

# Therabot-A Mental Health Chatbot

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**Abstract**—Mental health is an increasingly critical issue in India, affecting individuals across all age groups, from adolescents to working professionals. Despite the growing awareness of mental health challenges, there remains a significant gap between those in need of care and the availability of professional treatment, exacerbated by the limited number of mental health professionals. Furthermore, societal stigma continues to hinder open discussions about mental health, preventing many from seeking timely assistance. To address this gap, we propose a mental health chatbot that provides users with personalized, real-time support for common mental health issues, such as stress, anxiety, early-stage depression, and related mental health concerns. The chatbot is designed to offer a wide range of tools and resources, including self-help articles, exercises, and lifestyle tips, while also guiding users toward professional assistance when necessary. By providing a private, safe, and easily accessible platform, the chatbot has the potential to bridge the gap between mental health needs and formal professional care. It empowers individuals with tools for self-management, offering a first line of support that can make mental health care more inclusive, accessible, and destigmatized in a country with a significant unmet need for such services.

**Index Terms**—Mental health,mental health chatbot,stress,anxiety,depression,self-help,mental health care,accessibility,stigma,professional assistance,self-management

## I. INTRODUCTION

According to an estimation by the World Health Organization (WHO), the economic loss due to mental health conditions between 2010 and 2030 is projected to be 1.03 trillion US dollars. The Global Mental Health Report also highlights India's position, ranking 126th in the World Happiness Index of 2023. In India, mental health issues are severely stigmatized, making it a neglected aspect of public health. WHO statistics reveal that India has one of the highest suicide rates globally, with over 220,000 suicides annually. The Global Burden of Disease (GBD) study in 2017 showed that 197.3 million individuals (14.6 percent of the population) were affected by mental disorders. Additionally, general statistics indicate that one in five individuals suffer from some form of mental illness. It is further noted that 50 percent of mental health conditions begin by age 14, with 15 percent developing by age 24.

The motivation behind the development of a mental health chatbot stems from the growing demand for accessible and effective mental health support in an era where awareness of these issues is on the rise. Many individuals face significant barriers to traditional mental health care, such as stigma, cost, and limited availability of services. A chatbot can provide a non-judgmental, confidential space where users can express their feelings and receive guidance at any time. Available 24/7, it can offer immediate assistance regardless of location or time. This accessibility can help normalize conversations around mental well-being, encouraging more people to seek help. Furthermore, advanced algorithms can personalize interactions based on user inputs, enhancing the overall user experience. Additionally, mental health chatbots can assist professionals by providing preliminary support and resources, thus allowing therapists to focus on more complex cases. By collecting data from user interactions, these chatbots can also identify trends and needs, which can inform public health strategies and improve mental health services.

The aim of this work is to develop a chatbot that serves as a digital tool to provide emotional support, resources, and coping mechanisms for users experiencing stress, anxiety, or other mental health challenges. This chatbot will offer self-help techniques and facilitate connections with mental health professionals when necessary.

To achieve this, several objectives will be pursued. First, the chatbot will collect comprehensive user input regarding various aspects such as profession, working status, sleep patterns, dietary habits, and personality traits. This data will be gathered through scenario-based questions and rating scales. Second, the chatbot will integrate this collected information with a database containing relevant mental health analysis data, allowing for accurate comparisons and assessments. Third, it will compare user inputs with the existing database to generate a detailed analysis of the user's mental health condition. This analysis will be visually represented through pie charts and bar graphs for clearer insights. Finally, the chatbot will provide tailored recommendations based on the analysis,

offering actionable steps along with reminders and instructions to encourage regular engagement and improvements in mental health management.

## II. RESEARCH AND ANALYSIS

The rapid advancement of artificial intelligence (AI) technologies in recent years has significantly influenced the development of mental health solutions that prioritize accessibility, empathy, and personalization. Conversational agents, particularly chatbots, have emerged as scalable tools capable of delivering mental health support to individuals who may otherwise face barriers in accessing traditional therapy. TheraBot is conceptualized and developed within this evolving technological landscape, with a focus on providing emotionally intelligent, score-based feedback and support. Its analytical model draws extensively from research-based implementations and commercially deployed chatbot systems, synthesizing these insights to address current limitations in mental health technology.

One of the primary inspirations for TheraBot's hybrid analysis framework is the work by Rekik et al. [1], who developed a medical chatbot tailored for the Tunisian dialect using both rule-based systems and machine learning models. This approach was designed to counteract common health-related behaviors such as self-medication and delayed consultations due to cost and time constraints. Their implementation utilized a dataset of 356 Tunisian dialect questions and responses, trained using various machine learning models. The Random Forest classifier achieved an exceptional F1-score of 98.60, indicating strong performance in recognizing and generating contextually relevant outputs. Additionally, their integration of recurrent neural networks and transformer models contributed to improved user understanding and response generation [1].

