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Mental Health System Using Java, React.js and MySQL

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Abstract: ***Mental health disorders such as stress, anxiety, emotional instability, and de-pression are increasing rapidly across different age groups due to academic pressure, workplace stress, financial instability, unhealthy lifestyle patterns, and excessive digital engagement. Early emotional monitoring and continuous psychological self-assessment are important for improving emotional well-being and preventing severe mental health conditions. This paper presents a full-stack Mental Health Monitor-ing and Sentiment Analysis System developed using Java Spring Boot, React.js, and MySQL. The proposed system allows users to perform daily mood tracking, main-tain emotional journals, complete self-assessment surveys, and receive personalized wellness recommendations based on emotional analysis. The system incorporates a sentiment analysis mechanism that evaluates textual journal entries using positive and negative emotional keywords. Based on emotional classification, the recommendation engine generates mindfulness activities, motivational exercises, relaxation techniques, and emotional wellness suggestions. The frontend interface is developed using React.js, while Java Spring Boot is used to implement RESTful backend services and business logic. MySQL database ensures secure and structured emotional data storage. Experimental evaluation conducted on multiple participants demonstrates that continuous mood tracking and journaling improve emotional awareness, reduce stress levels, and encourage healthier self-care habits. The proposed system offers a lightweight, privacy-focused, scalable, and accessible digital healthcare solution for emotional wellness monitoring and preventive mental healthcare support.***

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

I. INTRODUCTION

Mental health plays a critical role in maintaining emotional, psychological, and social well-being. It influences human behavior, communication, productivity, relationships, and decision-making processes. In recent years, rapid technological development, in-creasing academic competition, workplace pressure, social isolation, financial instability, and unhealthy lifestyle patterns have significantly contributed to mental health issues among students, employees, and young adults.

According to global healthcare reports, stress, anxiety disorders, emotional burnout, and depression have become increasingly common. However, many individuals hesitate to seek professional counseling due to social stigma, lack of awareness, financial limitations, or limited accessibility to mental healthcare services. As a result, emotional problems often remain unidentified until they become severe. Modern digital healthcare systems provide opportunities for preventive emotional healthcare through self-monitoring applications, emotional journaling, mood tracking systems, and AI-driven wellness support. Mood tracking and reflective journaling help individuals identify emotional triggers, monitor emotional fluctuations, and improve self-awareness. Additionally, sentiment analysis techniques can be used to evaluate emotional conditions based on textual expressions and psychological patterns. This research presents a Full-Stack Mental Health Monitoring and Sentiment Analysis System developed using Java Spring Boot, React.js, and MySQL. The proposed system enables users to record daily emotional states, maintain secure emotional journals, analyze sentiment scores, visualize emotional trends, and receive personalized wellness recommen-dations. The system focuses on accessibility, privacy, scalability, and emotional self-care support.

II. PROBLEM STATEMENT

Mental health disorders are increasing rapidly due to stress, unhealthy routines, emo-tional overload, and excessive digital exposure. Existing mental health applications often require paid subscriptions, internet connectivity, cloud-based data storage, or professional supervision. Additionally, many systems provide temporary emotional support but fail to deliver continuous emotional monitoring and personalized emotional analytics.

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There is a strong need for a secure, scalable, and user-friendly mental health moni-toring platform capable of analyzing emotional states, tracking long-term emotional be-havior, generating personalized wellness recommendations, and ensuring emotional data privacy using local database storage.

III. OBJECTIVES

The major objectives of the proposed system are:

1) To design and develop a secure mental health monitoring system using Java, Re-act.js, and MySQL.
2) To provide daily emotional tracking and journaling facilities.
3) To implement sentiment analysis for emotional state detection.
4) To generate personalized wellness recommendations based on emotional scores.
5) To visualize emotional trends and mood fluctuations using dashboards.
6) To ensure emotional data security using authentication and database protection mechanisms.
7) To encourage preventive emotional healthcare and self-awareness practices.

IV. LITERATURE REVIEW

Digital mental healthcare applications and emotional wellness systems have become im-portant research areas in modern healthcare technology.

