Study Bot Chatbot Project Report

1. Project Title

Study Bot: AI-Powered Study Assistant Chatbot using FastAPI, MongoDB, and Groq LLM

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2. Project Overview

The Study Bot is an AI-powered chatbot designed to assist students by answering academic questions. It uses a Large Language Model (LLM) to generate intelligent responses and stores conversation history in MongoDB to provide contextual answers. The chatbot is built using FastAPI and deployed on Render as a live API service.

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3. Objectives

- Build an AI chatbot using LLM
- Implement conversational memory using MongoDB
- Create REST API using FastAPI
- Deploy chatbot as a live web service
- Enable students to ask academic questions

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4. Technologies Used

- Python
- FastAPI
- MongoDB Atlas
- Groq LLM API
- Render (Deployment)
- GitHub

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5. System Architecture

User → FastAPI → Groq LLM → MongoDB → Response → User

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6. Memory Implementation

The chatbot stores user conversations in MongoDB using a unique user_id. When a user sends a new query, the system retrieves previous chat history and includes it in the prompt sent to the LLM. This allows the chatbot to provide context-aware responses and simulate memory.

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7. API Endpoint

POST /chat

Example Request:

```
{
  "user_id": "student1",
  "query": "What is Artificial Intelligence?"
}
```

Example Response:

```
{
  "response": "Artificial Intelligence is..."
}
```

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8. Deployment

The chatbot is deployed using Render cloud platform. The FastAPI application is connected to MongoDB Atlas and Groq API using environment variables.

Live API Link:
https://studybot-qq9t.onrender.com

GitHub Repository Link:
https://github.com/Yaminipampana/StudyBot

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9. Results

The chatbot successfully answers academic questions and stores chat history in MongoDB. The API is deployed and accessible online.

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10. Conclusion

The Study Bot chatbot was successfully developed using FastAPI, MongoDB, and Groq LLM. It provides intelligent academic assistance and demonstrates the integration of AI, databases, and cloud deployment.