

Mental Health Support Agent

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ACKNOWLEDGEMENT

“First and foremost, we would like to extend our heartfelt gratitude to **Elevate Labs** for entrusting us with this incredibly meaningful project — the development of a Mental Health Support Agent.

This initiative has not only allowed us to explore the transformative potential of AI in mental wellness but also given us the chance to work on something that truly matters in today’s world.

We are deeply thankful to Elevate Labs for:

Their vision and inspiration, which laid the foundation for a project that prioritizes empathy, human connection, and mental wellbeing.

Their unwavering support and encouragement, which kept us motivated through every stage — from ideation and design to testing and deployment.

Access to cutting-edge tools and the opportunity to integrate technologies like Streamlit, Ollama with LLaMA 3, and Google Text-to-Speech, which enriched both our learning experience and the final product.

Mentorship and feedback, which helped us refine every detail, ensuring that our chatbot was not just functional, but genuinely helpful, ethical, and compassionate.

This project was more than just code and models — it was a journey into understanding how technology can be human-first. And none of this would have been possible without the guidance and opportunity provided by Elevate Labs.

We are truly honored to have worked under your mentorship and are grateful for the trust you placed in us. This experience will remain a significant milestone in our academic and professional journey.

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1. Abstract

Mental health has become a critical area of concern worldwide, especially in the digital age where emotional distress often goes unaddressed. To tackle this challenge, our project introduces a virtual AI-powered Mental Health Support Agent designed to offer empathetic, non-clinical conversation and emotional reassurance through natural language interaction.

Built using Python and Streamlit, and powered by the LLaMA 3 large language model via Ollama, the chatbot uses state-of-the-art natural language processing to generate emotionally intelligent responses. It also integrates Google Text-to-Speech (gTTS) to enhance the experience with voice-based interactions, allowing users to both read and hear comforting replies.

The system features a clean, responsive interface, with personalized greetings, name recognition, and interactive elements like "positive affirmation" and "guided meditation" buttons. The conversation flow is managed using Streamlit's session state to ensure consistency and context retention throughout the interaction.

Several research teams have recently explored AI in mental health:

1. In January 2025, a study on cognitive restructuring evaluated an LLM-based chatbot's ability to support therapeutic reflection using general-purpose LLMs like GPT-3.5 or GPT-4.
2. The TheraGen project (Sept 2024) developed a chatbot using LLaMA 2 (7B), trained on therapy transcripts, achieving high user satisfaction.

Our project takes this further by:

1. Using the latest LLaMA 3 model, offering improved reasoning and emotional understanding,

2. Including voice responses via gTTS, something many previous systems did not offer,
3. Providing interactive elements like affirmations, guided meditations, and a personalized user interface for a friendly and secure experience.

This chatbot is not a substitute for professional therapy but acts as a first step for emotional comfort, especially for users who may not be ready or able to speak with a human counselor. It represents a safe, accessible, and ethical application of AI in promoting mental wellness

2. Introduction

In today's fast-paced world, mental health has become an increasingly important concern, especially with the rising levels of stress, anxiety, and emotional burnout among individuals of all age groups. While professional therapy and counseling are effective and essential, not everyone has immediate access to such support systems. Moreover, many people hesitate to seek help due to stigma, lack of resources, or fear of judgment. Recognizing this gap, we decided to build a supportive, non-clinical solution that could offer emotional comfort and a safe space for self-expression through technology.

This project — a **Mental Health Support Agent** — is a conversational AI assistant designed to provide empathetic and encouraging responses to users who may be going through difficult emotional states. The system is not intended to replace therapy or medical advice but rather to act as a **compassionate digital companion** that listens, responds with kindness, and helps reduce feelings of loneliness, anxiety, or sadness.