Patel et al. [1] developed a digital mental health monitoring system that enabled users to record stress levels and emotional states. Their study demonstrated that self-reporting systems improve emotional awareness and emotional regulation.

Hollis [2] analyzed mobile mental health applications and identified that emotional journaling and mood tracking significantly improve self-reflection and emotional clarity. However, many applications lacked long-term emotional analytics.

Andersson and Samuelsson [3] proposed cognitive behavioral therapy (CBT)-based digital systems for anxiety and depression management. Their findings showed that digital therapy exercises positively influence emotional stability.

Banerjee and Dhawan [4] explored sentiment analysis approaches for emotional state detection using textual emotional expressions. Their work highlighted the effectiveness of natural language processing in psychological assessment.

The World Health Organization [5] emphasized the importance of affordable and accessible mental healthcare technologies for emotional wellness support.

Despite recent advancements, several limitations remain in existing systems:

1) Dependence on cloud storage
2) Privacy concerns regarding emotional data
3) Limited emotional visualization features
4) Lack of personalized emotional recommendations
5) Limited offline accessibility

The proposed system addresses these limitations through local database support, emotional dashboards, personalized recommendation generation, and scalable full-stack architecture.

V. THEORETICAL BACKGROUND

Mental health is a fundamental aspect of human well-being that influences emotional sta-bility, psychological behavior, interpersonal communication, social relationships, and pro-ductivity. According to healthcare organizations, mental health disorders such as anxiety, depression, stress, emotional exhaustion, and social isolation have increased significantly due to modern lifestyle patterns, digital dependency, work pressure, and academic com-petition. Psychological imbalance negatively affects human cognition, decision-making, emotional regulation, and physical health.

Digital healthcare technologies have emerged as an effective approach for supporting preventive healthcare and emotional wellness monitoring. The integration of computer science, artificial intelligence, and healthcare systems enables the development of intel-ligent applications capable of tracking emotional behavior, analyzing mental conditions, and generating wellness recommendations. Emotional self-monitoring systems help users identify psychological triggers and emotional patterns before mental health conditions become severe.

The proposed system combines concepts from mental healthcare, sentiment analysis, web technologies, and full-stack software engineering to create an integrated emotional wellness platform. The system is based on the principle that continuous emotional self-assessment and emotional journaling improve self-awareness and encourage healthy coping mechanisms.

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VI. IMPORTANCE OF MENTAL HEALTH MONITORING

Mental health monitoring plays an essential role in preventive healthcare because emo-tional disturbances often remain unnoticed during early stages. Emotional instability may gradually affect concentration, communication, productivity, and social interaction. Therefore, regular monitoring of emotional conditions can help individuals recognize be-havioral changes and emotional triggers at an early stage.

Several psychological studies indicate that individuals who regularly monitor emotions through journaling and mood tracking demonstrate higher emotional intelligence and bet-ter stress management capabilities. Self-reflection practices help individuals understand emotional fluctuations and improve emotional regulation.

Traditional mental healthcare systems primarily depend on direct counseling sessions and clinical diagnosis. However, modern digital systems provide additional support by enabling continuous emotional monitoring through mobile and web-based platforms. Dig-ital mental health systems are especially beneficial for individuals who hesitate to seek professional counseling due to social stigma or financial limitations.

The proposed system focuses on emotional self-awareness, behavioral observation, and preventive emotional healthcare support using a digital full-stack architecture.

VII. ROLE OF MOOD TRACKING IN EMOTIONAL WELLNESS

Mood tracking is a process of recording emotional conditions periodically to identify behavioral and psychological patterns. It is widely used in cognitive behavioral therapy (CBT), mindfulness practices, and emotional self-regulation techniques.

Daily mood tracking provides the following advantages:

1) Identification of emotional triggers
2) Monitoring of emotional fluctuations
3) Improved self-awareness
4) Better emotional regulation
5) Long-term behavioral analysis
6) Stress management support

The proposed system allows users to record emotional states such as happiness, calm-ness, stress, sadness, anxiety, and emotional neutrality. These mood records are analyzed over time to identify emotional trends and behavioral changes.

