Mental Wellness App - Project Report

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# 1. Project Overview

# The *Mental Wellness App* is an intelligent, user-friendly platform built to enhance emotional well-being through AI-guided journaling, empathetic conversations, and self-reflection. It integrates machine learning, natural language processing, and data visualization to empower users with insights about their emotional health.

# 2. How the Chatbot Works

The chatbot operates through the following pipeline:

1. The user inputs a journal or message.
2. The input is vectorized using **TF-IDF** to convert it into numerical features.
3. A **Logistic Regression** model predicts the user's emotional tone.
4. Based on the emotion (e.g., sadness, joy, anger), the app:
   * Returns a **tailored chatbot response**
   * Suggests a calming or affirming activity
   * Logs the interaction for future reference
5. The user’s mood data is tracked and visualized in the **dashboard**.

**Architecture Diagram**

**User Input**

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**TF-IDF Vectorizer**

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**Logistic Regression Model**

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**Predicted Emotion**

**↓**

**Emotion-Based Response Generator**

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**Chat Display + Journal Logging**

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**Analytics Dashboard (Trends & Visuals)**

# 3. Key Features

## 🧠 Emotion Detection Classifies journal/chat entries into emotions using TF-IDF + Logistic Regression.

Utilizes a trained machine learning model to classify journal/chat inputs into emotions. Implemented using TF-IDF Vectorizer + Logistic Regression for efficient emotion classification.

**🤖 Chatbot Responses**

Dynamically generates calming or empathetic responses based on detected emotions, providing supportive and empathetic messages.

**📈 Mood Tracking**

Displays emotional trends using pie charts, radar plots, and time-series graphs.

**📝 Journaling**

Allows users to document feelings; entries are auto-labeled by emotion.

**🔄 Conversation History**

Stores user-chatbot interactions to allow users to reflect on their emotional journey.

**📚 Resource Center**

Offers therapy tools, breathing exercises, journaling prompts, and helpline contacts.

**📊 Analytics Dashboard**

Presents emotional insights with visual summaries such as emotion distribution and trends.

# 4. Technology Stack

| **Component** | **Tool/Framework** |
| --- | --- |
| Frontend | Streamlit |
| ML Model | TF-IDF + Logistic Regression (sklearn) |
| NLP Tools | Neattext, NLTK |
| Visuals | Matplotlib, Plotly |
| Data Storage | CSV, session\_state |
| Deployment | Streamlit Cloud + GitHub |

# 5. Segment-Wise Takeaways

* **Emotion Detection** shows how even simple models can yield accurate insights when paired with thoughtful NLP.
* **Chatbot Interaction** teaches that tone-aware responses can improve user trust and experience.
* **Visual Analytics** highlight how users can gain awareness through patterns and trends.
* **Journaling** encourages expressive self-reflection and gives users agency over their wellness.
* **End-to-End Integration** via Streamlit makes it highly usable for clinics, students, or NGOs with minimal tech setup.

# 6. Strengths & Uniqueness

* Lightweight design with no reliance on cloud APIs
* Privacy-first: No external data sharing
* Emotion-aware journaling bridges mental health and AI
* Ideal for clinics, schools, or NGOs due to simplicity and accessibility

# ****7. Future Enhancements****

* 🔐 Secure user login with encryption
* 🌍 Add support for multilingual emotion detection
* 🤖 Use LLMs like GPT-3.5 for dynamic, smarter conversations
* 🗃 Connect to a persistent database (e.g., Firebase or SQLite)

# 8. Conclusion

The Mental Wellness App bridges intelligent emotional analysis with accessible self-care tools. It’s a highly deployable, ML-backed, and user-friendly solution for promoting emotional literacy and reflection. With further development, it has strong potential for use in education, counseling centers, or self-guided therapy.