Drawing from this methodology, TheraBot utilizes a sentiment-scoring mechanism embedded within a rule-based structure. This hybrid design enables the chatbot to interpret user input effectively, especially in emotionally nuanced conversations where precise sentiment classification is essential. While TheraBot does not currently deploy complex neural architectures like RNNs or transformers at its core, the modular nature of its design allows for potential future integrations. The reliability and interpretability of rule-based logic ensure consistency, whereas the scoring component introduces an element of adaptability, improving the chatbot's responsiveness to emotional cues.

In further alignment with deep learning-based mental health support systems, the work by Mishra et al. [2] explores the use of the BERT model—a transformer-based language model known for its bidirectional contextual understanding—to power a mental health chatbot. This system targets conditions such as anxiety, depression, and ADHD, providing therapeutic responses derived from curated datasets including questionnaires and mental health surveys. The strength of BERT lies in its capacity to comprehend the user's intent and emotion by evaluating the entire context of a sentence, rather than isolated words. This allows for more nuanced and

supportive conversations, which are vital in sensitive contexts involving mental health [2].

TheraBot, although currently not utilizing full-scale transformer models due to resource considerations, adopts the principle of contextual relevance in its sentiment analysis and mood scoring process. Each user interaction is evaluated to derive an emotional tone, which is then used to classify the user's state and guide the chatbot's responses. By learning from contextual models like BERT, TheraBot ensures that its rule-based outputs are still grounded in a user-sensitive understanding, reducing the chances of irrelevant or repetitive interactions.

A more holistic model of mental health chatbot design is exemplified by Rathnayaka et al. [3], who introduced a cognitive chatbot system capable of behavioral activation and remote health monitoring. Their chatbot is equipped with machine learning algorithms that adapt to user behavior, offering personalized suggestions and psychological interventions tailored to the user's emotional needs. Moreover, the system supports real-time mental health monitoring, enabling health-care professionals to intervene when necessary. This dual-user framework promotes both autonomy and clinical supervision, ensuring continuity and safety in mental health support [3].

Inspired by this comprehensive model, TheraBot employs a session-based mental health score tracking system. After every interaction, a numerical score is calculated based on the emotional weight of user responses. These scores are persistently stored, enabling the chatbot to identify trends and changes in a user's mental state across sessions. When a decline in mood or consistency in low scores is detected, TheraBot provides video recommendations, therapeutic PDFs, or motivational content that aligns with the user's emotional needs. This mechanism facilitates not only self-awareness but also opens the door for future integration with professional support systems or real-time intervention tools.

In addition to academic literature, TheraBot's development also takes into consideration insights from existing chatbot systems in the mental health domain. One prominent example is \*Woebot\* [4], a rule-based chatbot that delivers Cognitive Behavioral Therapy (CBT) through structured conversational techniques. It provides mood tracking, daily check-ins, and scientifically validated CBT exercises to help users manage stress, depression, and anxiety. Woebot's conversational interface offers an anonymous and judgment-free environment, which is an essential feature for promoting honest user engagement. However, its major limitations include a relatively shallow conversational depth and an inability to fully replicate human empathy. These drawbacks suggest the need for more sophisticated conversational logic and potentially optional human-in-the-loop support for crisis situations [4].

TheraBot addresses these issues by incorporating a score-based logic that allows for greater personalization and emotional depth. By analyzing the progression of emotional scores over time, it avoids static or repetitive conversations. Furthermore, TheraBot is designed with modularity in mind, making it easier to scale and improve its conversational models

over time, potentially incorporating human support features in critical cases.

Another example is \*Joyable\* [5], a legacy platform that used rule-based modules for delivering CBT through scripted interactions. Although effective in delivering structured content, it suffered from low personalization and repetitive dialogue that reduced long-term engagement. Attempts to mitigate these issues included introducing branching scenarios and modular scripts that allowed greater flexibility [5].

TheraBot adopts a more dynamic approach by leveraging session-specific sentiment scores and evolving its recommendations accordingly. Rather than relying on fixed scripts, it provides varied content based on user interaction patterns, increasing both the relevance and diversity of responses.

\*TherapistBot\* [6] further expands on customizable mental health support by offering developers templates and structured exercises in CBT, mindfulness, and stress management. While highly adaptable, it presents a steep learning curve for non-technical users due to its complex customization setup. Additionally, the rigid nature of its dialogue pathways often results in less fluid interactions. These issues are addressed in part by proposing modular updates and easy-to-use interfaces [6].

