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SupportHive: A Community Where Stress Fades, and Support Grows

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Abstract: ***There is an exponential rise in the incidence of mental disorders like stress, tension and depression in students and young adults as a result of various factors such as pressure from studies, change in lifestyle, and social isolation. However, existing mental healthcare facilities are plagued by certain drawbacks such as non-accessibility, expensive procedures, delays, and social stigmatisation. In this context, the paper focuses on "SupportHive", which represents an innovative, AI-driven mental wellness app that would help offer real-time emotional assistance and stress management services. The proposed solution encompasses several attributes, including AI counselling, mood monitoring, journaling, motivational therapy, gaming, and multi-tiered counselling services. Technologies such as Dialog flow, Flutter, and Firebase have been used to ensure intelligent interaction and secure storage of the data while also ensuring real-time functioning. Some features, like score and reward points, wellness activities, music therapy, podcasts, and emergency services, will increase user engagement.***
Keywords: Mental Health, Artificial Intelligence, Stress Management, Emotional Support, Mood Tracking, Gamification, AI Chatbot, Flutter, Firebase, Counselling System, Emotional Wellness, Digital Healthcare.

I. INTRODUCTION

Mental health issues like stress, tension, and depression are increasing rapidly among students and young adults due to academic pressure, busy lifestyles, social isolation, and excessive digital dependency.

These problems not only affect emotional well-being but also impact physical health, productivity, relationships, and overall quality of life. According to recent studies, many individuals avoid seeking professional help because of social stigma, lack of awareness, high treatment costs, and limited accessibility to mental healthcare services [1].

In previous years, improvements in Artificial Intelligence (AI), mobile applications, and cloud technologies have created new opportunities for digital mental healthcare solutions.

AI-based conversational systems and emotional support platforms are becoming popular because they provide quick, accessible, and personalised assistance to users [2]. Research has shown that AI chatbots and emotional therapy applications can help users manage stress, express emotions, and receive supportive guidance in real time [3]. Many existing mental health applications focus only on specific features such as mood tracking, journaling, meditation, or chatbot interaction.

However, most of these systems do not provide a complete and engaging mental wellness environment. Some applications lack personalisation, while others fail to maintain long-term user engagement due to the absence of motivational and interactive features [4]. Furthermore, users often require emotional support from different levels of counselling, including peers, interns, and professional experts, which is not commonly available on a single platform.

To remove these limitations, this paper proposes "SupportHive," an AI-powered mental wellness platform designed to provide real-time emotional support and stress management assistance.

The proposed system combines AI-based emotional counselling, mood tracking, journaling, motivational therapy, music recommendations, gamification, and multi-level counselling support within a single application. The system uses Dialog flow-based Natural Language Processing (NLP) for intelligent chatbot communication and Firebase cloud services for secure data storage and real-time synchronisation.

Gamification features like score and reward points, wellness challenges, streaks, and progress tracking are included to improve user engagement and encourage positive mental health habits.

Additionally, the platform provides music therapy, motivational podcasts, and emergency support features to create a holistic mental wellness ecosystem. The proposed system aims to provide an accessible, secure, scalable, and user-friendly solution that promotes emotional well-being and improves digital mental healthcare accessibility.

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II. LITERATURE SURVEY

In recent times, mental health has been considered one of the key areas of scientific investigation because of an increased number of cases of stress, anxiety, and depression among students and adolescents. In their works, researchers have used different types of technologies, including machine learning (ML), artificial intelligence (AI), Internet of Things (IoT) devices, conversation chatbots, and gamification methods to support emotional well-being and provide adequate mental health care support services.

The paper "Using Gamification to Reduce Youth Depression: A Step-by-Step Method" was concerned with the application of gamification technologies to enhance mental wellness in young people. The authors provided insights into how reward mechanisms, challenges, tracking of progress, and interactive activities could encourage users to engage in wellness activities consistently. This work revealed the effectiveness of gamified environments in terms of stimulating emotional participation and reducing stress and depressive states.

Another paper named "Stress Detection and Monitoring: A Systematic Review", reviewed different stress detection tools that use physiological and behavioural markers, such as electroencephalography (EEG), heart rate, salivary cortisol, and Galvanic Skin Response (GSR).

These authors discussed the abilities of machine learning techniques and healthcare platforms in automatic stress detection and monitoring of emotional state.

