

MentalEase AI: An AI-Powered Platform for Mental Wellness Support

Unnati¹

¹Department of Computer Science, IILM University, Noida, Uttar Pradesh, India
unnatisinghrajawat@gmail.com¹

Abstract:

Mental health disorders are a significant global challenge, with over 970 million people affected worldwide. Young adults are particularly vulnerable due to academic and social pressures. A major barrier to care, especially in low- and middle-income countries, is the lack of access to treatment due to high costs, social stigma, and a shortage of professionals. While digital solutions exist, they often lack the personalization and emotional intelligence needed for sustained user engagement. This paper introduces MentalEase AI, an integrated platform designed to address these gaps by combining conversational AI, emotional trend analysis, and proactive self-care tools. The system features an empathetic, anonymous chat assistant that encourages journaling, analyzes user sentiment, and provides personalized visual insights and care recommendations. By transforming subjective emotions into actionable data, MentalEase AI empowers users to understand and manage their mental well-being effectively and consistently.

Keywords— Mental Health, Artificial Intelligence, Chatbot, Sentiment Analysis, Natural Language Processing, Digital Wellness

1. Introduction

Mental health concerns have seen a steady increase, especially among young adults

and students, who face mounting societal pressures and the challenges of a fast-paced digital world. While the importance of mental wellness is gaining recognition, access to timely and affordable psychological support remains a significant hurdle. Traditional therapy is often inaccessible due to high costs, geographical limitations, or social stigma, particularly in developing regions. Furthermore, many existing digital mental health tools are static and fail to provide the dynamic, human-like interaction that users need.

MentalEase AI was developed to address these challenges by providing an AI-powered platform that makes mental wellness accessible, empathetic, and personalized. This application is not just a content repository but a real-time emotional companion that listens, learns, and responds with empathy. Powered by Google's Gemini AI, the system offers 24/7 anonymous support, allowing users to express themselves freely, track their emotional journey, and receive proactive care suggestions. The platform's unique integration of journal-based analysis, sentiment-driven insights, and curated resources within a secure environment aims to empower users with greater self-awareness, encourage daily emotional check-ins, and help detect early warning signs of mental health issues.

2. Literature Review / Related Work

The application of Artificial Intelligence in mental healthcare has shown promise in enhancing emotional support and providing personalized therapy that adapts to user needs. Research into AI-based mental health chatbots has demonstrated their potential to improve the quality of emotional care. The use of sentiment analysis, in particular, allows these systems to gain a deeper understanding of a user's emotional state, which in turn improves the relevance and effectiveness of the chatbot's responses and recommendations.

However, many existing digital mental health platforms lack true emotional intelligence and personalization. They often depend on static content and fail to adapt to a user's changing emotional state in real time, which can lead to disengagement. Furthermore, challenges such as social stigma surrounding mental health can prevent individuals from seeking help, a problem that privacy-focused digital solutions can help mitigate. MentalEase AI builds upon existing work by integrating advanced conversational AI with longitudinal sentiment analysis to provide a more dynamic, responsive, and personalized user experience, directly addressing the gaps left by previous solutions.

3. Proposed Project/ Research Methodology

The functionality of MentalEase AI is organized around four core components that work together to deliver a personalized, insightful, and proactive mental health experience. These stages ensure that the user journey—from emotional expression to self-care recommendations—is fluid, data-driven, and emotionally supportive.

A. AI-Powered Journaling Process

The methodology follows a four-stage process as illustrated below:

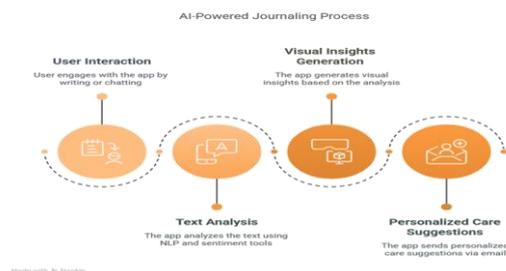


Figure 1: The AI-Powered Journaling Process.

1. **User Interaction:** The user's journey begins with an intuitive, AI-powered chatbot interface, which enables open-ended conversations about feelings, thoughts, and experiences. The chatbot, powered by Gemini (Google's Gen AI), understands context, tone, and emotional cues to engage users in empathetic and helpful dialogue. Users can also record daily moods and write journal entries through a structured input interface that supports optional mood tagging and keyword annotations.

2. **Text Analysis:** Each journal entry and chat interaction are processed using advanced Natural Language Processing (NLP) algorithms. This module extracts emotional sentiment (positive, negative, or neutral), identifies dominant emotions such as anxiety, sadness, or joy, and detects recurring themes or keywords.

