

# AI Chatbot for Mental Health Support

## Objective

The aim of this project is to develop a lightweight AI-powered chatbot designed to offer emotional support, empathetic conversations, and non-clinical mental wellness guidance. The chatbot engages in natural dialogue with users, while ensuring respectful interaction and anonymity, making it a safe tool for self-expression.

## Tools & Technologies Used

- Python: Core development language
- Transformers (Hugging Face): Pretrained conversational model (DialogPT / BlenderBot)
- Flask: Web application backend
- HTML/CSS or Streamlit: Frontend for chatbot interface
- Replit / Render: Cloud deployment
- Numpy / Pandas: Data management for logs and filters

## Implementation Steps

### 1. Model Fine-Tuning:

- Used DialogPT-small (or BlenderBot) from Hugging Face.
- Optionally fine-tuned on custom empathetic dialogue datasets.

### 2. Offensive Language Filtering:

- NLP filter checks user inputs for harmful or offensive content.

### 3. Empathetic Dialogue Scripting:

- Scripted friendly and comforting fallback responses for common expressions.

### 4. Flask API Backend:

- Flask routes handle user messages, apply filters, and return responses.

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### 5. Frontend (HTML/CSS or Streamlit):

- Clean, mobile-friendly UI for message exchange.

### 6. Deployment:

- Hosted on Render or Replit.

### 7. User Session Logging:

- Stored each user message and bot response in local `.csv` or `.txt` format.

## Sample Interaction

User: I'm feeling lonely.

Bot: I'm really sorry to hear that. Want to talk about what's been bothering you?

User: I want to give up.

Bot: You're not alone. Please know you matter. If you feel in danger, reach out to a crisis line immediately. I'm here to listen.

User: hello

Bot: Hello! How can I support you today?

## Deliverables

- Trained Model: DialoGPT-based conversational agent
- API Backend: Flask server
- Frontend UI: Built with HTML/CSS or Streamlit
- Session Logs: Logs stored locally for user sessions

## Strengths

# AI Chatbot for Mental Health Support

- Lightweight and easy to deploy
- Supports both scripted and generative conversation
- Prioritizes empathy and emotional safety
- Flexible UI options

## Limitations

- Not a substitute for professional mental health advice
- Model may occasionally respond inappropriately
- Crisis handling is minimal (text redirect only)

## Future Improvements

- Integrate voice input/output using SpeechRecognition
- Add sentiment analysis to adapt tone dynamically
- Connect to local mental health resources or helplines
- Enable user profiles and progress tracking

## References

- DialoGPT - Hugging Face: <https://huggingface.co/microsoft/DialoGPT-small>
- BlenderBot - Meta AI: <https://huggingface.co/facebook/blenderbot-3B>
- Flask Docs: <https://flask.palletsprojects.com/>
- Hugging Face Transformers: <https://huggingface.co/transformers/>
- Replit Deployment Guide: <https://replit.com/>