TheraBot balances this flexibility and simplicity by integrating a backend that stores user progress and emotional states. This enables the system to dynamically alter conversation flow and recommendations based on real user data, reducing the rigidity commonly associated with rule-based systems. Its architecture is also designed to accommodate future expansion via user interface improvements and pathway customization, making it both scalable and adaptable.

### III. PROPOSED SYSTEM

#### A. ABOUT

The chatbot addresses several common yet often overlooked mental health disorders, such as Obsessive-Compulsive Disorder (OCD), Post-Traumatic Stress Disorder (PTSD), Social Anxiety Disorder (SAD), and Persistent Depressive Disorder (PDD). These conditions are associated with common symptoms such as long-term stress, depression, and anxiety.

Obsessive-Compulsive Disorder (OCD) is a mental health condition that causes individuals to experience unwanted, recurring thoughts and repetitive behaviors. Post-Traumatic Stress Disorder (PTSD) can develop after a person experiences a traumatic event, leading to persistent emotional distress and symptoms related to the trauma. Social Anxiety Disorder (SAD), also known as social phobia, is characterized by an intense fear of social interactions, particularly the fear of being observed or judged, which can cause significant distress and interfere with daily activities. Persistent Depressive Disorder (PDD), or dysthymia, is a chronic form of depression that presents itself as a low-affect mood lasting for at least two years in adults (one year in children and adolescents).

#### B. WORKING

- The chat interface allows users to interact with the chatbot through text-based inputs. The system asks questions in

various formats, such as simple yes/no questions, mood-rating questions, and open-ended text-based questions. By analyzing keywords like “stress,” “anxiety,” and “depression,” the chatbot can assess the user’s emotional state and provide appropriate suggestions.

- The mental health database serves as the backbone of the chatbot, containing a collection of articles, guides, and tips on various mental health topics such as stress management, mindfulness, and cognitive behavioral therapy (CBT). If users express suicidal ideation or other high-risk behaviors, the chatbot can provide emergency contact information and resources for mental health professionals or emergency services.
- The recommendation system offers personalized suggestions based on user input, such as helpful articles, exercises, or the recommendation to speak with a professional if necessary. Additionally, a referral system connects users with licensed therapists or support groups when needed, either through external platforms or helplines.
- To ensure user privacy and promote a sense of safety, the system includes an anonymous usage option, allowing users to interact with the chatbot without disclosing their identity.