Mood tracking also helps users recognize environmental or social factors affecting emotional conditions. Long-term visualization of emotional patterns encourages users to maintain healthy routines and mindfulness practices.

VIII. EMOTIONAL JOURNALING AND SELF-REFLECTION

Emotional journaling is a psychological self-reflection practice where individuals express thoughts, emotions, experiences, and feelings through written communication. Journaling is widely recognized in psychotherapy and emotional wellness practices because it allows individuals to process emotions constructively.

Psychological studies suggest that journaling reduces mental stress, improves emo-tional clarity, and enhances self-awareness. Writing emotional experiences helps users externalize internal emotional conflicts and organize thoughts more effectively.

The proposed system includes a secure digital journaling module where users can write daily reflections and emotional experiences. The journal entries are analyzed using sentiment analysis techniques to determine emotional polarity and emotional intensity.

The benefits of emotional journaling include:

1) Emotional stress reduction
2) Improved mental clarity
3) Better emotional expression
4) Increased mindfulness
5) Psychological self-awareness
6) Recognition of recurring emotional patterns

Digital journaling systems provide additional advantages such as secure storage, emo-tional visualization, and automated emotional analysis.

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IX. SENTIMENT ANALYSIS IN MENTAL HEALTHCARE

Sentiment analysis is a natural language processing technique used to identify emotional polarity and psychological meaning from textual data. It is widely applied in healthcare systems, customer feedback analysis, social media monitoring, and emotional intelligence applications.

In mental healthcare applications, sentiment analysis helps identify emotional condi-tions based on user-written text. Emotional words and phrases are classified into positive, neutral, and negative categories to evaluate emotional behavior.

The proposed system uses keyword-based sentiment analysis for emotional classifica-tion. The algorithm evaluates journal entries by comparing emotional keywords against predefined emotional datasets.

Positive emotional indicators include:

- Happy
- Motivated
- Relaxed
- Calm
- Excited
- Grateful

Negative emotional indicators include:

- Sad
- Lonely
- Angry
- Depressed
- Stressed
- Anxious

The sentiment analysis mechanism calculates an emotional score that determines the emotional condition of the user.

The sentiment score formula is represented as:

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

Based on the calculated score, the emotional condition is classified as:

- Positive Emotional State
- Neutral Emotional State
- Negative Emotional State

This classification enables the system to generate personalized wellness recommenda-tions and emotional guidance.

X. ROLE OF FULL-STACK DEVELOPMENT IN HEALTHCARE SYSTEMS

Full-stack development refers to the integration of frontend technologies, backend services, databases, and APIs into a unified software architecture. Modern healthcare applications require scalable, responsive, and secure architectures capable of handling sensitive health-care information.

The proposed system uses React.js, Java Spring Boot, and MySQL to implement a scalable full-stack emotional wellness platform.

A. Frontend Technology: React.js

React.js is a JavaScript library used for building dynamic and responsive user interfaces. It supports reusable components, efficient rendering, and fast user interaction.

The advantages of React.js include:

- Component-based architecture
- Improved user experience
- Fast rendering using Virtual DOM
- Responsive interface design
- Efficient dashboard visualization

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React.js is suitable for healthcare applications because it enables user-friendly inter-faces that simplify emotional self-monitoring and interaction.

B. Backend Technology: Java Spring Boot

Java Spring Boot is used for backend service implementation. It provides REST API development, dependency management, authentication, and business logic handling.

Advantages of Spring Boot include:

- Scalability
- Security integration
- RESTful API support
- Simplified backend development
- Efficient database connectivity
- Enterprise-level reliability

Spring Boot allows secure communication between frontend and database layers while handling emotional data processing and recommendation generation.

C. Database Technology: MySQL

MySQL is a relational database management system used for secure emotional data storage.

Advantages include:

- Structured relational storage
- High performance
- Data consistency
- Scalability
- Secure access management
- Efficient querying

MySQL stores user records, emotional logs, sentiment scores, journal entries, and recommendation histories.

