

Intelligent sql querying with llms using Gemini pro

1. Abstract

This project converts natural language questions into SQL queries using Google Gemini API. The generated SQL query is executed on a SQLite database and the results are displayed using a Streamlit web interface. The system helps non-technical users interact with databases without writing SQL manually.

2. Introduction

Databases require SQL knowledge to retrieve data. This project converts natural language into SQL queries automatically using Large Language Models (LLMs).

3. Objectives

- Convert English questions into SQL queries.
- Execute queries on SQLite database.
- Display results in user-friendly format.
- Reduce dependency on manual SQL writing.

4. Technologies Used

- Python
- Streamlit
- SQLite
- Google Gemini API
- dotenv

5. System Architecture

1. User enters question in Streamlit interface.
2. Question is sent to Gemini API.
3. Gemini generates SQL query.
4. Query is executed on SQLite database.
5. Results are displayed to the user.

6. Advantages

- Easy database interaction
- Beginner-friendly
- Saves time

7. Limitations

- Depends on API availability
- Internet connection required
- Query accuracy depends on prompt clarity

8. Conclusion

The Text-to-SQL system demonstrates how AI can simplify database interaction by converting natural language into executable SQL queries.