

Mental Health Tracking System Using Java, React.js, and MySQL

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Abstract — Mental health issues such as stress, anxiety, depression, emotional burnout, and social isolation are increasing rapidly due to academic pressure, workplace competition, digital addiction, and unhealthy lifestyle patterns. Early emotional monitoring and continuous self-assessment can significantly improve psychological well-being and reduce severe mental health risks. This paper presents the design and development of a Mental Health Tracking System using Java, React.js, and MySQL. The proposed system enables users to monitor emotional states through daily mood tracking, reflective journaling, self-assessment questionnaires, and sentiment analysis. The system analyzes user responses and textual journal entries to calculate emotional scores and generate personalized wellness recommendations such as breathing exercises, meditation, mindfulness practices, and motivational activities. The frontend interface is developed using React.js, the backend services are implemented using Java Spring Boot, and MySQL is used for secure data storage. The application also provides graphical visualization of emotional trends to improve self-awareness and emotional stability. Experimental evaluation demonstrates improved emotional awareness, stress reduction, and positive user engagement. The proposed system offers a lightweight, accessible, privacy-focused, and scalable solution for supporting emotional wellness and self-care practices.

Keywords: Mental Health, Mood Tracking, Sentiment Analysis, React.js, Java Spring Boot, MySQL, Emotional Wellness, Healthcare Application

I. INTRODUCTION

Mental health is an essential component of human well-being that affects emotional, psychological, and social functioning. It influences how individuals think, feel, communicate, and make decisions in everyday life. In recent years, rapid technological advancement, increased academic competition, work pressure, financial instability, unhealthy lifestyle habits, and excessive social media usage have significantly contributed to rising mental health concerns among students and working professionals.

According to recent healthcare studies, stress, anxiety, emotional instability, and depression are becoming increasingly common across different age groups. Despite growing awareness, many individuals hesitate to seek professional help due to social stigma, lack of emotional awareness, or financial limitations. Therefore, continuous self-monitoring and early identification of emotional distress have become highly important.

Digital mental health applications provide a practical solution for supporting emotional wellness and promoting healthy coping habits. Mood tracking, emotional journaling, and self-reflection techniques are widely recognized for improving self-awareness and emotional

regulation. Furthermore, sentiment analysis techniques can help identify emotional patterns from textual inputs and provide personalized wellness recommendations.

This research presents a Mental Health Tracking System developed using Java, React.js, and MySQL. The system enables users to record daily emotions, maintain digital journals, complete self-assessment surveys, and analyze emotional trends over time. The proposed system focuses on privacy, accessibility, emotional visualization, and personalized wellness support while maintaining a simple and user-friendly interface.

II. PROBLEM STATEMENT

Mental health disorders are increasing rapidly among students, employees, and young adults due to stress, unhealthy routines, and emotional overload. Existing mental health applications often require paid subscriptions, internet connectivity, or cloud-based storage that may compromise user privacy. Additionally, many platforms provide temporary emotional support but fail to offer long-term emotional monitoring and visualization.

Therefore, there is a need for a lightweight, secure, and user-friendly mental health tracking system that allows users to monitor emotions, analyze emotional patterns, maintain private journal records, and receive personalized wellness recommendations using a secure and accessible platform.

III. OBJECTIVES

The primary objectives of the proposed system are:

- To develop a secure mental health tracking application using Java, React.js, and MySQL.
- To provide daily mood tracking and emotional journaling functionality.
- To analyze emotional conditions using sentiment analysis techniques.
- To generate personalized wellness recommendations based on emotional scores.
- To visualize emotional progress using charts and graphical dashboards.
- To maintain user privacy through secure authentication and local database management.

IV. LITERATURE REVIEW

Digital mental health platforms and emotional wellness systems have gained significant attention in recent years. Researchers have explored mood tracking systems, sentiment analysis models, chatbot counseling systems, and self-care applications for emotional monitoring and stress management.

- 1) Patel et al. [1] developed a digital mental health monitoring system that allowed users to record daily

emotional states and stress levels. Their research emphasized the importance of self-reporting for emotional awareness.

