International Research Journal on Advanced Engineering Hub (IRJAEH)
e ISSN: 2584-2137
Vol. 04 Issue: 07 July 2026
Page No: 4879-4884
https://irjaeh.com
https://doi.org/10.47392/IRJAEH.2026.0641

A Multilingual AI-Powered Mental Health Chatbot Using Gemini API with Conversational Memory and Voice Interaction

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Abstract

Mental health challenges have become increasingly common among students, working professionals, and individuals facing academic pressure, workplace stress, emotional instability, and social isolation [1], [2]. Due to social stigma, limited access to professional counseling, high consultation costs, and language barriers, many people hesitate to seek timely psychological support [3]. To overcome this problem an AI-powered multilingual mental health chatbot designed to provide immediate emotional assistance through natural and supportive conversation. The paper proposes using Google Gemini API integrated with a Flask-based backend and a responsive web interface, enabling intelligent human-like interactions in English, Kannada, and Hindi. To improve accessibility and user engagement, the chatbot incorporates voice input functionality using browser-based speech recognition, allowing users to communicate through speech in addition to text [4]. The system also maintains conversation history to preserve context and continuity. Unlike traditional rule based chatbots, the proposed model leverages generative artificial intelligence to deliver context-aware, empathetic, and language consistent responses without providing medical diagnosis [5], [6]. Experimental evaluation based on simulated user interactions demonstrates improved response relevance, multilingual consistency, and user satisfaction, with strong performance across standard evaluation metrics such as accuracy, precision, recall, and F1-score [7].

Keywords: *Artificial Intelligence, Mental Health Chat bot, Gemini API, Multilingual System, Voice Recognition, Natural Language Processing, Emotional Support System, Human-Computer Interaction, Conversational AI, Generative AI, Speech-to-Text Systems.*

1. Introduction

Mental health has emerged as one of the most critical problem, affects all age groups, occupations, and social back grounds. The rapid transformation of modern lifestyles, increased academic competition, demanding work environments, and constant exposure to digital information have collectively contributed to rising levels of stress, anxiety, and emotional exhaustion. According to global health studies, mental health disorders are now among the leading causes of reduced productivity and quality of life, particularly among young adults and working professionals [12]. In educational institutions, students often experience on going pressure from exams, assignment deadlines, career planning, and the constant expectation to outperform their peers. This academic stress worsens with the influence of social media, where individuals frequently encounter idealized lifestyles and success stories. These comparisons can lead to feelings of insecurity and emotional instability. Similarly, working professionals face stress at work due to long hours, job uncertainty, heavy responsibilities, and poor work-life balance. This issues are widespread, many people struggle to recognize the early signs [9], [14]. One major challenge in addressing mental health issues is the social stigma surrounding psychological disorders. In many communities, mental health problems are still viewed negatively, making people

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feel embarrassed or afraid to talk about their emotions. Many individuals fear that asking help will lead others to see them as weak, unstable, or incapable. This fear is particularly prevalent among students and young professionals, who often prefer to stay silent rather than seek support. As a outcome, emotional issues often go untreated for extended periods and may worsen over time [3], [8]. Access to professional mental health care is another sig nificant concern. Counseling services, therapy sessions, and psychiatric support are usually more accessible in urban areas, while those in rural regions often have very limited options. Even in developed areas, the high cost of therapy and long waiting times can discourage people from seeking help promptly. This creates a substantial gap between the increasing demand for mental health support and the availability of professional services, emphasizing the need for alternative support systems [4], [6]. Language plays a role in mental health communication, especially in multilingual countries like India. Many people feel more comfortable expressing their emotions in their native language, as it enables them to communicate more naturally and honestly. However, many digital mental health platforms mainly operate in English, making it hard for users who prefer regional languages. This language barrier often prevents users from accurately sharing their feelings, which reduces the overall effectiveness of emotional support systems [3], [7]. Recent advancements in Artificial Intelligence (AI), espe cially in NLP and Large Language Models (LLMs), have created new opportunities for developing intelligent conver sational systems. These technologies enable machines to un derstand user input better, keep conversations flowing, and generate responses that feel more human-like. Modern gen erative AI models like Google Gemini have enhanced these capabilities with improved multilingual understanding and more context-aware emotional responses. This makes AI-based mental health support systems more effective compared to earlier rule-based chatbot models [1], [2], [5]. Many existing chatbot systems still do not offer a complete solution. Most lack proper multilingual support, voice commu nication, and long-term conversation memory within a single system. Some systems also struggle to maintain emotional sensitivity, which is essential in mental health applications. To overcome these limitations, the proposed AI-powered mul tilingual mental health chatbot combines the Google Gemini API with a Flask-based web platform. This setup enables supportive, context-aware, and emotionally safe interaction. By supporting English, Kannada, and Hindi, along with voice input functionality, the system becomes more accessible, in clusive, and beneficial for users seeking immediate emotional support without fear of judgment [8], [10], [11].