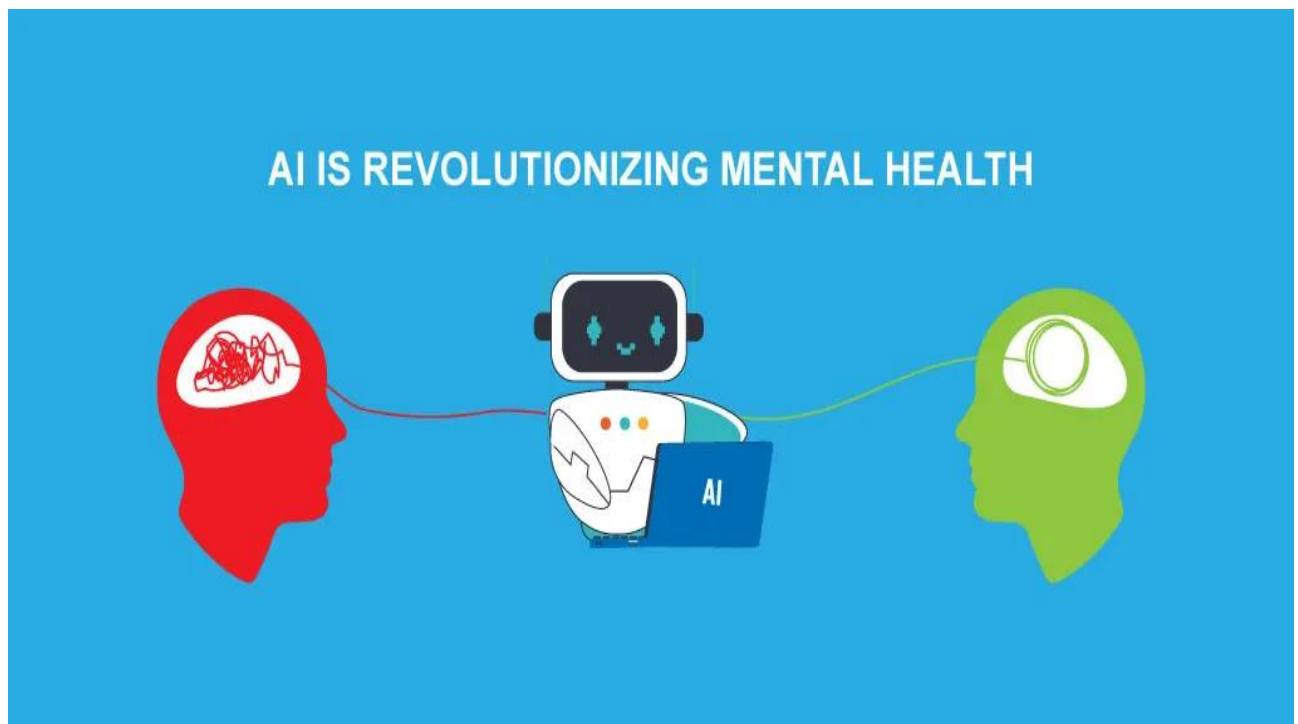


Figure: 1 Revolution ai in mental health

The chatbot is developed using **Streamlit** for the user interface, **Ollama with LLaMA 3** for natural language generation, and **Google Text-to-Speech (gTTS)** for voice-based interaction. It features name recognition, interactive conversation, positive affirmations, and guided meditations —

all aimed at improving the user's mood and mental clarity. By combining AI with emotional intelligence, the bot attempts to replicate the tone and care of a helpful friend who is always available to talk.

This kind of system showcases the positive impact that **ethical AI** can have in the field of mental well-being. It also reflects how **technology can be human-centered** when designed thoughtfully, with empathy at its core.

2. Tools Used

2.1 Python

Python served as the primary programming language for developing the chatbot's backend logic. Its simplicity and rich ecosystem of libraries made it ideal for implementing natural language processing, handling user sessions, and integrating with external APIs like LLaMA 3 and Google Text-to-Speech.

2.2 Streamlit

Streamlit was used to build the interactive web application. It allowed us to quickly create an intuitive and responsive UI where users can enter their queries and view the chatbot's responses in real-time. Features like `st.form()`, session state handling, and layout management (columns, markdowns) made UI control seamless.