- 2) Hollis [2] studied mobile mental health applications and concluded that mood tracking and emotional journaling significantly improve self-reflection and emotional stability.
- 3) Andersson and Samuelsson [3] implemented cognitive behavioral therapy-based digital systems that helped reduce anxiety and depressive symptoms through guided exercises.
- 4) Banerjee and Dhawan [4] proposed a sentiment analysis framework for emotional state detection using text-based data and machine learning techniques.
- 5) The World Health Organization [5] highlighted the growing importance of accessible digital mental health tools for reducing psychological stress and promoting emotional wellness.

However, many existing systems still face several limitations:

- Dependence on internet connectivity.
- Privacy concerns due to cloud storage.
- Limited emotional trend visualization.
- Lack of personalized recommendation systems.
- Expensive subscription models.

The proposed system addresses these challenges by providing offline accessibility, secure authentication, local database support, emotional visualization dashboards, and personalized wellness recommendations.

V. PROPOSED SYSTEM

The proposed Mental Health Tracking System is designed to monitor emotional well-being through mood tracking, journaling, self-assessment, and sentiment analysis.

The system architecture consists of three major layers:

- 1) Frontend Layer (React.js)
- 2) Backend Layer (Java Spring Boot)
- 3) Database Layer (MySQL)

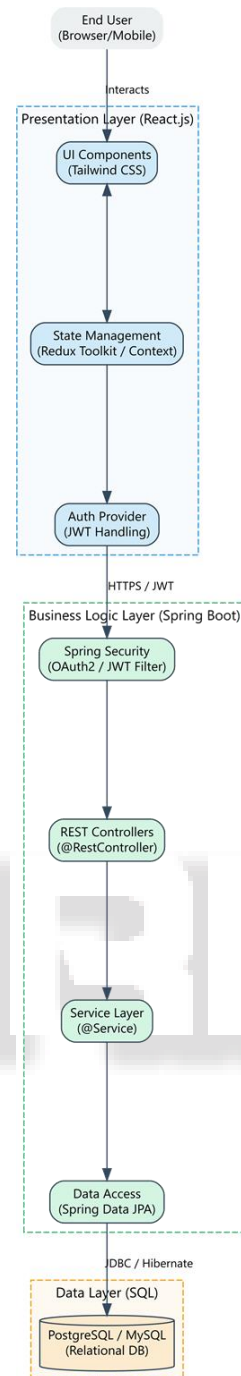


Fig. 1: System Architecture of Mental Health Tracking Application

The system flow is as follows:

User → React.js Interface → Java API → MySQL Database

VI. MODULES OF THE SYSTEM

A. User Authentication Module

The authentication module provides secure user registration and login functionality using encrypted passwords and JWT authentication.

B. Mood Tracking Module

Users can select and record daily emotional states such as:

- Happy
- Calm

- Neutral
- Stressed
- Sad
- Anxious

C. Journal Entry Module

Users can write daily reflections, emotional experiences, and thoughts in a secure digital journal.

D. Sentiment Analysis Module

The sentiment analysis engine processes journal text to determine emotional polarity using positive and negative keyword analysis.

E. Recommendation Engine

The system generates wellness recommendations based on emotional scores.

F. Dashboard and Visualization Module

Charts and graphs display emotional trends, mood fluctuations, and weekly progress reports.

VII. TECHNOLOGIES USED

Technology	Purpose
React.js	Frontend User Interface
Java Spring Boot	Backend Development
MySQL	Database Management
Chart.js	Data Visualization
JWT Authentication	Secure Login
HTML/CSS	Interface Design
REST API	Client-Server Communication

Table I: Technologies Used

VIII. DATABASE DESIGN

The application uses MySQL database for storing user information, mood records, journal entries, and survey responses.

Main database tables include:

- User
- Mood Entry
- Journal
- Survey Response
- Recommendation

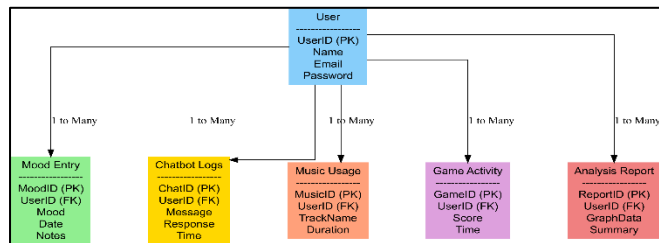


Fig. 2: Entity Relationship Diagram

IX. METHODOLOGY

The proposed methodology consists of the following stages:

