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Report : Task 12

Project Report: AI-Powered Hospital Chatbot Using DialoGPT

1. Project Overview

This project involves the development of a hospital information chatbot that responds to user queries regarding hospital-related services. It combines rule-based logic for specific questions and a pre-trained NLP model (DialoGPT-medium) for general conversation.

2. Technologies Used

- Python – Main programming language.
- Hugging Face Transformers – To utilize the DialoGPT-medium model.
- PyTorch – Backend for model computation.
- Pre-trained Model: microsoft/DialoGPT-medium.

3. Key Features

a. Hybrid Response System

- Rule-based System: Responds instantly to common hospital-related queries such as:
  - Working hours
  - Location
  - Emergency contact
  - Doctor availability
  - Appointments
  - Hospital facilities
- Generative Model: If the user input doesn't match any predefined keywords, the chatbot uses DialoGPT-medium to generate a context-aware response.

b. GPU Support

- Checks if a CUDA-enabled GPU is available and utilizes it to accelerate inference.

c. Exit Option

- The user can end the chat by typing quit.

4. Sample Chat Session

vbnet

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Chatbot: Hello! How can I assist you today? Type 'quit' to exit.

You: doctors?

Chatbot: We have a team of expert doctors in various specialties. Would you like to know about a specific doctor?

You: quit

Chatbot: Goodbye!

The chatbot successfully recognized the keyword "doctor" and responded using the predefined rule-based response.

5. Strengths

- Fast and accurate responses for known hospital queries.
- Fallback to generative AI ensures natural conversation beyond hard-coded responses.
- Modular code structure for easy enhancement and debugging.
- User-friendly interface through the console.

6. Future Improvements

- Add context retention to keep track of multi-turn conversations.
- Deploy the chatbot using a web interface or a mobile app.
- Extend rule-based responses using NLP keyword extraction for better matching.
- Add doctor database integration for specific queries like “cardiologist available today?”

7. Conclusion

This chatbot effectively demonstrates the use of hybrid AI techniques—combining rule-based logic with advanced NLP models—to create an intelligent assistant. It can be easily extended to serve real-world hospital systems, improving user experience and response time.