

MIND EASE AI: A HUMAN-CENTERED AI APPROACH TO EMOTIONAL AND MENTAL WELL-BEING

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ABSTRACT:

Current issues like stress, anxiety, loneliness, and emotional exhaustion are common today. Even though there's more awareness about mental well-being, a lot of people still don't ask help from family, friends and professionals because of fear of being judged, social stigma, or not having easy access to resources. This study introduces MindEase AI, an AI chatbot designed with a focus on human needs, to offer empathetic and supportive conversations. It was created using a step-by-step approach that mixes rule-based logic, machine learning, and a cloud-based large language model through the Groq API. The system includes parts for remembering past conversations, making better prompts, detecting possible crises, and filtering responses to be ethical and safe. Testing with simulated emotional situations shows that using generative AI improves how natural and relevant the conversation feels. The results suggest that MindEase AI can be a helpful digital tool for mental support, for those who can't easily access professional mental health services.

KEYWORDS:

Artificial Intelligence, Mental Health Chatbots, Human-Centered AI, Large Language Models, Emotional Support Systems, Conversational AI, Digital Mental Health

I. INTRODUCTION

Emotional Wellbeing is a critical concern that people are facing in today's society. Situations affecting mental health have increased academic pressure, professional pressures, comparisons through social platforms, etc. These are leading to mental health problems in all ages of people. Among young professionals and youth, problems like depression, stress, anxiety etc., are on the rise. Even if humans are aware of mental health, people are not seeking timely help. These problems are one of the reasons that people don't share about their mental health and challenges that are holding people from seeking mental health services.

Earlier, chatbots were using guidelines to operate. The chatbots were dependable, but they were not useful when put in a difficult situation. The chatbots were not able to carry on a conversation, but were designed to understand human emotions with the use of machine learning. The large language models are helpful in

carrying on a conversation. The ethical issue in artificial intelligence in the area of mental well being is that it may provide wrong information which is dangerous and improper.

The previous generation of chatbots operated based on strict guidelines. They were reliable but were unable to handle emotional and complex conversations. These chatbots were able to comprehend human intention and emotions using machine learning. However, they were unable to generate a smooth and natural conversation. Currently, there are models that allow chatbots to have smooth and realistic conversations. However, there are issues in using AI in the terms of mental health, such as providing false and dangerous information and ethical usage.

This study introduces MindEase AI, a chatbot created with an emphasis on human-centered assistance for those coping with emotional problems. It offers both intelligent discourse and ethical responsibility by fusing strong language models with safety-based regulations. This research's primary objective is to investigate how AI can promote emotional well-being while remaining open, secure, and accountable in its interactions.

II. RELATED WORK

Over the past few decades, research on chatbots for mental well being and support has changed dramatically. ELIZA, first conversational programs, demonstrated how computer systems could use pattern matching techniques to mimic psychotherapy-like discussions [2]. Despite no presence of real language understanding, the research shows that subjects were willing to share about their individual problems with computer-based chat systems. Rule-based chatbots with set dialogue flows were also developed in later studies. Using these chat systems, programmers can monitor the answers and maintain the security of the chat processes. However, due to the structured format, the programmers found it hard to manage various emotional expressions and debate inputs. Machine learning techniques later improved chat systems by helping the chatbot recognize the input from the user and the emotional state.

The natural processing of language helped the chatbot identify patterns related to anxiety, depression, and stress. However, the chat system was still not able to cope with the topic discussed.. Conversational AI underwent a transformation with the birth of transformer-based language models. New approaches to comprehending the connections between meaning in language were made possible by models such as the Transformer architecture [3]. Compared to conventional approaches, these models enable systems to produce more logical and contextually relevant replies.

Pretrained models like BERT, which enhanced natural language comprehension by learning how language functions in both directions, brought about further advancements [4]. These advancements improved conversational systems' comprehension of human goals and emotional expression. These AI technologies have been used to create a number of digital chatbots for mental health. According to research, difficulties faced by humans can be helped by conversational agents in emotional discomfort by providing thoughtful dialogues and promoting constructive coping mechanisms [1]. AI chatbots can boost participation in mental health conversations and offer easily accessible help, according to systematic studies of conversational agents in healthcare [5].

