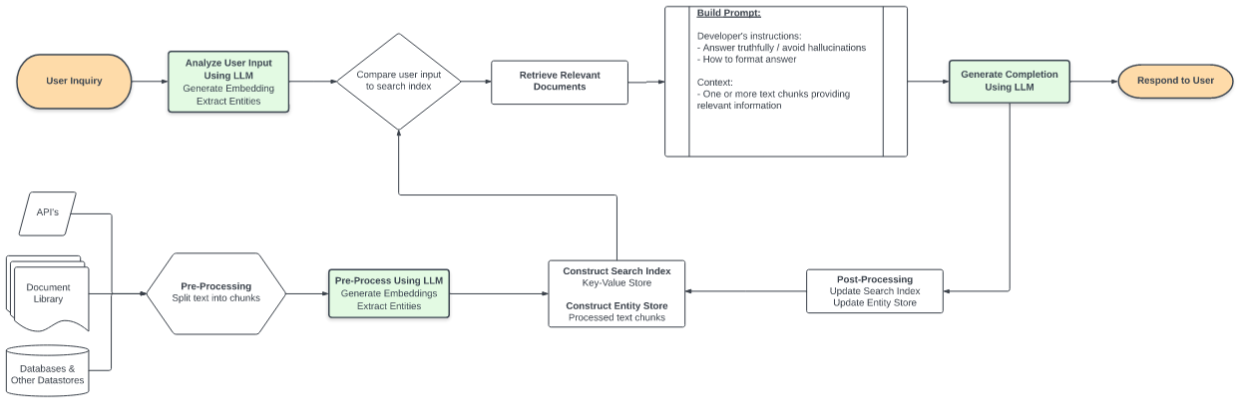
Key Features

- **Specialized Medical Responses:** SLiMQ is designed to answer medical queries accurately, providing reliable information to users.
- **Lightweight and Efficient**: SLiMQ is optimized for performance, enabling it to run seamlessly on various devices without compromising efficiency.
- **Integration of External Data**: To enhance response accuracy, SLiMQ utilizes external data sources, allowing for contextually relevant answers.
- **Flexible Deployment:** SLiMQ can be deployed as a Jupyter Notebook or a standalone application

SLiMQ's architecture comprises several components:

- **Embedding Model**: SLiMQ utilizes standard embeddings models, such as Huggingface and LangChain, to process text data effectively.
- **Vector Database:** The system employs CromaDb, a versatile vector database, for storing and retrieving contextual information.
- **Pretrained Language Models**: SLiMQ integrates pretrained language models like Llama-2 to complete answers accurately.
- **Document Pipeline**: The system incorporates LangChain, an external document pipeline, to manage and process medical documents.
- **Dataset**: SLiMQ utilizes a specific dataset for testing and fine-tuning purposes, ensuring robust performance.

Architecture Diagram

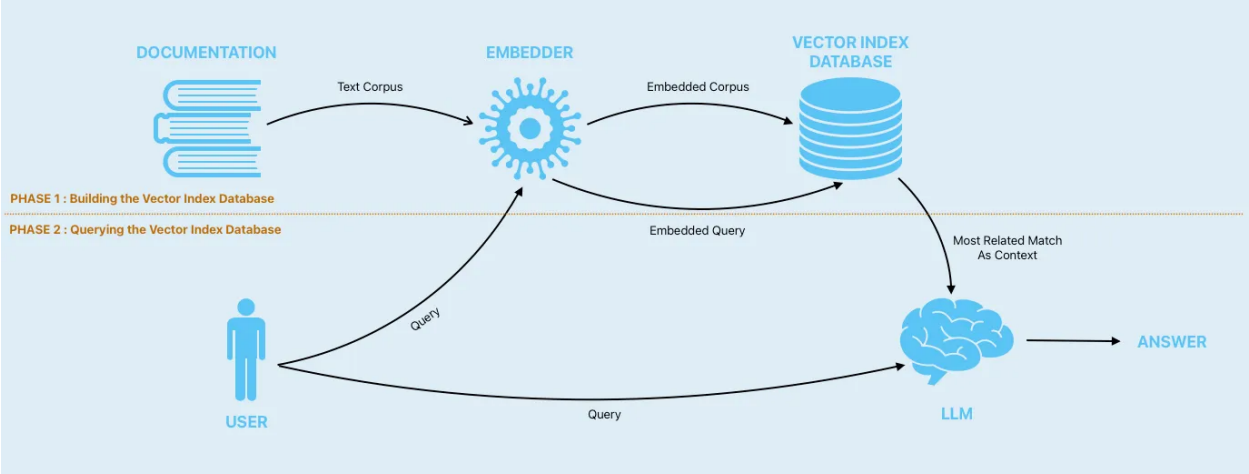


System Requirements

- Python/Jupyter-based environment (compatible with both Python 2.x and 3.x)
- Embedding model: SentencePiece, LlamaIndex
- Vector Database: CromaDb (compatible with numpy)
- Pretrained Language Models: Llama-2 (available from Hugging Face)
- Document Pipeline: LangChain
- Dataset: Provided during problem announcement

Design

Graphical Representation of our Model:



Resources:

https://pypi.org/project/chromadb/
https://python.langchain.com/docs/get_started/introduction
https://huggingface.co/docs/transformers/main/model_doc/llama

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