Another significant contribution is the work titled "Stress Relief and Anxiety Therapy Using AI," authored by Ruthi Shankari et al., which discussed an AI-driven emotional therapy system incorporating chatbots and Cognitive Behavioural Therapy. The suggested system incorporated several modules, including chatbot interaction, journaling, emotion tracking, and emotional therapy, through which users can share their feelings and get instant advice.

The research concluded that AI-enabled conversational therapy systems offer affordable and effective emotional support to stressed and anxious individuals.

The research titled "Musical Therapy for Stress Reduction Using Machine Learning and IoT," conducted by Achal Mate et al., presented a system designed to help stressed individuals feel relaxed using musical therapy. The suggested system incorporates wearable IoT devices to track physiological parameters like heartbeat and blood pressure. Based on detected levels of stress, the system recommends Indian classical music and relaxation therapies for stressed individuals. The findings indicated that intelligent and automated systems could help in reducing stress effectively.

Though most existing platforms offer various features like journaling, chatting with chatbots, meditation sessions, stress assessment, or any motivational exercise, these apps look into only one of the area of mental health care. Most platforms do not offer any assistance with emotions, customised advice, games, and counselling sessions across different levels. Besides this, user retention is a significant issue in many current wellness apps.

After analysing the available literature and platforms, there is still a requirement for an all-encompassing platform integrating AI-powered emotional counselling, mood assessments, journaling sessions, motivational therapy, gaming, and counselling across various levels into one platform.

To look for these limitations, the proposed system "SupportHive" is designed as an AI-powered mental wellness platform that provides real-time emotional support and stress management assistance. The system integrates intelligent chatbot interaction, motivational tools, music therapy, mood tracking, journaling, gamification, and multi-level counselling support to create a more personalised, engaging, and accessible digital mental healthcare environment.

III. PROBLEM STATEMENT

Stress, anxiety, and depression are now common among students and youth due to stress from studies, a hectic lifestyle, and a lack of emotional support.

People hesitate from visiting professionals as they find them expensive, stigmatised, and hard to access. Most existing mental applications target one aspect of mental health, whether mood tracking, journaling, or chatbots. There is a need for a simple, affordable, and intelligent system to offer real-time emotional support, counselling guidance, motivating exercises, and other wellness aspects in one place.

The proposed system, "SupportHive", is an AI-based application that targets to offer support in mental wellness through its interactive features, thereby making the process easier for users and professionals.

IV. PROPOSED SYSTEM

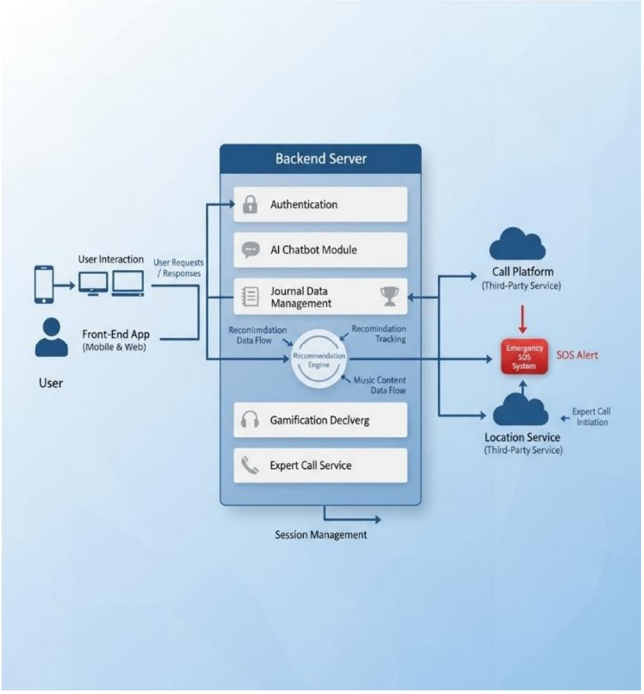


Fig 1. System Architecture

The suggested system, called "SupportHive", is an AI-driven mental wellness application designed to offer real-time support for users' emotional state and stress management. The architecture of the software is structured in three layers, namely the mobile application layer, backend layer, and cloud database layer.