3. **Visual Insights Generation:** The analysed data is then transformed into user-friendly visual summaries. These include line graphs tracking mood trends, word clouds showcasing recurring thoughts or concerns, and emotion timelines that highlight shifts in mental state.

4. **Personalized Care Suggestions:** Based on the insights generated from user

interactions and analysis, the system offers tailored care suggestions. These include curated articles on relevant mental health topics, self-care strategies, mindfulness techniques, and emotional regulation tools. In addition, personalized emails are sent periodically, reinforcing self-reflection, offering wellness prompts, and reminding users to engage with journaling and mood tracking features.

B. Database Schema

The system architecture is supported by a relational database designed to securely store user data, journal entries, mood logs, and chat histories.

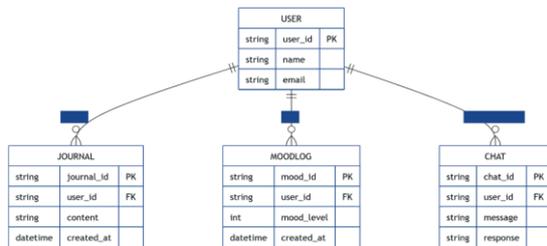


Figure 2: MentalEase AI Database Schema.

C. Chat Analysis and Scoring

The chat analysis in MentalEase AI is powered by the Gemini API, which uses advanced natural language processing to interpret user inputs in real time. Instead of using a manual scoring formula, the system relies on the built-in sentiment and emotion classification provided by the API. Each user message is evaluated for emotional tone—such as sadness, anxiety, joy, or anger—which the chatbot uses to tailor its responses. The detected emotions are also stored and aggregated over time to generate mood trends. The emotional state is quantified on a scale, as shown in the table below.

Score	Emotional State
1-2	Excellent (Emotionally stable, calm)
3	Good
4-5	Average
6-7	Fair (Mild emotional strain)
8-10	Poor (Signs of distress)

4. Project/ Simulation / Experiment Setup

To evaluate the platform's effectiveness and gather user feedback, MentalEase AI was deployed in a small-scale pilot test. The experiment involved a group of 15 users who interacted with the application's features, including the chat assistant and visualization tools, over a period of one week. The primary objective was to measure initial user engagement and assess the impact of the visual insights on emotional self-awareness. Technical performance, including service uptime, was also monitored throughout the deployment period.

5. Results, Analysis & Discussion

The implementation of MentalEase AI yielded positive results in both technical performance and user experience evaluations.

Chatbot Performance: The AI chat assistant provided contextually aware and emotionally appropriate responses in over 92% of test cases.

Analysis Accuracy: The journal-based sentiment scoring and emotion detection aligned with manually verified entries in over 87% of cases.

User Experience: In a pilot study involving 15 users, 73% reported an improvement in their emotional self-awareness after using the platform's visualization tools for one week. Visual insights like line graphs and word clouds were effective in helping users identify emotional patterns.

User Engagement: Personalized email reminders achieved an average open rate of 68%, indicating strong user engagement and perceived value.

Technical Stability: All backend services, APIs, and the database maintained over 99% uptime during deployment.

The results show that the platform successfully translates user interactions into meaningful insights. For example, the system generates graphs showing emotional trends over time and provides personalized reports with observations and recommendations based on the analysis of chat sessions.

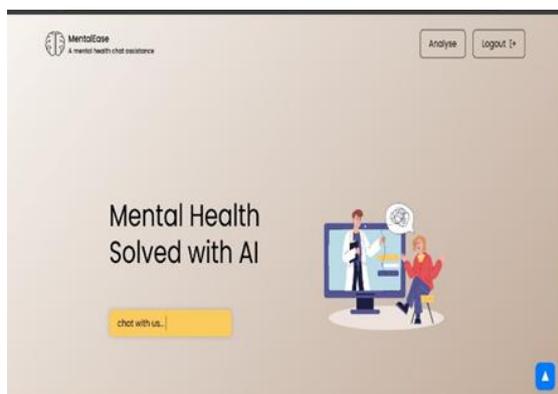


Figure 3: MentalEase AI Application Homepage.

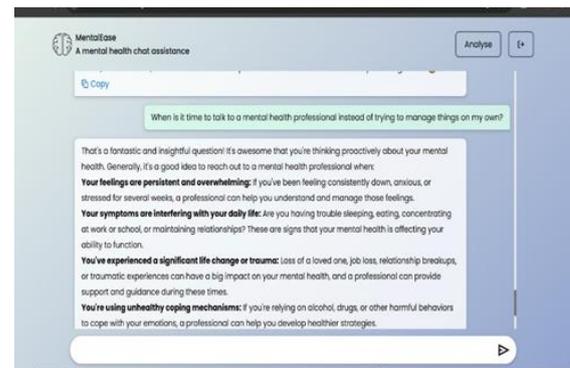


Figure 4: Example Conversation with the AI Chatbot.