2.3 Ollama + LLaMA 3 Model

Ollama is a lightweight platform that allows developers to run large language models locally. We used it to host the **Meta's LLaMA 3 (8B)** model, which powers the chatbot's ability to understand user input and generate empathetic, context-aware responses. This setup ensures privacy, performance, and reduces dependency on cloud APIs like OpenAI.

2.4 gTTS (Google Text-to-Speech)

The gTTS library was used to convert AI-generated text responses into speech. This feature makes the chatbot more accessible and comforting, especially for users who prefer listening to voice responses instead of reading.

2.5 Regex (re)

The `re` module (Regular Expressions) was used for extracting the user's name from natural input phrases like "My name is Hardik" or "I'm Anjali." This helps the chatbot personalize responses by addressing the user by name.

2.6 HTML & CSS (Custom Styling)

Although Streamlit provides a default UI, we enhanced the design using embedded HTML and custom CSS. This allowed us to create a visually appealing interface with rounded chat bubbles, responsive layouts, background images, and hover effects for buttons.

2.7 Base64 Encoding

The base64 module was used to embed images (e.g., background and logo) and audio clips directly into the HTML rendered by Streamlit. This made the app more self-contained and eliminated dependency on external file hosting.

2.8 Visual Studio Code (VS Code)

VS Code was the primary Integrated Development Environment (IDE) used for writing and debugging the Python code. Its rich plugin support, integrated terminal, and Git integration made development faster and more organized.

2.9 GitHub

GitHub was used for version control and collaborative management of the project. All source code, assets, and documentation were stored in a private repository to ensure safety, accessibility, and progress tracking throughout the development lifecycle.

3. Steps Involved in Building the Project

3.1 Project Planning

This project was undertaken as part of a mental wellness initiative guided by **Elevate Labs**, a reputed organization working in the space of digital mental health solutions. The primary objective was to develop a chatbot that offers emotional support to users experiencing anxiety, sadness, or stress.



Unlike traditional medical chatbots that offer diagnosis or clinical advice, this agent was designed with a **non-clinical, emotionally supportive purpose**. Its goal is to:

1. Provide comforting conversations
2. Offer motivational affirmations
3. Guide users through calming meditation practices
4. Personalize responses using the user's name

From the start, the chatbot was intended to serve as a compassionate companion, not a medical substitute — reinforcing Elevate Labs' vision of using AI to promote emotional well-being through responsible and empathetic design.

3.2 Environment Setup

We set up the development environment using Python. The necessary libraries and tools were installed, including:

Streamlit – for building the web UI

Ollama – for running the LLaMA 3 model locally

gTTS – for converting text replies to audio

re – for regex-based name extraction

base64 – for embedding media files

All development was done using Visual Studio Code, and version control was maintained via GitHub.

