**Hackathon Documentation: AI-Powered Data Query Interface**

**Overview**

The AI-Powered Data Query Interface is an innovative solution designed to read and interpret client data from internal databases using a Large Language Model (LLM). Leveraging cutting-edge technologies such as Streamlit, Langchain, OpenAI, and SQL databases, this interface provides users with an intuitive and powerful tool for real-time data querying and analysis.

**Key Features**

1. **Introductory Page:**

- The landing page offers a comprehensive guide on how to use the chatbot, ensuring a smooth onboarding experience for new users.

2. **Multi-Page Streamlit Application:**

- The interface utilizes Streamlit's multi-page feature to create a seamless navigation experience. Users can easily switch between different sections of the application.

3**. Chatbot Tab:**

- This is the core functionality of the application, where users can interact with the LLM-based chatbot.

- Users have the option to select between querying a pre-loaded Chinook database or connecting their own SQL database.

4. **Database Connection:**

- Users can connect to their own SQL database by entering valid database credentials.

- An OpenAI key is required to enable the LLM functionalities.

5. **Real-Time Query Execution:**

- The chatbot can interpret user questions and convert them into SQL queries.

- The LLM executes these queries in real-time and provides accurate responses based on the data.

6. Chat With DB

- Ask questions about your database to our data bot based on LangChain LLM and procure your answers within seconds!

7. EDA with DB

- Users can view their database entities and tables in form of exploratory data analysis through graphs, pi-charts and whatnot!

8. Predict With DB

- The chatbot can interpret user questions and convert them into realtime data models to predict probability and occurence of a situation

**Technologies Used**

- **Streamlit:**

- Streamlit is used to create a user-friendly web interface. Its multi-page feature helps in organizing the application into distinct sections.

- **Langchain:**

- Langchain is employed to handle the language model interactions, allowing the chatbot to understand and respond to user queries effectively.

- **OpenAI:**

- OpenAI's powerful LLM is utilized to process natural language queries and convert them into SQL commands.

- **SQL Database:**

- The application supports querying against an SQL database. Users can choose between the built-in Chinook database or connect their own SQL database.

**Application Flow**

1. Introduction Page:

- Users are greeted with an introduction page that explains how to use the chatbot and the various features available.

2. Chatbot Tab:

- Users navigate to the 'Chatbot' tab to start interacting with the LLM-based bot.

- They select either the Chinook database or their own SQL database.

3. Database Connection:

- Users enter their database credentials and OpenAI key.

- Upon successful authentication, users can start asking questions about their data.

4. Query Execution:

- The LLM interprets the user’s natural language questions and converts them into SQL queries.

- The SQL queries are executed in real-time, and the results are displayed to the user.

5. Chat With DB, EDA with DB, Predict With DB

- Users can select whether to chat with DB, conduct exploratory data analysis with DB or build prediction models based on DB.

**How to Use:**

1. Navigate to the Introductory Page:

- Understand the features and functionalities of the chatbot.

2. Access the Chatbot Tab/ EDA with DB / Predict With DB :

- Select the database type (Chinook or custom SQL).

- Enter the required credentials and OpenAI key.

3. Interact with the Chatbot:

- Ask questions in natural language.

- Receive real-time responses based on the executed SQL queries.

**Conclusion:**

The AI-Powered Data Query Interface offers a seamless and efficient way to interact with SQL databases using natural language. By leveraging the power of LLMs and integrating with Streamlit, Langchain, and OpenAI, this application transforms the way users query and analyze their data, making it accessible and intuitive for everyone.

**TEAM: VANCE**

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