Project Monthly Update Report

Project: Personalized AI-Powered Mental Health Companion (PAI-MHC)
Reporting Month: October 2025
Submission Date: October 23, 2025
Project Deadline (PoC): November 20, 2025

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1. Group Details

Group Members:

- Sourav Bera
- Edwin Eldhose
- Suragani Yaswanth Sai
- Bindu Vamsi Guntupalli
- Avuthu Meenu Sree (placed – not active)

Role Allocation:

- Collaborative and dynamic allocation across all tasks.
- All members contribute to backend, ML model, and documentation as needed.

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2. Project Objectives (Summary)

- Develop an AI-powered mental health companion with **real-time empathetic chatbot support**, **emotion detection**, and **personalized therapy recommendations**.
- Provide dashboards to visualize trends and insights.
- Implement secure, scalable backend and MLOps pipelines.

3. Achievements in October 2025

Phase 1: Discovery & Architecture (Completed)

Task	Status	Details
HIPAA/GDPR Data Governance & Security Checklist	Completed	Security policies, data classification, encryption, access control, compliance measures defined.
System Architecture Blueprint	Completed	Detailed diagram and textual explanation covering backend, AI models, databases, and MLOps.
Initial Cloud/Local Infrastructure Setup	Completed	Local MongoDB & PostgreSQL containers running; FastAPI backend skeleton initialized.
Repository & Folder Structure	Completed	Backend and ML model directories initialized with base dependencies installed.

Phase 2: Core MVP Build (Oct 12 – Nov 8) – In Progress

Activities Initiated:

1. **Backend Skeleton Setup**
    - FastAPI project initialized
    - Basic /chat and /emotion placeholder routes created
    - Local MongoDB and PostgreSQL containers tested for connectivity
    - Endpoints return **sample responses** for testing:
        - /chat → {"response": "Hello! How are you feeling today?"}
        - /emotion → {"text": "I am feeling sad", "emotion": "sad"}
2. **ML/AI Preparation**
    - GoEmotions dataset downloaded and preprocessed
    - Dataset size and class distribution verified
    - Fine-tuning plan designed for future integration with backend

Remarks:

- Core backend structure and ML dataset preparation **initiated successfully**.
- Demoable work completed: backend endpoints respond with sample data, and dataset is ready for fine-tuning.

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4. Work Completed (Summary)

1. **Backend:**
    - Base FastAPI app initialized with /chat and /emotion endpoints
    - Database connections tested (MongoDB & PostgreSQL)
2. **ML/AI:**
    - GoEmotions dataset collected and preprocessed
    - Dataset ready for fine-tuning
3. **Documentation:**
    - Data governance/security checklist finalized
    - System architecture diagram created

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5. Pending Tasks

Task	Status
Backend API logic enhancement	Pending
ML model fine-tuning and integration	Pending
Phase 2 sprint planning (week-wise)	Pending

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6. Challenges / Risks

- Fine-tuning NLP models may require additional compute time.
- Synchronization of database schemas with future recommendation engine.
- Security & compliance verification will continue during full PoC development.