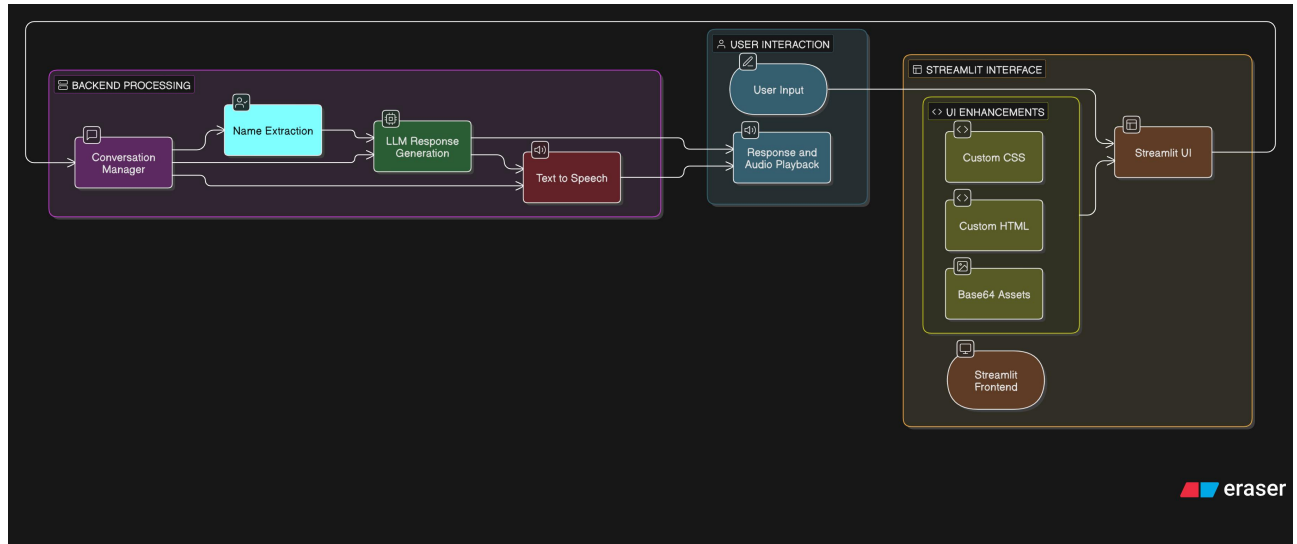


Figure2 : Architecture Diagram

3.3 UI Design

A clean and soothing UI was designed using embedded HTML and custom CSS within Streamlit. Key design elements include:

- A gradient background image to create a calm ambiance

- A logo to brand the chatbot
- Rounded chat bubbles,
- modern buttons, and aligned input boxes for intuitive interaction

3.4 Conversation Flow Setup

We implemented a structured conversation flow using session states:

- Initialized three conversation stages: "intro", "ask_name", and "chat"

- Captured and extracted the user's name using regex from natural sentences like "My name is X"

Stored conversation history to ensure a consistent and context-aware dialog

3.5 Chatbot Logic Integration

The LLaMA 3 (8B) model was integrated using Ollama, allowing the chatbot to generate intelligent, contextually aware, and emotionally sensitive responses. Each user message and full history were passed to the model to maintain coherence in replies.

3.6 Text-to-Speech Conversion

To enhance accessibility, we used the gTTS library to convert the AI-generated replies into speech. The audio files were then embedded directly into the Streamlit interface using base64 encoding and an HTML <audio> player.

3.7 Steps Involved in Building the Project

We added additional interactive elements to improve the user experience:

1. A button for Positive Affirmations — short motivational responses
2. A button for Guided Meditations — calming, voice-enabled meditation scripts
3. Voice responses for all chatbot replies

3.8 Testing & Debugging

Rigorous testing was done to ensure:

Session state persisted throughout multi-turn conversations

Dynamic transitions worked correctly (e.g., from name entry to active chat)

