

Project Overview

The backend defines a LangGraph state graph that processes chat messages using ChatOpenAI, maintaining message history via an in-memory checkpoint. The frontend provides a Streamlit chat interface that invokes the backend graph, stores history in session state, and displays user-assistant exchanges.

File Structure

- **streamlit_frontend.py**: Handles the UI, session state for messages, and invokes the backend chatbot.
- **LangGraph_backend.py**: Defines the LangGraph workflow, ChatState, chat node, and compiles the graph with checkpoint.
- **.env** (required, not provided): Stores OPENAI_API_KEY for the LLM.

Prerequisites

Python 3.10+ is required. Install dependencies via

```
pip install streamlit langgraph langchain-core langchain-openai langgraph-checkpoint-memory python-dotenv
```

Setup Steps

1. Create a project directory and place `streamlit_frontend.py` and `LangGraph_backend.py` inside it.
2. Create a `.env` file in the same directory with your OpenAI API key:
`OPENAI_API_KEY = your_key_here.`
3. Open a terminal in the project directory and run
`pip install streamlit langgraph langchain-core langchain-openai python-dotenv.`
4. Verify imports work by running `python LangGraph_backend.py` (no output expected if

successful).

Running the App

Execute `streamlit run streamlit_frontend.py` in the terminal. The app opens at <http://localhost:8501>. Type messages in the chat input; responses use OpenAI with persistent history across refreshes via the graph's checkpointing.

Key Features


- Persistent conversation history using LangGraph's `InMemorySaver` and Streamlit session state.
- Simple single-node graph: input messages → LLM invoke → append response → end.
- Chat UI with role-based message display (user/assistant).


Potential Fixes


- Test with a valid OpenAI key; rate limits apply.


Troubleshooting


- **ModuleNotFoundError**: Ensure all pip installs succeeded; restart terminal.
- **API key error**: Verify `.env` loads correctly (add `print(load_dotenv())` temporarily).
- **No response**: Check console for OpenAI errors; ensure internet access.


 hi


 Hello! How can I assist you today?


 my name is siddhesh

 Nice to meet you, Siddhesh! How can I help you today?

 where is pune

 Pune is a city located in the state of Maharashtra in India. It is known for its educational institutions, cultural heritage, and IT industry.

 do you know aundh

 Yes, Aundh is a suburb located in the north-western part of the city of Pune in Maharashtra, India. It is a residential and commercial area with various amenities and services.

Your message

