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AI Mental Health Support Chatbot

Introduction

Mental health conditions are on the increase worldwide, and prompt emotional support is not always available. This project is about creating an AI-based chatbot that provides a listening ear, identifies distress, and directs users toward supportive behaviors in a safe and compassionate way.

Abstract

The AI Mental Health Support Chatbot is meant to mimic sympathetic conversations and provide a judgment-free space for users. The chatbot utilizes natural language understanding and sympathetic conversation to administer low-level emotional support. The bot also incorporates safety filters to identify abusive language and encourage the user to find professional assistance. It's not a therapy substitute, but it is a starting point for emotional expression

Tools & Technologies Used

Tool	Purpose
Python	Core programming
HuggingFace DialoGPT	Conversational AI model
Flask	RESTful API backend
Streamlit	Lightweight frontend interface
Torch	Runs the pretrained model
nltk	Used for simple NLP filters
Flask-CORS	Enables frontend-backend interaction

Project Objectives

- Enable a user-friendly chatbot interface
- Generate context-aware, empathetic replies
- Detect and flag emotionally harmful messages
- Maintain private session logs
- Deploy a testable web-based demo

Architecture Overview

User (Streamlit UI) ⇄ Flask API ⇄ DialoGPT Model
⇅
Logger & Safety Filter

Dataset / Model Used

- Pretrained: microsoft/DialoGPT-medium (via HuggingFace)
- Fine-tuned logic through conversational context management

Logs Example

2025-07-25T12:10:33 | session_123 | User: I feel empty. | Bot: I'm here for you. Want to talk more about it?

Steps Involved in Building the Project

1. Model Integration

- Used DialoGPT-medium via HuggingFace Transformers.
- Handled conversation context with token-level history tracking.

2. Flask API Backend

- Created a /chat endpoint that receives input and returns bot responses.
- Integrated input validation and offensive phrase detection.

3. Session-Based Chat History

- Used Python dictionaries and session IDs to track individual conversations.
- All interactions logged to per-session CSV files.

4. Safety Filter

- Created regex-based NLP filters to flag phrases like "end it all", "hopeless", etc.
- Triggered alternative empathetic messages when distress detected.

5. Frontend UI (Streamlit)

- Designed minimal, mobile-friendly interface.
- Messages stored in st.session_state for persistent local chat history.

6. Testing

- Covered both safe and unsafe input scenarios.
- Validated edge cases like empty messages and backend timeouts.

Conclusion

This chatbot illustrates the promise of conversational AI in managing emotional well-being. As a supplement, not a substitute, for human counselors, it serves as a first digital layer of comfort. It can be supplemented with improved LLMs such as OpenAI GPT-3.5

or combined with professional help lines. The project illustrates how AI can be used in responsible mental health technology when managed with empathy and ethical design.