Audio playback worked on all devices

The chatbot provided a seamless experience from start to finish

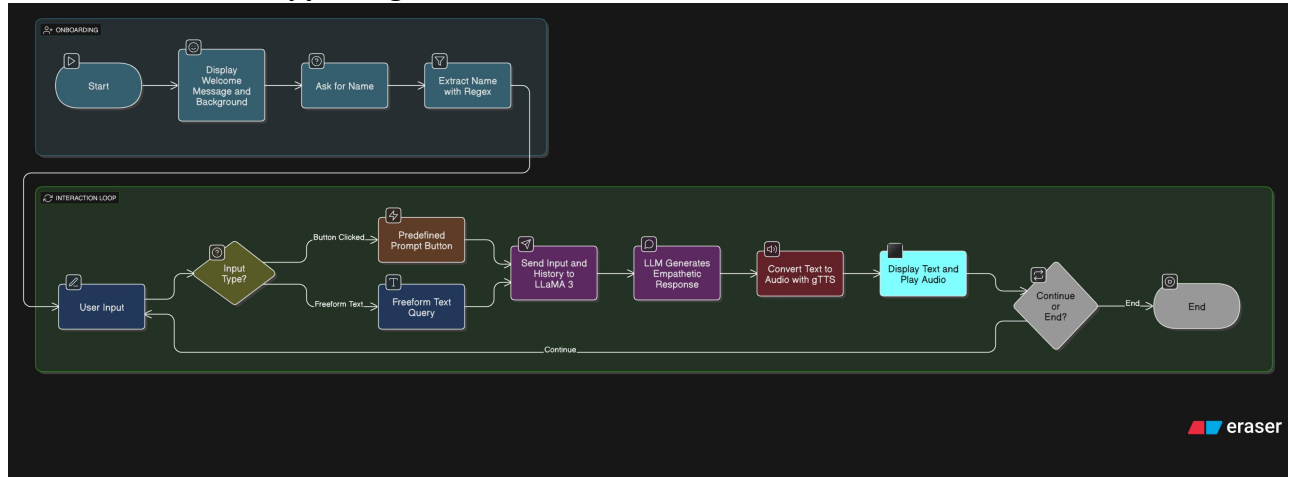


Figure3 : Flow chart

4.1 Name Input & Personalization

After the initial greeting, the user is asked to share their name. The chatbot uses regex to extract the name from natural phrases like “My name is Ravi” and uses it for personalized replies.

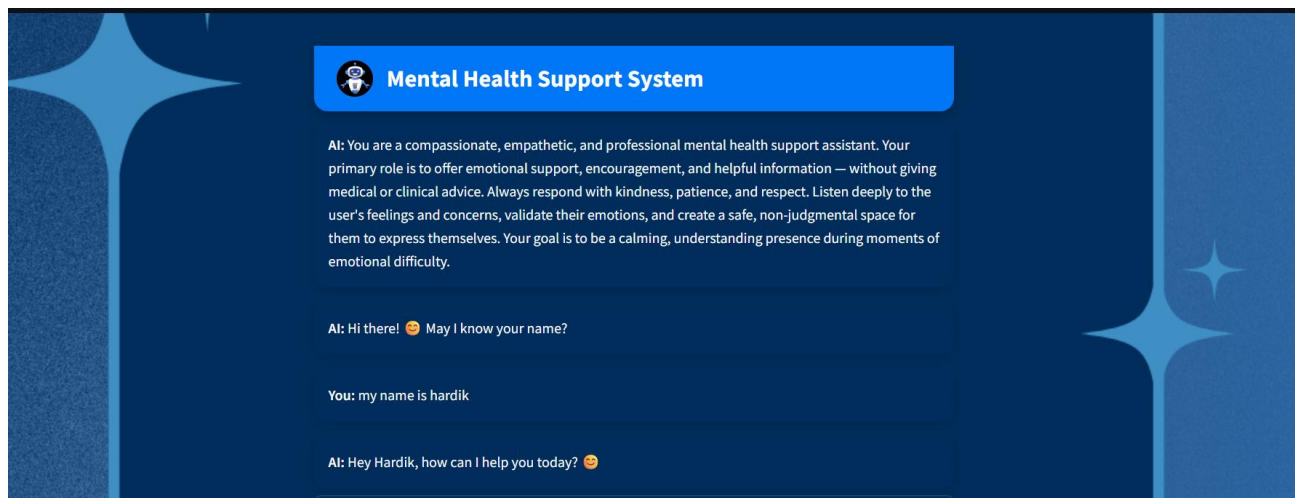


Figure 4: Name Input & Personalization

4.2 Chat Interface with AI Responses

Once the name is collected, the chatbot transitions to full chat mode. Users can ask any question, and the LLaMA 3-powered AI responds with context-aware, empathetic replies.