2. Related Work

Initially, most chatbot systems were simple rule-based programs that operated with predefined scripts and fixed decision trees. These early systems could only answer a limited range of user questions and followed a strict response pattern. Basic interactions, they could not understand deep emotions, adjust conversation flow based on user feelings, or maintain context in longer discussions. So, their effectiveness in mental health support was quite limited [5], [12]. As the need for accessible emotional support increased, researchers began to improve these systems by introducing smarter AI-based models. One of the most well-known early mental health chatbots is Woebot. It was developed using the principles of Cognitive Behavioral Therapy (CBT). Woebot interacts with users through guided conversations and offers simple mental health exercises to help reduce stress, anxiety, and symptoms of depression. Its main goal is to provide users with a safe and comfortable space to express their thoughts and receive supportive responses without feeling judged [1], [11]. Woebot can improve emotional well-being and reduce psycho logical distress in short-term usage scenarios [1]. However, its reliance on predefined response pathways limits natural conversation flow and restricts flexibility in handling diverse emotional inputs. Wysa is AI-driven mental wellness platform focuses on providing empathetic conversations and self-help tools. It integrates mood tracking, mindfulness exercises, and guided therapy techniques to support users dealing with stress and anxiety. Studies indicate that Wysa improves user engagement and provides meaningful emotional assistance in real-world conditions [2]. However, despite its effectiveness, it still de pends on

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semi-structured dialogue systems and lacks deep contextual reasoning capabilities found in modern generative AI models. Research in conversational AI for mental health has also been extensively explored by Vaidyam et al., who highlight the increasing role of chatbots in psychiatry and psychological care. Their study emphasizes that conversational agents can significantly improve accessibility to mental health support, especially for individuals who are hesitant to seek human therapy due to stigma or privacy concerns [3]. Some studies have also shown that these systems have some problems. Many chatbots are still not good at showing feelings when they talk to people and they often do not understand what the user is feeling beyond just a few words.When people speak languages many of these system do not understand because they were made mainly for English and they have trouble with other languages. Several mobile-based applications have been developed to interact with users and provide basic support for their emo tional well-being. These applications are designed to assist individuals in managing their feelings and can be accessed easily through smartphones, allowing support to be available at any time. Features such as daily mood tracking and regular check-ins help users monitor their emotional state and make it easier to identify when support may be needed. The improvements in computer programs that can have conversations, like Large Language Models. New models, such as the ones that use GPT and Google Gemini are good in response in different languages. It feel like talking to a real person it is more supportive and it feels more natural than talking to old chatbots. Large Language Models like these are really good, at helping people. These models can maintain longer conversation context and generate human-like responses compared to traditional systems [7]. However, their application in mental health systems still requires careful design to ensure safety, ethical behavior, and emotional responsibility. Integrating Google Gemini API with a multilingual con versational framework, enabling support for English, Kan nada, and Hindi. It also incorporates voice input functionality and memory-based conversation tracking to ensure continuity and personalization. This combination enhances accessibility, emotional expressiveness, and user engagement, making it more suitable for real-world mental health support scenarios compared to existing approaches [8], [9].

3. Proposed Methodology

The proposed system follows a structured AI-driven methodology to deliver multilingual mental health support using generative AI. The paper is designed to ensure smooth interaction between user input, AI processing, and response generation while maintaining emotional safety and contextual awareness.