Despite these advantages, some hazards associated with generative AI systems have been identified by researchers. AI chatbots may provide incorrect or inappropriate responses in the absence of adequate protections, particularly in delicate mental health situations [5]. As a result, many academics recommend utilising hybrid designs that combine rule-based safety measures with generative models. Based on these discoveries, MindEase AI was developed utilising a progressive architecture that integrates huge language models, machine learning methods, and rule-based conversational structures inside a human-centered design framework.

III METHODOLOGY

A methodical, multi-phase process was used to develop MindEase AI with the goal of progressively enhancing conversational skills while preserving system control and security.

A. Conversational Framework Based on Rules
Predetermined conversational intents and responses were used in the construction of the original system. Techniques for recognizing patterns were employed to match user inputs with these intents, which were kept in structured datasets.

B. Classification of Machine Learning Intent

A machine learning classifier was added to categorise user inputs into states like stress, anxiety, or loneliness to increase the system's flexibility. Combining Big Language Models In the last phase, the Groq API was used to integrate a cloud- based large language model. To make sure the answers were sympathetic and morally correct, prompt engineering techniques were employed.



Fig. 1 System architecture of the proposed MindEase AI chatbot.

Key components include:

- User Input Interface
- Text Processing Module
- Intent Detection System
- Conversation Memory Module
- Prompt Engineering Layer
- LLM Generation Engine
- Ethical Response Filter
- Response Delivery System

This design verifies that responses are both intelligent and responsible.

V. EXPERIMENTAL EVALUATION

Simulated testing was used in terms of emotional interaction scenarios that represent common user experiences, such as academic stress, loneliness, and career uncertainty.

Sr. No.	Evaluation criteria included:		
	Features	Rule-Based System	LLM System
1.	Response Clarity	Low	High
2.	Context Awareness	Low	High
3.	Conversational Flexibility	Low	High
4.	User engagement potential	Moderate	High

Comparative analysis between rule-based and LLM-based systems showed a big improvement in conversational naturalness and contextual understanding when generative AI was used.

VI.RESULT AND DISCUSSION

The experimental findings demonstrate that incorporating large language models significantly enhances contextual awareness and conversational flexibility. The generative system responded with outputs that were more emotionally supportive and natural than those produced by conventional rule-based chatbots. Consistent results demonstrate that conversational AI systems can boost user engagement and promote more candid expression of emotional concerns [1]. Conversational systems can produce responses that are both linguistically coherent and contextually relevant thanks to transformer-based architectures [3].

However, ethical issues were discovered while using generative AI. When utilising AI agents, researchers have emphasised the significance of implementing safety measures and explicit behavioural guidelines [5]. AI systems may respond in an unduly generic or deceptive manner in the absence of such safeguards. MindEase AI's hybrid design demonstrates how integrating generative language models with rule-based safety layers can enhance conversational intelligence and system dependability.

VII CONCLUSION

The birth of MindEase AI, a human-centered conversational AI system designed to provide encouraging emotional interactions, was presented in this study. The system includes rule-based conversational frameworks, machine learning techniques, and massive language models. This creates a balanced system that focuses on the importance of both conversational intelligence and responsibility. The outcomes of this research indicate the importance of massive language models in improving the coherence and emotional intelligence of conversations compared to the use of rule-based techniques. This research also confirms the outcomes of previous studies that indicated the importance of the role that the conversational system could play in offering support to emotionally challenged individuals.

It is inadequate to replace the role of mental health care with AI-based systems but can be assured with the help of an assistant that offers immediate support through communications. Future development in NLP could improve the functionality of digital systems used in mental health support systems.

Future improvements may include:

- Mobile and web deployment
- Advanced emotion detection algorithms
- Long-term conversation memory
- Multilingual support

- Integration with professional services

ACKNOWLEDGMENT

The authors acknowledge the usage of AI-assisted tools for language refinement and structural editing of this manuscript. All conceptual development, analysis, and conclusions are the authors' original work.

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