XI. ROLE OF DASHBOARD VISUALIZATION IN MENTAL HEALTHCARE

Visualization plays a critical role in emotional awareness because graphical representation helps users understand emotional behavior more effectively than textual records.

The dashboard visualization module provides charts, graphs, and emotional analytics that display:

- Weekly mood fluctuations
- Emotional trend analysis
- Positive and negative mood comparison
- Stress level distribution
- Emotional consistency analysis
- Mood frequency tracking

Graphical analytics improve user engagement and encourage continuous emotional self-monitoring. Visualization also helps users identify emotional triggers and long-term behavioral changes.

The proposed system uses Chart.js integrated with React.js to implement dynamic emotional dashboards.

XII. HEALTHCARE SECURITY AND PRIVACY CONSIDERATIONS

Mental healthcare systems manage highly sensitive emotional and psychological informa-tion. Therefore, emotional healthcare applications must implement strong privacy and security mechanisms.

The proposed system incorporates the following security techniques:

- Password encryption using BCrypt algorithm
- JWT token-based authentication

- Secure REST API communication
- Session management
- Database protection mechanisms
- Input validation and sanitization
- User authorization controls

Privacy-focused architecture is important because users are more likely to engage with emotional wellness systems when emotional records remain confidential and protected.

XIII. PSYCHOLOGICAL BENEFITS OF DIGITAL MENTAL HEALTH SYSTEMS

Digital emotional wellness systems provide several psychological and behavioral advan-tages.

These systems help users:

- Understand emotional conditions
- Improve emotional self-awareness
- Develop healthy coping habits
- Reduce psychological stress
- Encourage mindfulness practices
- Improve emotional communication
- Build emotional resilience

The accessibility and simplicity of digital emotional wellness systems make them suit-able for students, professionals, and individuals experiencing emotional stress.

Continuous emotional tracking also enables users to observe emotional progress and maintain motivation toward emotional wellness goals.

XIV. SCALABILITY AND FUTURE HEALTHCARE INTEGRATION

The proposed architecture is scalable and capable of supporting future healthcare tech-nologies such as:

- Artificial Intelligence
- Machine Learning
- Natural Language Processing
- Wearable Device Integration
- Voice Emotion Recognition
- Facial Emotion Detection
- Cloud-Based Emotional Analytics
- Predictive Emotional Modeling

Future integration of AI-based systems can significantly improve emotional analysis accuracy and personalized recommendation generation.

Machine learning algorithms can be trained on emotional datasets to predict stress levels, emotional instability, and behavioral changes more effectively.

Wearable devices such as smartwatches can provide physiological indicators including heart rate variability and sleep patterns for advanced emotional monitoring.

XV. RESEARCH CONTRIBUTION

The proposed research contributes to the field of digital healthcare and emotional wellness systems by integrating full-stack software development with emotional monitoring and sentiment analysis techniques.

Major contributions include:

- Development of a scalable full-stack mental healthcare platform
- Integration of sentiment analysis for emotional classification
- Personalized recommendation generation

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- Emotional dashboard visualization
- Secure emotional data management
- Preventive emotional healthcare support
- User-friendly emotional wellness monitoring system

The system demonstrates how modern web technologies and emotional analytics can be integrated to support accessible and scalable emotional healthcare solutions.

XVI. PROPOSED SYSTEM

The proposed Mental Health Monitoring and Sentiment Analysis System is designed as a full-stack healthcare platform capable of monitoring emotional conditions and generating wellness recommendations.

The system architecture consists of three major layers:

A. Frontend Layer

The frontend interface is implemented using React.js and provides:

- User registration and login pages
- Mood tracking interface
- Emotional journaling interface
- Dashboard analytics
- Recommendation display system

B. Backend Layer

The backend services are implemented using Java Spring Boot framework.