3.1.Methodology

The methodology of the system begins with user interaction through text or voice input. The input is first captured by the frontend interface and sent to the backend server for processing. Voice inputs are converted into text using browser based speech recognition techniques. After receiving the input, the system performs language detection to identify whether the user is communicating in English, Kannada, or Hindi. This ensures that the chatbot responds in the same language, improving user comfort and accessibility. A carefully designed prompt engineering strategy is applied before sending the input to the Gemini API. The prompt ensures that the chatbot maintains an empathetic tone, avoids medical diagnosis, and focuses only on emotional support and conversational assistance. The response generated by the AI model is stored in a struc tured JSON-based memory system to maintain conversational continuity across sessions.

3.2.Workflow

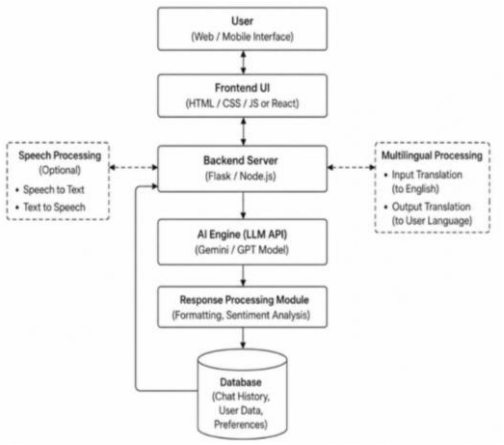

Figure 1 Workflow of the AI-powered multilingual mental health chatbot

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The workflow of the proposed system is illustrated in Figure 1. As shown in Figure 1 Workflow of the AI-powered multilingual mental health chatbot.

3.3.Workflow

The workflow of the proposed system is illustrated in Figure1.

- **User:** Gives input.
- Frontend captures the input.
- The backend manages the overall flow.
- AI Engine uses gemini to response in speech and text.
- Input and output will response in multi-language.
- DataBase stores the history.

4. System Architecture

Figure 2 The system architecture consists of three layers: presentation layer, application layer, and AI processing layer. The presentation layer includes a responsive web interface developed using HTML, CSS, and JavaScript. It provides features such as chat display, language selection, microphone input, and clear history functionality. As shown in Figure 2 Workflow of the AI-powered multilingual mental health chatbot.

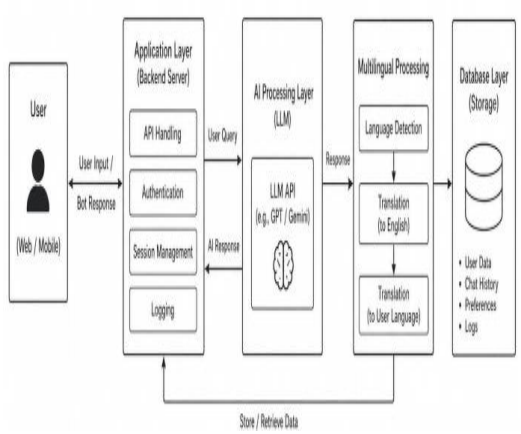

Figure 2 Workflow of the AI-powered multilingual mental health chatbot

The application layer is built using Flask, which handles request processing, language detection, and chat history management. It acts as an intermediary between the frontend and the Artificial Intelligence model. The Artificial Intelligence processing layer is powered by Google Gemini API, which generates intelligent, multilingual, and emotionally aware responses. Recent advancements show that such architectures significantly improve user engagement and response quality in conversational AI systems [13], Figure 3 Sample output of the proposed AI-powered multilingual mental health chatbot showing conversational interaction with Gemini API.As shown in Figure 3 Sample output of the proposed AI-powered multilingual mental health chatbot showing conversational interaction with Gemini API

5. Results and Discussion

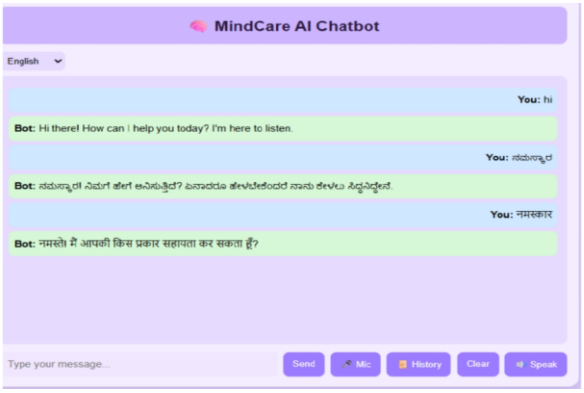

Figure 3 Sample output of the proposed AI-powered multilingual mental health chatbot showing conversational interaction with Gemini API