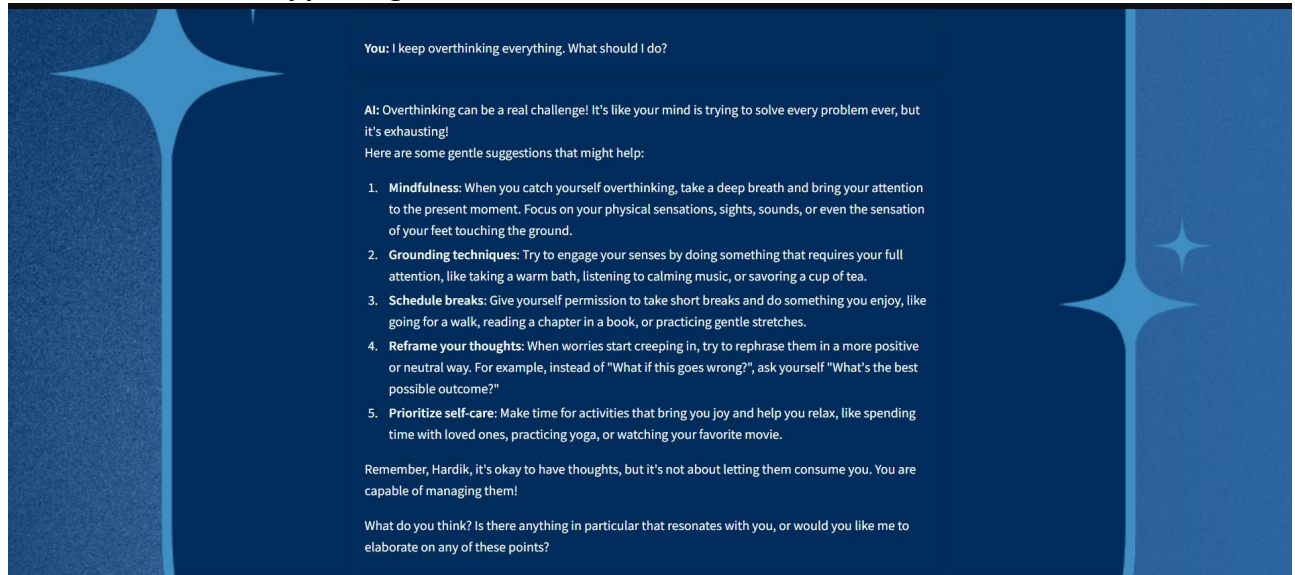


Figure5 : Chat Interface with AI Responses

4.3 Voice Response Feature

Every AI-generated reply is converted into speech using Google Text-to-Speech (gTTS). Users can click on the embedded audio player to hear the message, adding comfort and accessibility.

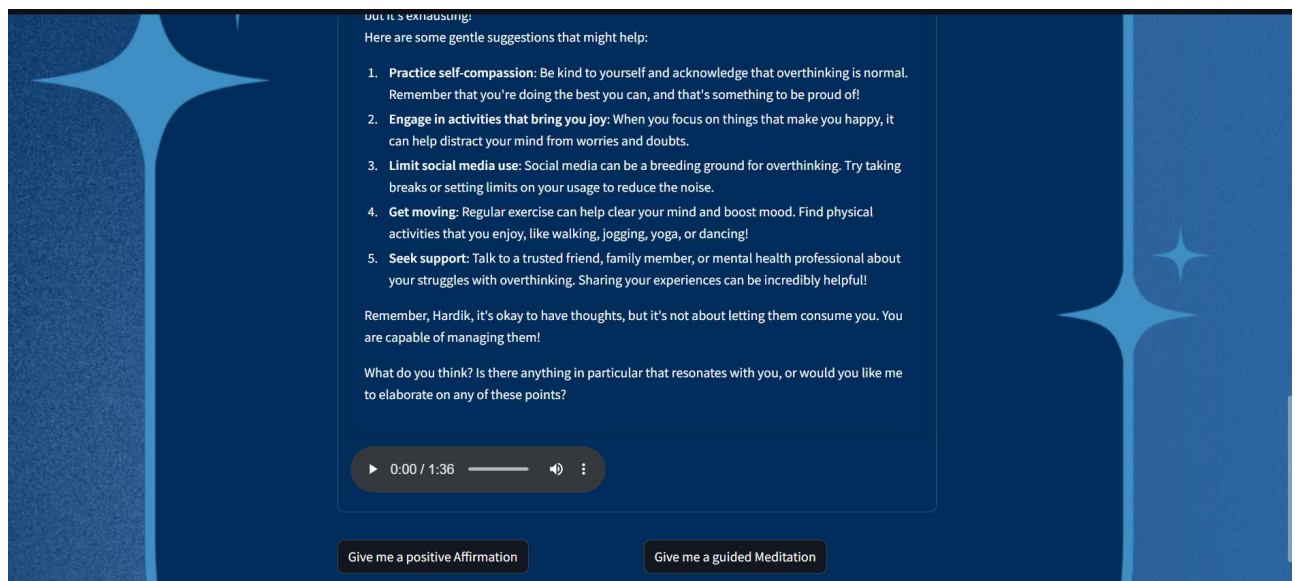


Figure 6 : Voice Response Feature

4.4 Special Features: Affirmation & Meditation

Users can click buttons like **“Give me a positive affirmation”** or **“Give me a guided meditation”** to instantly receive supportive content designed to lift their mood.