The backend handles:

- REST API communication
- Authentication
- Business logic
- Sentiment analysis processing
- Recommendation generation
- Database communication

C. Database Layer

MySQL database stores:

- User details
- Mood entries
- Journal records
- Emotional scores
- Survey responses
- Recommendation history

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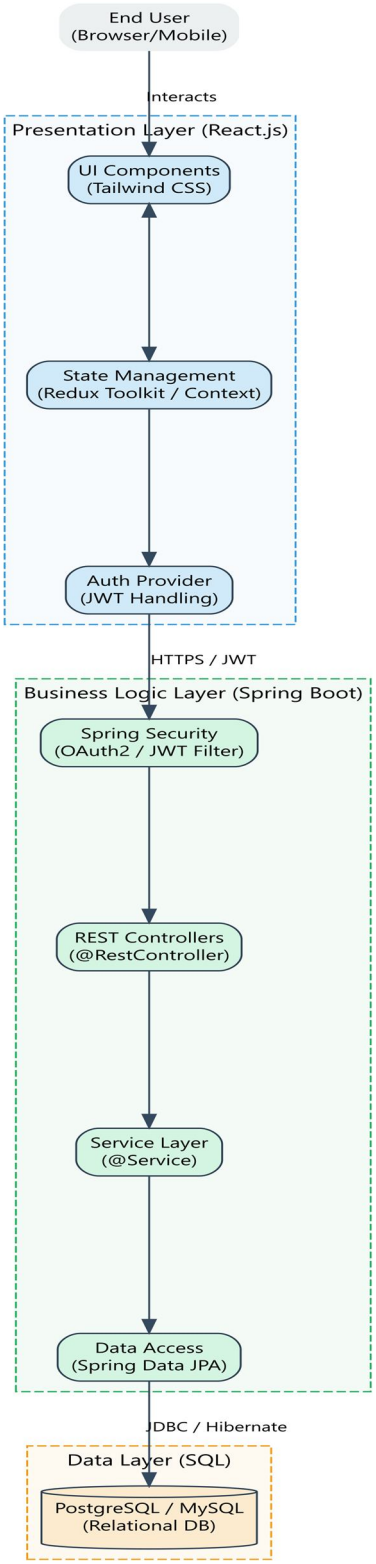

Figure 1: System Architecture of Mental Health Monitoring System

XVII. SYSTEM ARCHITECTURE

The system workflow operates as follows:

User → React.js Frontend → Java Spring Boot API → MySQL Database

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XVIII. FUNCTIONAL MODULES

A. Authentication Module

This module provides secure user registration and login functionality using JWT authen-tication and encrypted passwords.

B. Mood Tracking Module

Users can select emotional states including:

- Happy
- Calm
- Neutral
- Stressed
- Sad
- Anxious

C. Journal Module

Users can write emotional experiences, daily reflections, and thoughts through secure journaling functionality.

D. Sentiment Analysis Module

This module processes journal text using keyword-based emotional analysis techniques.

E. Recommendation Engine

Personalized emotional wellness recommendations are generated according to emotional classification.

F. Dashboard Module

Interactive charts and visualizations display emotional patterns and mood fluctuations.

XIX. METHODOLOGY

The proposed methodology consists of the following stages:

1) User Registration and Authentication
2) Daily Mood Tracking
3) Emotional Journaling
4) Sentiment Analysis
5) Emotional Classification
6) Recommendation Generation
7) Dashboard Visualization

XX. SENTIMENT ANALYSIS ALGORITHM

The system uses a keyword-based sentiment analysis mechanism to evaluate emotional conditions.

A. Algorithm Steps

1) Accept journal text from user.
2) Convert text into tokens.
3) Compare words with emotional keyword dataset.
4) Count positive and negative emotional words.
5) Calculate sentiment score.
6) Classify emotional condition.
7) Generate recommendations.

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B. *Sentiment Score Formula*

The sentiment score is calculated using:

Where:

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

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

XXI. DATABASE DESIGN

The application uses MySQL relational database management system for structured emo-tional data storage.