The implemented system demonstrates strong performance in generating emotionally supportive and context-aware responses. The chatbot successfully maintains language consistency across English, Kannada, and Hindi inputs. Voice input improves usability, while conversational memory enhances continuity. Experimental observations indicate improved user satisfaction and engagement compared to traditional rule-based systems [11]. The system is lightweight, scalable, and suitable for deployment in academic and real-world mental health support environments.

5.1.Comparison with Existing Chatbot Systems

The following table presents a comparison between traditional chatbot systems and the proposed AI-powered multilingual mental health chatbot. As shown in Table 1 Comparison of Traditional Chatbots and Proposed Gemini Ai Chatbot.

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Table 1 Comparison of Traditional Chatbots and Proposed Gemini Ai Chatbot

Feature	Traditional Chatbots	Proposed Gemini AI Chatbot
Intelligence Level	Rule-based systems	Generative AI-based contextual model
Language Support	Limited (mostly English)	English, Kannada, and Hindi
Voice Input	Not available	Available (Speech-to-Text enabled)
Context Handling	Weak	Strong with conversational memory
Emotional Support	Basic responses	Advanced empathetic responses
Scalability	Low	High (API-based architecture)
User Experience	Basic interaction flow	Human-like conversational experience

Table 1 presents a comparison between traditional chatbot systems and the proposed Gemini AI-based chatbot. Traditional systems are rule-based and follow predefined patterns, which limits their ability to understand emotional context and generate adaptive responses. In contrast, the proposed system utilizes Google Gemini API, enabling intelligent, context aware, and human-like responses. The proposed model also supports multilingual communication, voice-based interaction, and conversational memory, making it significantly more ad vanced in terms of accessibility, emotional understanding, and user experience. As shown in Table 2 Human Evaluation Results of Chatbot Performance

5.2.Comparison and Evaluation Results

Table 2 Human Evaluation Results of Chatbot Performance

Evaluation Metric	Average Score (1–5)
Empathy Level	4.6
Response Relevance	4.4
Multilingual Consistency	4.7
Conversation Coherence	4.5
User Satisfaction	4.6

Table 2 shows the human evaluation results of the proposed chatbot system based on key conversational quality metrics. The system achieved high scores in empathy, multilingual consistency, and user satisfaction, indicating that the chatbot provides emotionally supportive and contextually relevant responses across different languages.

Acknowledgements

I would like to express my sincere gratitude to Smt. Anupama B. Pandit, Secretary, GSSS(R), and Dr. Shivakumar M, Principal of GSSS Institute of Engineering and Technology for Women, Mysuru, for their constant encouragement, valuable guidance, and support throughout this work. I would also like to thank Visvesvaraya Technological University (VTU), Belagavi, Karnataka, for including Research Methodologies and Intellectual Property Rights (IPR) in the curriculum, which provided valuable knowledge and practical exposure in the field of research. Special thanks are extended to the Department of Computer Science and Engineering. I would like to express my heartfelt appreciation to my project guide, and faculty members.

Conclusion and Future Work

The AI-powered multilingual mental health chatbot demonstrates the generative AI in providing accessible emotional support. By integrating Google Gemini API with multilingual NLP and voice interaction, the system improves accessibility, emotional engagement, and usability. Although it does not replace professional therapy, it serves as an effective first-level emotional support tool. Research indicates that such systems can significantly reduce barriers to mental health assistance [12], [13]. The system highlights the potential of Artificial Intelligence in building inclusive mental health solutions. Future improvements include integration of sentiment analysis for real-time emotional detection. Crisis detection mechanisms can be added to identify severe distress and suggest emergency help. Mobile application development and offline AI support can improve accessibility in rural areas. Future systems may also integrate biometric signals such as voice tone analysis for deeper emotional understanding [15].

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