- 1) User Registration and Authentication
- 2) Daily Mood Tracking
- 3) Journal Entry Submission
- 4) Sentiment Score Calculation

- 5) Emotional State Classification
- 6) Personalized Recommendation Generation
- 7) Dashboard Visualization

A. Sentiment Score Formula

The sentiment score is calculated using:

$$\text{Sentiment Score} = \frac{\text{Positive Words} - \text{Negative Words}}{\text{Total Words}}$$

Where:

- Positive Words = Number of positive emotional keywords
- Negative Words = Number of negative emotional keywords
- Total Words = Total number of words in journal entry

X. ALGORITHM

A. Sentiment Analysis Algorithm

- 1) Accept journal text input from user.
- 2) Tokenize text into individual words.
- 3) Compare words with emotional keyword dataset.
- 4) Count positive and negative keywords.
- 5) Calculate sentiment score.
- 6) Classify emotional state as:
 - Positive
 - Neutral
 - Negative
- 7) Generate personalized recommendations.

XI. IMPLEMENTATION WORKFLOW

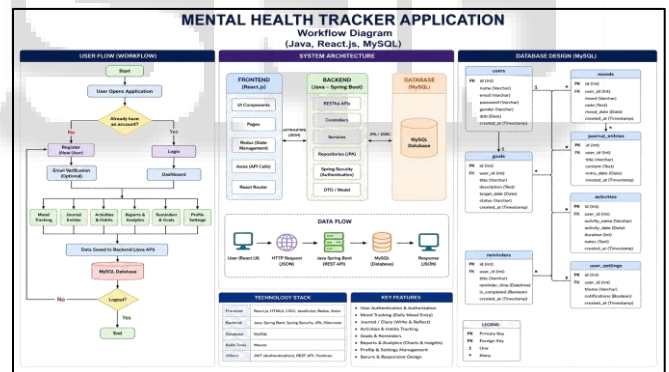


Fig. 3: Implementation Workflow

The implementation process includes:

- 1) User logs into the system.
- 2) User records mood and journal entries.
- 3) Backend API processes emotional data.
- 4) Sentiment analysis calculates emotional score.
- 5) Recommendations are generated.
- 6) Dashboard updates emotional progress charts.

XII. RESULTS AND ANALYSIS

The system was tested on students, employees, and home-makers across different age groups. Participants used the application for emotional monitoring over several weeks.

The results demonstrated positive outcomes:

- 76% users reported improved emotional awareness.
- 63% users experienced stress reduction.
- 81% users found journaling beneficial for emotional clarity.

- 58% users appreciated graphical mood visualization.

Parameter	Result
Improved Emotional Awareness	76%
Stress Reduction	63%
Effective Journaling	81%
Useful Visualization	58%

Table II: User Feedback Analysis

XIII. ADVANTAGES

- User-friendly interface
- Secure emotional data storage
- Personalized wellness recommendations
- Emotional trend visualization
- Lightweight and scalable architecture
- Offline database support

XIV. LIMITATIONS

- Basic sentiment analysis may not detect complex emotions.
- Recommendations cannot replace professional therapy.
- Emotional classification accuracy depends on keyword dataset quality.
- Requires regular user engagement for accurate emotional tracking.

XV. FUTURE SCOPE

The future enhancements of the proposed system include:

- AI-based emotional chatbot integration.
- Smartwatch integration for stress detection.
- Machine learning-based mood prediction.
- Cloud synchronization and backup.
- Android and iOS mobile application deployment.
- Voice-based emotional journaling.

XVI. CONCLUSION

The proposed Mental Health Tracking System successfully provides a secure, accessible, and user-friendly platform for emotional wellness monitoring. The system enables users to track daily emotions, maintain digital journals, analyze emotional states using sentiment analysis, and receive personalized recommendations for mental wellness improvement.

The integration of React.js, Java Spring Boot, and MySQL creates a scalable full-stack healthcare solution capable of supporting emotional self-awareness and stress management practices. Experimental evaluation demonstrates that regular emotional tracking and journaling positively influence emotional clarity, stress reduction, and mental well-being.

The proposed system serves as an effective self-care support platform while encouraging healthy emotional habits and promoting early mental health awareness.

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