A. *Database Tables*

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

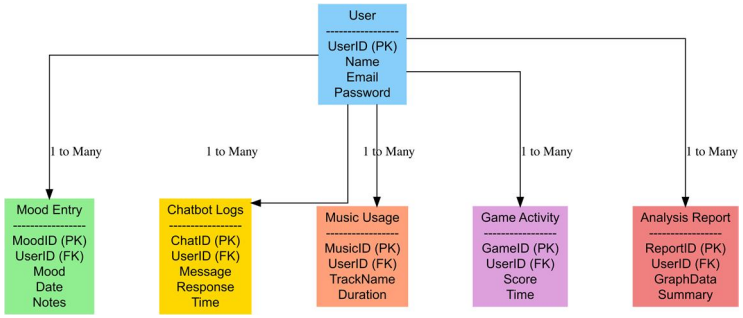

Figure 2: Entity Relationship Diagram

XXII. REST API DESIGN

RESTful APIs are implemented for frontend-backend communication.

Table 1: REST API Endpoints

Endpoint	Method	Purpose
/api/register	POST	User Registration
/api/login	POST	User Authentication
/api/mood/add	POST	Add Mood Entry
/api/journal/add	POST	Add Journal Entry
/api/dashboard	GET	Dashboard Analytics
/api/recommendation	GET	Wellness Suggestions

XXIII. SECURITY MECHANISM

Emotional healthcare systems require strong data privacy and protection mechanisms.

The proposed system implements:

1) BCrypt password encryption
2) JWT token authentication
3) Session validation

4) Secure database communication
5) Input validation
6) API authorization

XXIV. EXPERIMENTAL EVALUATION

The proposed system was evaluated using multiple participants from different age groups including students, professionals, and homemakers.

Table 2: Experimental Dataset

Participant Category	Count
Students	20
Professionals	15
Homemakers	10
Total Participants	45

Participants used the system continuously for four weeks.

XXV. RESULTS AND DISCUSSION

The experimental results indicate positive emotional engagement and improved emotional awareness.

1) 76% participants reported improved emotional awareness.
2) 63% users experienced noticeable stress reduction.
3) 81% users found journaling beneficial for emotional clarity.
4) 58% users appreciated emotional dashboard visualization.
5) 69% users preferred personalized recommendations.

Table 3: User Feedback Analysis

Parameter	Result
Emotional Awareness	76%
Stress Reduction	63%
Effective Journaling	81%
Dashboard Satisfaction	58%
Recommendation Effectiveness	69%

The results demonstrate that regular emotional journaling and mood tracking posi-tively influence emotional stability and self-awareness.

XXVI. COMPARATIVE ANALYSIS

Table 4: Comparison with Existing Systems

Features	Existing Systems	Proposed System
Mood Tracking	Yes	Yes
Sentiment Analysis	Limited	Yes
Dashboard Analytics	Partial	Yes
Offline Support	No	Yes
Local Storage	No	Yes
Personalized Suggestions	Partial	Yes
Secure Authentication	Limited	Yes

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XXVII. ADVANTAGES

The proposed system offers multiple advantages:

1) Secure emotional data storage
2) Personalized wellness recommendations
3) Lightweight full-stack architecture
4) Emotional trend visualization
5) User-friendly interface
6) Preventive emotional healthcare support
7) Scalable backend system
8) Real-time dashboard analytics

XXVIII. LIMITATIONS

The proposed system has certain limitations:

1) Basic sentiment analysis may not detect complex emotions accurately.
2) Recommendations cannot replace professional therapy.
3) Emotional classification depends on keyword datasets.
4) Long-term psychological diagnosis is not supported.

XXIX. FUTURE SCOPE

Future enhancements may include:

1) AI-powered emotional chatbot
2) Machine learning-based sentiment prediction
3) Facial emotion recognition
4) Voice-based emotional analysis
5) Smartwatch integration
6) Mobile application deployment
7) Cloud synchronization
8) Deep learning-based emotional analytics

XXX. CONCLUSION

This paper presented a Full-Stack Mental Health Monitoring and Sentiment Analysis System developed using Java Spring Boot, React.js, and MySQL. The proposed system enables emotional self-monitoring through mood tracking, emotional journaling, senti-ment analysis, and dashboard visualization.

The integration of full-stack web technologies with emotional analytics creates a scal-able and accessible digital healthcare platform that promotes emotional awareness and preventive mental healthcare practices. Experimental results indicate that continuous emotional tracking and journaling contribute positively toward emotional stability, stress reduction, and healthy emotional habits.