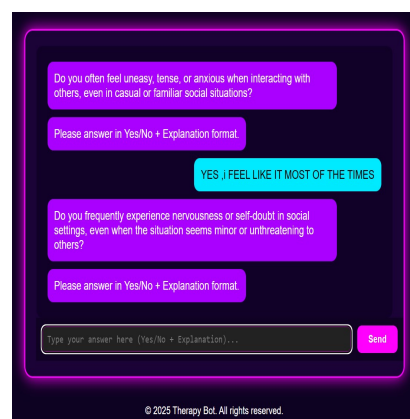


Fig. 1. Chat interface 1

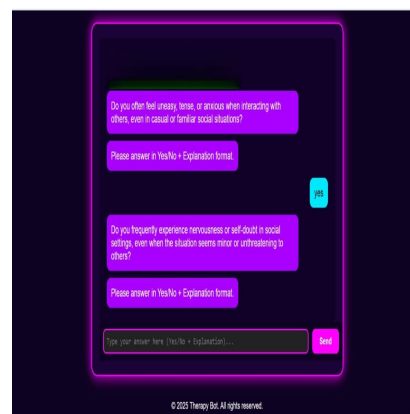


Fig. 2. Chat interface 2

## IV. METHODOLOGY

### A. SYSTEM ARCHITECTURE

- The system begins with the Register/Log In step. New users are prompted to register by providing their details, such as name, email, and password. Once registered, their credentials are saved in the system's database. Existing users can log in by entering their username and password, allowing them to access their personal accounts and previous interactions with the system. The login process ensures that the system is personalized to the individual user.
- Upon successful registration or login, users are directed to the Dashboard, which serves as the main interface of the system. The dashboard provides access to various options designed to assist users with their mental health and well-being. The interface is user-friendly, displaying different categories or services that can be selected based on the user's needs.
- The Services section is where users can explore various mental health support options. They can choose the chatbot for immediate support, where the chatbot provides responses and suggestions for managing stress, anxiety, and other mental health challenges. Additionally, the user can explore nearby services, which help the user find local mental health professionals or support groups in their area. Another option includes affirmations, where the system delivers positive messages and motivational quotes to promote mental well-being.
- Finally, users can access meditation exercises, which offer relaxation techniques such as breathing exercises, mindfulness practices, or guided meditation, aimed at helping the user relax and reduce stress.
- In cases where the system detects negative emotions, likely through user interactions with the chatbot, the system will automatically guide the user to additional supportive services. This feature ensures that users who are experiencing emotional distress are promptly directed to tools or services that can help. These supportive services could include contacting local professionals, offering mental health resources, or recommending exercises designed to address the identified emotional state.
- This flow ensures a comprehensive, responsive system that adapts to the user's emotional needs and offers a range of services to support mental health management.

### B. FLOWCHART

This flowchart outlines the process of a system that involves user interaction, typically for an assessment or survey-based application. The process begins with a greeting, followed by a decision point to determine if the user has an existing account. If the user does not have an account, they are prompted to enter a new username and password, and the data is stored in a database. Existing users can log in using their credentials.

Once logged in, the system proceeds by asking a series of questions. Based on the answers, points are awarded, and

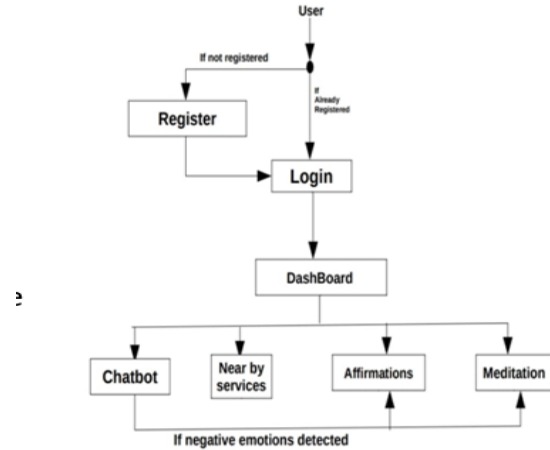


Fig. 3. Block diagram

the data is saved in the database. The system continues to loop through questions until a predefined condition is met. If the condition is not met, the user continues answering. Upon fulfilling the condition, the system calculates the total points and presents the user with relevant results and suggestions aimed at addressing any identified issues.

The user is then given the option to quit, and the session concludes with motivational feedback. This structure ensures a smooth interaction, beginning with either registration or login, followed by a questionnaire, condition checks, and personalized recommendations. Additionally, the data is saved for future use, ensuring continuity in the user's experience.

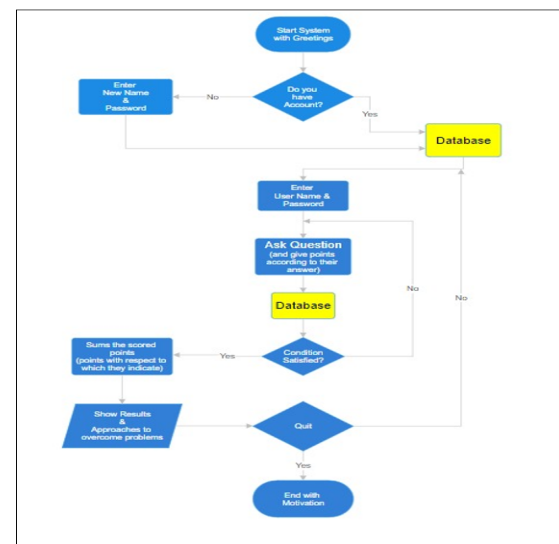


Fig. 4. Flowchart

V. RESULTS

The implementation of the proposed mental health chatbot system successfully demonstrates its capability to provide accessible, real-time emotional support for users facing stress, anxiety, and early symptoms of depression. Through interactive conversations and intelligent analysis of user input, the chatbot can assess emotional well-being and provide relevant suggestions, self-help resources, and connections to professional support when necessary.

During testing, the system effectively identified various emotional states by interpreting mood-based responses, key terms (e.g., “stress”, “anxiety”, “sad”), and scenario-based inputs. Based on this input, the chatbot generated personalized responses, including relaxation techniques, affirmations, and articles on mental wellness.

The recommendation module performed well by offering suitable advice and activities, while the referral module efficiently directed users to external professional help when risk indicators were detected. Additionally, users appreciated the anonymous chat feature, which encouraged open communication without fear of judgment or data misuse.

The integration of services like meditation exercises, positive affirmations, and emergency contact suggestions further added to the holistic approach of the system. Furthermore, the chatbot’s 24/7 availability and intuitive dashboard allowed users to engage in self-care practices regularly, contributing to a sense of empowerment and self-awareness.

