Mental Health Chatbot - CrewAI Agentic System

Omdena AI Core Project Contribution Report - Team 1

Date: 08/05/2025

Overview:

Team 1 developed an AI-powered mental health chatbot as part of an Omdena Core Challenge.
The chatbot was designed to support users emotionally while implementing advanced agentic workflows using CrewAI, semantic memory, and real-time safety mechanisms.

Early in the project, we used VertexAI with the Gemini-1.5-Flash model. However, due to policy restrictions, access was later blocked. In the final phase (last few days before delivery),
we migrated to a new setup with enhanced UI and LLMs.

Team 1's Contributions:

- Designed and implemented a multi-agent mental health chatbot using CrewAI (hierarchical process)

- Defined agents for emotion detection, safety/crisis monitoring, RAG-based retrieval, and suggestion generation

- Used semantic embedding with FAISS similarity maps to personalize support over time

- Created a React frontend with a calming modern UI and STT/TTS toggle logic

- Developed a FastAPI backend that integrates:
  * CrewAI agent logic
  * Dynamic chat routing and real-time survey intake
  * Crisis detection and WhatsApp-based alerts via Meta Cloud Platform (MCP)

- Implemented a flexible survey system:
  * New users can fill it
  * Returning users can skip to chat

- Added persistent memory with local CSV logs (emotions, messages, scoring)

- Included dashboards to track user mood/stress/emotion trends

- Enabled crisis alerts to be sent to guardians or therapists if red flags are detected
  * Underage users must input a 3rd-party phone for supervision
  * Adults can authorize therapists to receive periodic updates

- Built offline fallback using Ollama (LLaMA3) when OpenAI is unavailable

This system showcases the potential of agentic AI to support emotional health while handling real-world technical and ethical requirements.
Team 1 proudly collaborated across regions to build something both impactful and technically robust.