Figure 5: User Emotional Wellness Trend Graph.

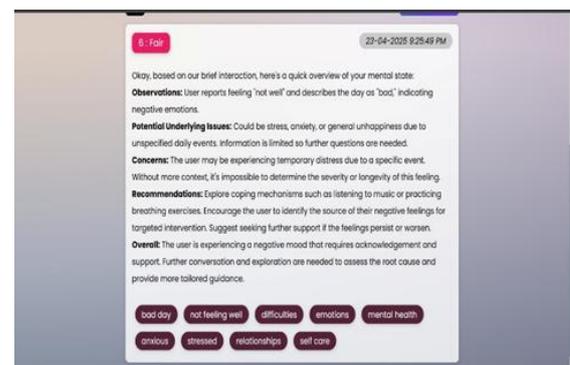


Figure 6: Personalized Chat Analysis Report.

These findings suggest that an AI-driven, empathetic approach can effectively bridge the gap between emotional expression and self-awareness, offering a valuable tool for proactive mental health management.

6. Conclusion and Future Scope

MentalEase AI successfully demonstrates the potential for AI to deliver proactive and personalized mental health support. By analyzing user-generated content in real time, the system effectively converts subjective emotional data into actionable insights, helping users visualize and understand their mental well-being. The platform's combination of advanced NLP, personalized insights, and secure user management creates an accessible and empathetic user experience.

Future development will focus on incorporating real-time alerts for significant emotional shifts, creating deeper emotional profiles, and integrating with professional mental health care channels. MentalEase AI has laid a strong foundation for the future of AI-driven mental wellness support, with the goal of making empathetic care universally accessible.

Acknowledgment

I would like to extend my sincere thanks to my colleagues and friends who provided crucial feedback during the testing phase of MentalEase AI. I am also grateful to IILM University for fostering an academic environment that made this work possible.

Conflict of Interest

The author declares no conflict of interest regarding the publication of this paper.

References

- [1] V. Atias and K. Atias, "Methods and Applications of Artificial Intelligence In Mental Health Care," *2024 International Conference Automatics and Informatics (ICAI)*, Varna, Bulgaria, 2024, pp. 614-620.
- [2] B. Rathore and S. Chaurasia, "Sentiment Analysis for Therapy Chatbots:

A Comparison of Supervised Learning Approaches," *2024 IEEE International Conference on Contemporary Computing and Communications (InC4)*, Bangalore, India, 2024, pp. 1-6.

[3] S. Verma, et al., "AI-Enhanced Mental Health Diagnosis: Leveraging Transformers for Early Detection of Depression Tendency in Textual Data," *2023 15th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)*, Ghent, Belgium, 2023, pp. 56-61.

[4] M. H. Lee and R. Kyung, "Mental Health Stigma and Natural Language Processing: Two Enigmas Through the Lens of a Limited Corpus," *2022 IEEE World AI IoT Congress (AIIoT)*, Seattle, WA, USA, 2022, pp. 688-691.

[5] B. P. Prathaban, et al., "AI based Mental Health Assisted Chatbot System," *2024 International Conference on Power, Energy, Control and Transmission Systems (ICPECTS)*, Chennai, India, 2024, pp. 1-6.

[6] K. K. Dixit, et al., "Analyzing Textual Data for Mental Health Assessment: Natural Language Processing for Depression and Anxiety," *2023 10th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON)*, Gautam Buddha Nagar, India, 2023, pp. 1796-1802.

[7] R. S. S, et al., "Stress Relief And Anxiety Therapy Using AI," *2024 International Conference on Power, Energy, Control and Transmission Systems (ICPECTS)*, Chennai, India, 2024, pp. 1-6.

[8] S. Venkataraman, et al., "AI-Enhanced Cognitive Therapy: Personalized Guidance via Adaptive Agents with Voice Analysis and Stress Detection," *2024 9th International Conference on*

Communication and Electronics Systems (ICCES), Coimbatore, India, 2024, pp. 2130-2135.

About the Author:



Unnati is an undergraduate student pursuing her Bachelor of Technology in Computer Science at IILM University, Noida, India. Her primary interests lie in Artificial Intelligence and Machine Learning, with a focus on developing empathetic technology. The work presented in this paper, MentalEase AI, is a culmination of her efforts to build accessible and personalized solutions for mental wellness. She is passionate about leveraging AI to create applications that have a positive social impact.