

Mental Health Chatbot with Emotion Recognition

Thesis Report

Submitted in partial fulfillment of the requirements for the degree of
B.Tech in Information Technology

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April, 2025

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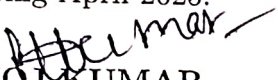


CERTIFICATE

This is to certify that the project report entitled "Mental Health Chatbot with Emotion Recognition" submitted by:

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to Guru Ghasidas Vishwavidyalaya towards partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Information Technology**. This report is a record of bonafide work carried out by them under our supervision and guidance during April 2025.


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Date: 03-04-2025

Place: Bilaspur

Abstract

Mental health disorders such as anxiety, depression, and stress-related conditions have seen a significant rise in recent years due to various social, personal, and professional pressures. The increasing demand for mental health support is met with several challenges, including a shortage of qualified mental health professionals, high consultation costs, and societal stigma associated with seeking therapy. As a result, many individuals avoid or delay seeking help, leading to worsened conditions. There is an urgent need for innovative and accessible solutions that provide immediate emotional support and guidance to individuals struggling with mental health issues.

This thesis presents the development of a Mental Health Chatbot with Emotion Recognition, an AI-powered virtual assistant designed to offer psychological support and mood analysis using Natural Language Processing (NLP), Sentiment Analysis, and Machine Learning (ML) techniques. The chatbot is capable of understanding user inputs, analyzing emotions, and generating appropriate responses to assist individuals in managing their mental health. By leveraging deep learning models and sentiment classification algorithms, the chatbot can recognize a wide range of emotions such as happiness, sadness, anger, fear, anxiety, and stress. Based on the detected sentiment, it provides personalized suggestions, including relaxation techniques, mindfulness exercises, and motivational content to improve the user's emotional well-being.

The chatbot follows a hybrid approach that combines pre-trained transformer-based models (such as BERT or LSTM) with traditional sentiment analysis techniques to improve response accuracy. It is designed to handle real-time conversations, enabling users to freely express their thoughts while receiving contextually relevant responses. Additionally, the chatbot incorporates self-assessment modules, daily mood tracking, guided therapy recommendations, and mental health resources, allowing users to reflect on their emotional state and take appropriate action.

One of the primary objectives of this project is to make mental health support more accessible, confidential, and non-judgmental for individuals who are hesitant to seek professional therapy. The chatbot serves as an early intervention tool, helping users manage their emotions effectively before consulting a mental health professional if necessary. It does not replace human therapists but acts as an initial support system, providing immediate guidance and emotional regulation strategies to individuals in distress.

The chatbot has undergone extensive testing and evaluation to measure its effectiveness in recognizing emotions and generating appropriate responses. Results indicate that the chatbot performs well in identifying user sentiments and providing helpful recommendations based on emotional context. Future enhancements to the system could include multilingual support, voice-based emotion recognition, facial expression analysis, and integration with wearable devices to further improve the chatbot's emotional intelligence and user interaction experience.

In conclusion, this research contributes to the growing field of AI-driven mental health support systems by offering an innovative solution to promote emotional resilience and mental well-being. With continuous improvements and advanced AI capabilities, such a chatbot has the potential to bridge the gap between individuals and mental health resources, ensuring that psychological assistance is available anytime, anywhere.