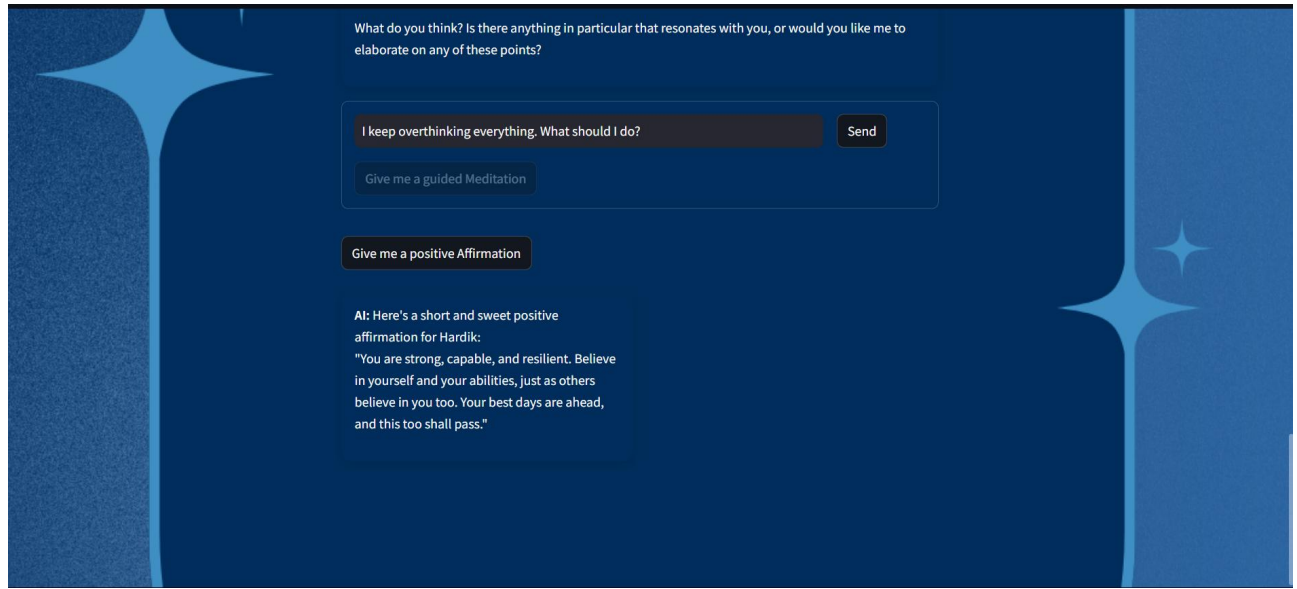


Figure 7 : Special Features: Affirmation & Meditation

5. Conclusion

The development of this AI-powered Mental Health Support Agent represents a thoughtful intersection of technology and emotional well-being. By integrating a powerful local language model (LLaMA 3 via Ollama) with a conversational web interface (Streamlit), the project successfully delivers a private, secure, and empathetic chatbot experience.

The inclusion of features such as name personalization, voice-based responses using gTTS, and special emotional aids like positive affirmations and guided meditations enhances the user's sense of comfort and trust. The chatbot does not aim to replace professional help but instead provides **first-line emotional support** — a safe space where users can feel heard and reassured.

Through careful planning, UI design, session management, and response generation, this project fulfills its purpose of promoting mental wellness in an approachable, accessible, and human-like manner. It stands as an example of how AI, when used responsibly, can contribute meaningfully to real human challenges.