

SOLUIVA

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Abstract—Millions of people worldwide struggle with mental health issues, but there is still a lack of timely and efficient assistance, especially in rural and multilingual communities. This study introduces Soluvia, a conversational chatbot driven by AI that uses multilingual interaction to offer early-stage mental health support. In order to detect emotional indicators like stress, anxiety, and depressive tendencies from both text and voice inputs, the system combines Natural Language Processing (NLP) and Speech Emotion Recognition (SER). In addition to providing individualised wellness activities, such as relaxation methods and constructive coping mechanisms, Soluvia performs initial psychological evaluations. The chatbot provides quick advice and directs users to qualified mental health services in high-risk circumstances. The platform supports Tamil, Hindi, and English to guarantee inclusivity. User information is protected by robust data privacy measures and a secure backend infrastructure.

Keywords— Mental Health Support, Artificial Intelligence, Conversational Chatbot, Natural Language Processing, Speech Emotion Recognition, Multilingual Interaction

I. INTRODUCTION

Millions of people from all age groups and social backgrounds suffer from mental health disorders, which are a growing global concern. Access to prompt and effective mental healthcare is still insufficient despite growing awareness, especially in rural and multilingual communities. Language barriers, social stigma, and a lack of qualified professionals frequently keep people from getting early psychological support.

The creation of intelligent conversational systems that can provide initial mental health support has been made possible by recent developments in artificial intelligence. AI-powered chatbots with emotion recognition and Natural Language Processing (NLP) capabilities can assess users' feelings and offer prompt, individualised assistance. These systems offer a scalable and affordable way to close current gaps in healthcare.

This paper presents Soluvia, a multilingual AI-powered chatbot that uses text and voice communication to provide early-stage mental health support. Soluvia hopes to increase accessibility while maintaining user safety and data privacy by supporting Tamil, Hindi, and English. The suggested system shows how AI technologies can improve the provision of mental healthcare, particularly for marginalised groups..

II. LITERATURE SURVEY

The use of AI in mental health applications has grown significantly in recent years. The creation of AI-based chatbots to offer emotional support and initial mental health evaluation has been the subject of several studies. Woebot, a chatbot based on cognitive behavioural therapy (CBT) created by Fitzpatrick et al., has proven successful in lowering anxiety and depressive symptoms through interactive dialogues. Their results demonstrate how conversational agents can enhance mental health.

Wysa, another noteworthy system, uses mindfulness practices and AI-driven conversation to help users deal with stress and emotional difficulties. According to research, its tailored interventions help users regulate their emotions

better. In a similar vein, Tess, a psychological AI chatbot, has been effectively implemented in clinical settings and provides mental health support via natural language interaction.

In the field of mental health monitoring, Speech Emotion Recognition (SER) has also drawn interest. Research by Schuller et al. shows that vocal characteristics like pitch, tone, and intensity can be used to accurately identify emotional states. Sentiment analysis and emotion classification from text data have been enhanced by developments in Natural Language Processing (NLP), such as transformer-based models like BERT.

The majority of current systems are only available in English and are not culturally sensitive, despite the fact that they offer helpful assistance. Moreover, the lack of therapist integration and privacy issues continue to be significant obstacles. These constraints spurred the creation of Soluvia, a multilingual chatbot with professional monitoring capabilities that protects privacy and supports marginalised communities

III PROPOSED SOLUTION

This paper proposes Soluvia, an AI-driven multilingual conversational chatbot designed to provide early-stage mental health support through text and voice interaction. The system aims to bridge the gap in mental healthcare access, particularly for users in rural and multilingual communities, by offering timely, affordable, and personalized assistance.

Solvuvia integrates Natural Language Processing (NLP) to analyze user text input and identify emotional patterns, sentiment, and key stress indicators. In parallel, Speech Emotion Recognition (SER) techniques are employed to extract vocal features such as pitch, tone, and energy to detect emotional states from voice inputs. By combining both text and speech analysis, the system ensures more accurate emotion detection.

