Introducing PsyCare: Your Path to Mental Wellness

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MOTIVATION / INTRODUCTION

- Mental health conditions such as depression, anxiety, and stress-related disorders are increasingly impacting people across all age groups worldwide. These challenges often lead to a diminished quality of life, social withdrawal, and, in extreme cases, suicidal thoughts.

- The World Health Organization (WHO) reports that one in eight people globally is affected by a mental disorder, with depression alone impacting over 280 million individuals. In India, the situation is compounded by social stigma, limited awareness, and restricted access to mental health services, resulting in widespread underdiagnosis and lack of treatment.

- The COVID-19 pandemic further exposed and worsened this mental health crisis, underscoring the critical need for accessible, scalable, and affordable mental healthcare solutions.

- PsyCare was created in response to this need — a digital mental wellness platform that blends psychological expertise with advanced technology. It offers therapy access, AI-driven mental health assessments, and chatbot-based support, all designed to promote early intervention, continuous care, and personalised mental health assistance.

- By leveraging modern web technologies, WhatsApp integration, and supervised learning models for assessments, PsyCare aims to bridge the mental health gap and empower users to seek help without fear or friction.

OBJECTIVES

- To build an intelligent mental health platform that assists users in identifying symptoms of anxiety, depression, and stress using automated screening assessments.

- To implement supervised learning techniques for accurate prediction and analysis of mental health conditions.

- To integrate WhatsApp-based chatbot and web-based appointment system for seamless therapy booking and engagement.

- To enhance the efficiency of early detection and access to care through data-driven insights and user-friendly design.

- To compare and analyse various machine learning models for mental health assessment accuracy and effectiveness.

SCOPE OF THE PROJECT

This project aims to support both mental health professionals and individuals by facilitating early identification of conditions like anxiety, stress, and depression through AI-driven tools and automated assessments. PsyCare strives to offer an all-in-one, accessible, and intuitive platform that combines mental health screening, therapy booking, session tracking, and real-time assistance via a web interface and WhatsApp chatbot.

METHODOLOGY

1. Data Collection
User data is collected through PsyCare's chatbot, appointment system, assessments, and session records. The data includes demographic details, user responses to screening tools, interaction logs, and session feedback.

2. Preprocessing
Preprocessing in PsyCare involves cleaning and structuring raw input data—removing duplicates, handling missing values, and normalising fields like age, location, and response scores to ensure consistency.

3. Feature Extraction
Relevant features such as stress levels, appointment history, screening scores, and symptom patterns are extracted. These are used as predictors for various mental health outcomes like anxiety or depression risk levels.

ARCHITECTURE
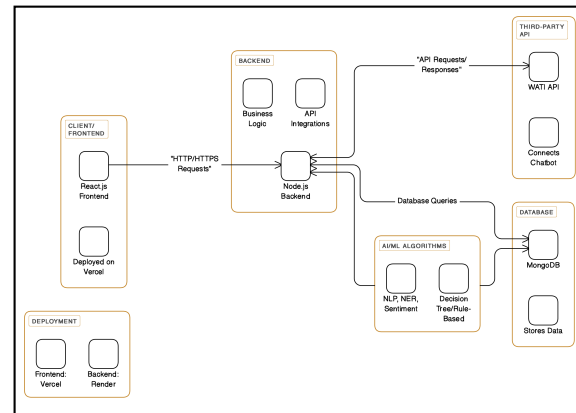
PsyCare's system architecture is designed as a modular pipeline that spans from data collection to smart prediction and output visualization. User health data—gathered via the chatbot, appointment system, and mental health assessments—is initially preprocessed to address missing entries and standardize input formats.

Next, relevant features such as age, stress levels, mood metrics, consultation frequency, and symptom trends are extracted. This refined data is then processed through supervised machine learning models like Support Vector Machines (SVM), k-Nearest Neighbours (KNN), and Random Forest to classify mental health status into categories like low, moderate, or high risk.

Model performance is assessed through metrics like accuracy, precision, and recall, with outcomes securely stored in a database. Depending on the predicted risk level, users are directed to the most suitable support path—whether that's self-guided resources, professional therapy, or urgent care—enabling dynamic, AI-driven mental health triage.

RESULTS

Algorithm	Accuracy
Logistic Regression	84.62
Random Forest	87.91
SVM	86.37
(KNN)	82.15

CONCLUSION

This project utilized supervised machine learning techniques on mental health data to predict psychological conditions. Of all the models evaluated, the Random Forest algorithm achieved the highest accuracy at 87.91%, showcasing its strength in handling classification tasks. These findings emphasize the valuable role of AI in enabling early detection and tailored mental health interventions, making it highly beneficial for platforms like PsyCare to deliver prompt and precise psychological assistance.

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