In summary, the system achieved its goal of creating a digital first-line support tool that is inclusive, informative, and easy to use. It successfully bridges the gap between the need for mental health care and the accessibility of professional help, making it a promising solution in India’s context of mental health challenges and limited resources.

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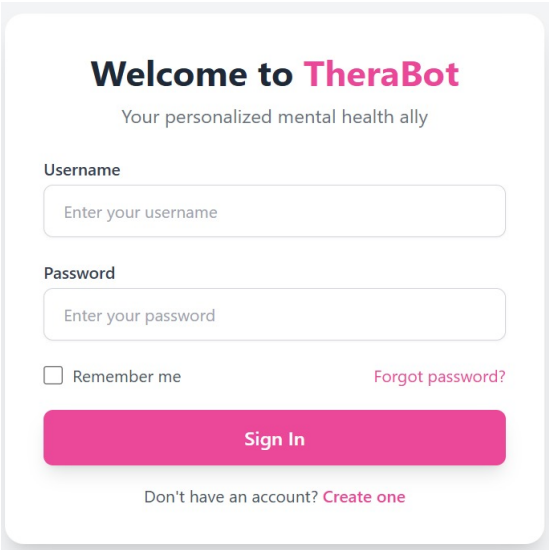


Fig. 5. Login Page



Fig. 6. Do's and Don't s



Fig. 7. Recommendations 1

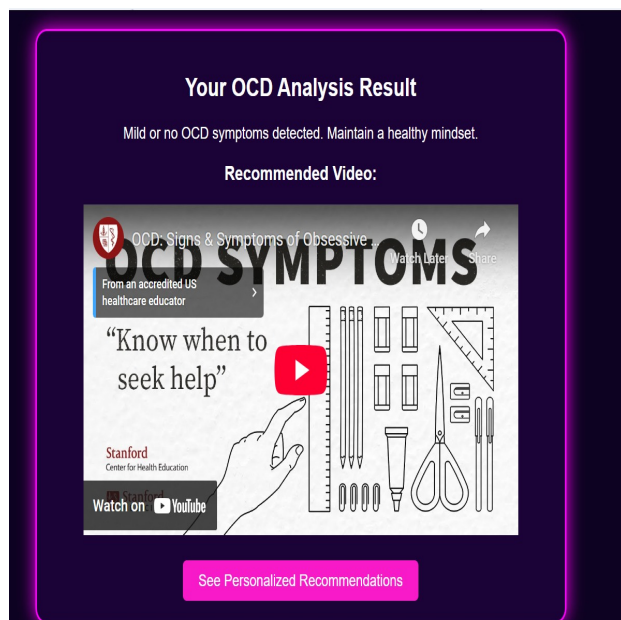


Fig. 8. Recommendations 2

## VI. CONCLUSION

The proposed mental health chatbot represents a significant advancement in the accessibility and personalization of mental health support. By leveraging a user-friendly chat interface, a comprehensive mental health database, and a robust recommendation and referral system, the chatbot effectively addresses a wide range of mental health challenges. Its ability to analyze user input and provide tailored responses ensures that individuals receive relevant guidance and resources suited to their unique situations. Additionally, the emphasis on user anonymity fosters a safe environment, encouraging individuals who may be hesitant to seek help to engage openly. Ultimately, this chatbot not only serves as an immediate source of emotional support but also acts as a vital bridge to professional mental health resources, making it an invaluable tool in promoting overall mental well-being.

The future scope of this mental health chatbot includes integrating with wearable devices to monitor stress levels and provide real-time support. The platform could offer personalized therapy recommendations based on user behavior and mood patterns. Additionally, partnerships with professional mental health services for referrals and the inclusion of community support features, such as forums, would ensure more comprehensive care and support for users.

In conclusion, the analytical model of TheraBot is deeply informed by both scholarly research and established chatbot systems. The hybrid sentiment scoring inspired by Rekik et al. [1], the contextual depth of Mishra et al.'s BERT-based system [2], and the behavioral personalization framework of Rathnayaka et al. [3] collectively provide a robust foundation for TheraBot's score-based analysis engine. Furthermore, lessons learned from existing implementations such as Woebot [4], Joyable [5], and TherapistBot [6] have guided design

decisions to mitigate the limitations of static, rule-only systems by introducing adaptive logic, personalization, and future scalability. Through this integrative approach, TheraBot aims to provide meaningful, empathetic, and data-informed support for individuals navigating mental health challenges.

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