The proposed system can serve as an effective digital emotional wellness platform while encouraging self-care and emotional self-awareness among users.

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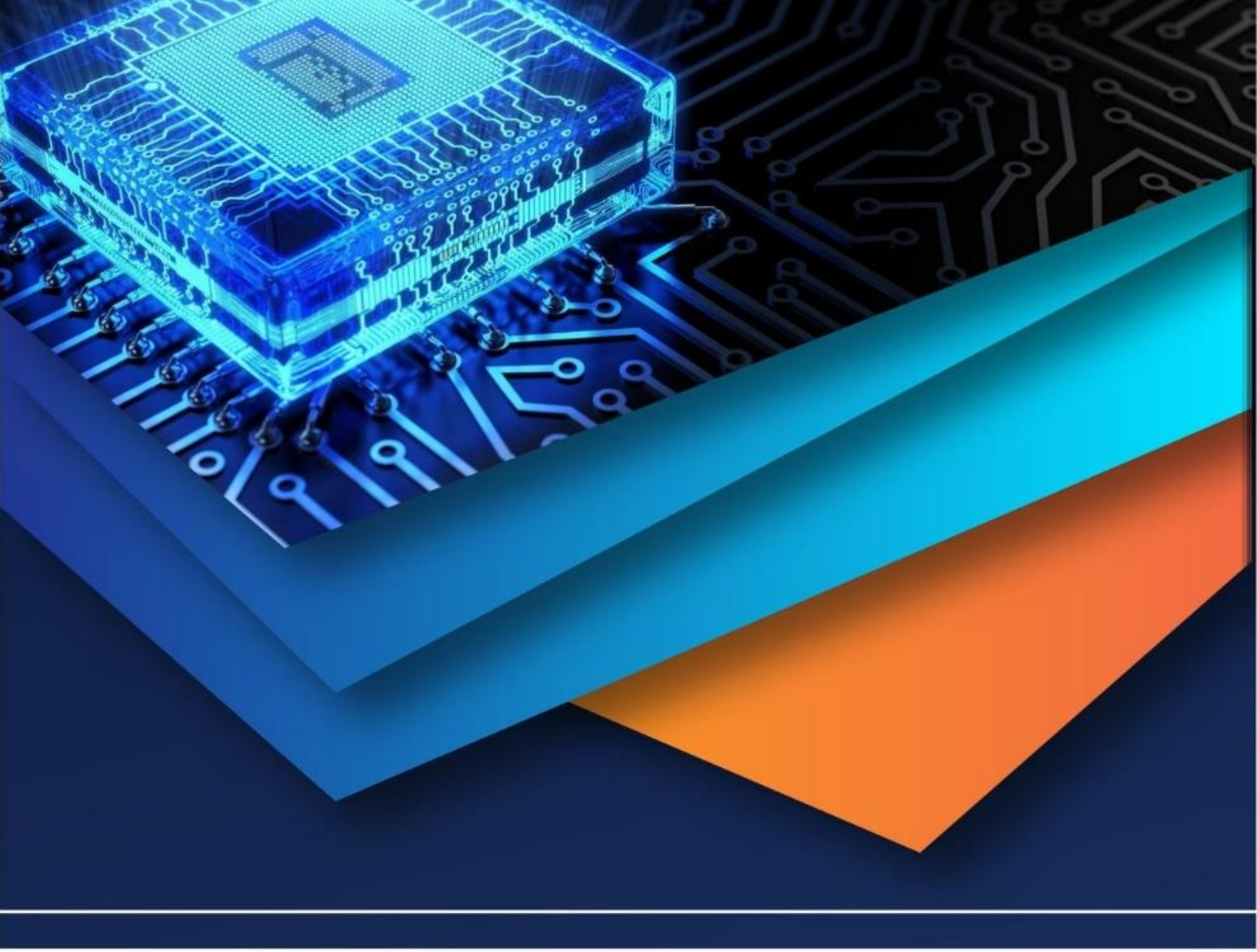

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