

Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: Ministry of Power

PS Code: SIH1380

Problem Statement Title: Intelligent chatbot to answer queries pertaining to various Maintenance Processes within Substation

Team Name: CurioSapiens

Team Leader Name: Arya Kanase

Institute Code (AISHE): C-33550

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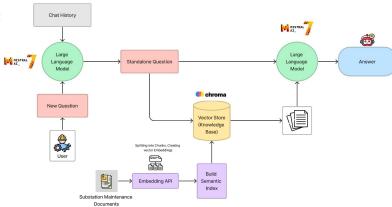
Theme Name: Smart Education

Flowchart:

Idea/Approach Details

Idea/Solution/Prototype:

- The chatbot will be powered by a knowledge base consisting of documents on substation maintenance, which will be processed and indexed for efficient retrieval of information.
- It will also have the capability to provide visual aids, including images, when maintainers/users require additional visual guidance or clarification for specific maintenance procedures
- For more complex and knowledge-intensive tasks, we will integrate the Retrieval Augmented Generation (RAG) method.
 - It will provide factual-based information on maintenance procedures, acceptable limits, issue resolution, and safety guidelines by referring to source documents.



Technology stack:

- ➤ **Mistral 7B** A powerful 7.3B parameter language model known for its performance in various benchmarks, ensuring accurate and context-aware responses.
- Vector Store Database: ChromaDB A specialized database powered by the Chroma class from the LangChain library.
- Langchain- incorporates Retrieval Augmented Generation (RAG), allowing the chatbot to access external knowledge sources dynamically for knowledge-intensive tasks, ensuring factual consistency and reliable responses.
- Django A robust web framework that ensures a seamless and user-friendly experience for interacting with the chatbot

Idea/Approach Details

Use Cases:

- Maintenance Procedures: Maintainers/Users can inquire about specific maintenance procedures for equipment classes like transformers, circuit breakers, etc.
- Acceptable Limits: Users can ask for acceptable limits for various maintenance tests and checks.
- Issue Resolution: The chatbot can assist in troubleshooting and resolving issues that arise during maintenance activities.
- Safety Guidelines: Provide safety guidelines and best practices for substation maintenance.
- Compliance: Ensure that maintenance activities align with industrial standards and safety regulations.

Dependencies / Show stopper:

- Maintenance and Updates: Regularly update the knowledge base and language models to keep the chatbot's information up-to-date with industry standards and best practices.
- The success of the chatbot depends on the availability and quality of documents related to substation maintenance. But we will make sure that a sufficient amount of relevant data is accessible.

Team Member Details

Team Leader Name: Arya Kanase

Branch (Btech/Mtech/PhD etc): BE Stream (ECE, CSE etc): AIDS Year (I,II,III,IV): IV

Team Member 1 Name: Rohit Wahwal

Branch (Btech/Mtech/PhD etc): Stream (ECE, CSE etc): AIDS Year (I,II,III,IV): IV

Team Member 2 Name: Manish Patil

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Team Member 3 Name: Vipul Jain

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Team Member 4 Name: Prasad Vichare

Branch (Btech/Mtech/PhD etc): Stream (ECE, CSE etc): AIDS Year (I,II,III,IV): III

Team Member 5 Name: Shreya Patil

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Team Mentor 1 Name: Amol Yaday