Solvuvia performs initial psychological evaluations based on the identified emotional state and suggests tailored wellness activities, such as mindfulness exercises, relaxation techniques, and constructive coping mechanisms. The chatbot promptly offers crisis counselling and connects users who are deemed high-risk to licensed mental health specialists.

The platform allows users to communicate in their preferred language by supporting Tamil, Hindi, and English in order to promote inclusivity. To safeguard user information, robust data privacy measures are put in place, such as secure data storage and encrypted communication. A therapist-facing dashboard also enables professionals to track the progress of anonymous users and take appropriate action.

All things considered, the suggested solution provides a secure, scalable, and user-friendly system that uses artificial intelligence to improve early mental healthcare support.

IV METHODOLOGY

The methodical process utilised to create and deploy Soluvia, an AI-powered multilingual chatbot for mental health, is

described in the suggested methodology. In addition to ensuring safe data handling, the system is built to analyse user emotions and offer early psychological support.

A. Information Gathering

Real-time user interactions with the chatbot are used to gather text and speech data. The models are trained using additional publicly accessible sentiment and emotional speech datasets. All data collection adheres to user consent procedures and ethical standards.

B. Preprocessing Data

Stop words, punctuation, and special characters are eliminated from text inputs. To increase the accuracy of feature extraction, speech signals are subjected to segmentation, normalisation, and noise reduction.

C. Extraction of Features

NLP techniques are used to extract linguistic features from text, such as sentiment polarity and emotional keywords. Mel-frequency cepstral coefficients (MFCCs), pitch, energy, and other acoustic characteristics are extracted from speech to aid in the identification of emotions.

D. Training Models

Models for deep learning and machine learning are trained to classify emotions. While CNN/LSTM-based models are employed for speech emotion recognition, NLP models handle textual data.

E. Risk Assessment & Emotion Recognition

Emotional states are identified by combining the outputs from both models. Users are categorised as normal, moderate, or high-risk by a risk assessment module

F. Generation of Reactions

The chatbot offers customised wellness recommendations or crisis support based on identified emotion levels.

G. Processing in Multiple Languages

Support for Tamil, Hindi, and English is made possible by language translation and processing modules.

H. Security & Privacy

Authentication and access control systems are used to securely store and encrypt user data.

I. Dashboard for Therapists

To assist professionals in tracking user progress, a secure dashboard shows anonymised analytics.

V .CONCLUSION

Solvuvia, a multilingual AI-powered conversational chatbot intended to offer early-stage mental health support via text

and voice interaction, was introduced in this paper. The system successfully identifies emotional states like stress, anxiety, and depressive tendencies by combining Natural Language Processing (NLP) and Speech Emotion Recognition (SER). Soluvia helps users access professional mental health support when necessary by providing individualised wellness activities and prompt guidance in high-risk situations.

Professionals can also keep an eye on users' progress and take appropriate action thanks to the therapist-facing dashboard.

VI. FUTURE SCOPE

Even though Soluvia shows great promise for providing early-stage mental health support, there are a few improvements that could be investigated in subsequent research. To improve accessibility for a larger user base, more regional and international languages can be incorporated. The accuracy of emotion detection from speech and text inputs can be increased by using sophisticated deep learning models.

VII. REFERENCE

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By supporting Tamil, Hindi, and English, the platform guarantees inclusivity and makes it available to a wide range of people, especially those living in rural areas. To safeguard user data, robust data privacy policies and a secure backend infrastructure were put in place.

To enable multimodal emotion recognition, the system can be expanded by adding physiological signals from wearable devices and facial expression analysis. Direct appointment scheduling with mental health specialists would be possible through integration with telemedicine platforms and hospital information systems.

Additionally, long-term user behaviour analysis can be used to create customised treatment plans. To assist users in remote locations, low-bandwidth optimisation and offline functionality can also be used. These improvements will further solidify Soluvia's position as an all-inclusive digital platform for mental health care

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