The first step is authenticating the user through Firebase Authentication. Then only he/she will have access to the features offered by the application. These features include AI chatbot communication, mood monitoring, journaling, counselling support, motivational elements, and gamification. The AI chatbot employs NLP using Dialogue Flow to comprehend the user's emotions and provide him/her with corresponding answers and guidance on relieving stress.

The modules of mood tracking and journaling assist the user in tracking his/her mood throughout the day. In addition, the recommendation engine will analyse the user's behaviour in order to provide suggestions concerning content such as music therapy, podcasts, motivational quotes, and wellness activities. The application will have multilevel counselling where a user is allowed to interact with other people, interns, or professional experts via chat or video calling facilities. For the purpose of storage and synchronisation, Firebase Cloud Services will be employed.

The suggested approach seeks to develop a secure, scalable, and user-friendly mental health application. The proposed methodology aims to create a secure, scalable, and user-friendly mental healthcare platform that improves emotional well-being through AI-based support, personalisation, and interactive wellness features.

V. EXISTING SYSTEM

Existing mental health applications mainly provide features such as mood tracking, journaling, meditation, chatbot interaction, and stress monitoring. Some systems use AI-based chatbots for emotional support, while others focus on music therapy or relaxation techniques. Although these applications are helpful, most of them focus only on individual functionalities and lack a complete and personalised mental wellness solution. Many systems also provide limited counselling support and fail to maintain long-term user engagement due to the absence of interactive and motivational features.

To overcome these disadvantages, the given system "SupportHive" integrates AI-based emotional support, mood tracking, journaling, motivational therapy, gamification, and multi-level counselling support into a single platform.

TABLE 1. Comparison Table of Existing Vs Proposed System

Parameters	Existing Systems	Proposed System (SupportHive)
Emotional Support	Limited Chatbot Support	AI-based real-time emotional assistance
Mood Tracking	Basic tracking features	Personalised mood analysis
Journalling	Simple journaling	Smart journaling with recommendations
Gamification	Not commonly available	Rewards, streaks, badges, challenges
Counseling Support	Limited professional support	Peer, intern, and expert counseling
Motivational Features	Limited relaxation activities	Music therapy, podcasts, positive content
User Engagement	Less interactive	Highly engaging and interactive
Emergency Support	Mostly unavailable	Emergency SOS support
Personalization	Limited personalization	Personalised wellness recommendations
System Integration	Separate functionalities	Integrated all-in-one platform

Table.1 compares the existing system with the proposed SupportHive system. It shows that the proposed system offers better emotional support, personalised mood tracking, smart journaling, gamification features, counselling support, and emergency assistance. It also provides a more interactive and integrated platform to improve user engagement and overall wellness support.

VI. MATERIALS AND METHODS

The proposed system, "SupportHive", is developed using modern software tools and standard hardware resources to provide a secure, scalable, and user-friendly mental wellness platform. The technologies used support real-time communication, cloud storage, AI-based interaction, and smooth mobile application performance.

A. Software Requirements

- Flutter Framework – Used for cross-platform mobile application development.
- DartProgramming Language – Used for implementing application logic and functionality.
- Firebase – Provides authentication, cloud database, and real-time synchronisation.
- Dialog flow API – Used for AI chatbot interaction and Natural Language Processing (NLP).
- Android Studio / VS Code – Used as the development environment.
- Figma – Used for UI/UX design and prototyping.The subscript for the permeability of vacuum □0, and other

B. Hardware Requirements

- Processor – Intel i3 or higher
- RAM – Minimum 4 GB
- Storage – 20 GB free space minimum
- Device – Android smartphone or laptop
- Internet Connection – Required for cloud services and real-time communication.

VII. EXPERIMENTAL RESULT

The proposed system, "SupportHive", was tested to evaluate its performance, usability, and effectiveness in providing emotional support and stress management assistance. The system was successfully implemented as a mobile application, and all major modules, such as AI chatbot interaction, mood tracking, journaling, counselling support, and gamification features, functioned properly during testing.

The AI chatbot was able to provide real-time responses and supportive guidance based on user input. Mood tracking and journaling features helped users record emotional patterns and monitor their mental well-being over time. Gamification elements such as reward points, streaks, and wellness challenges increased user engagement and encouraged regular participation in mental wellness activities.

The recommendation module successfully suggested motivational content such as music therapy, podcasts, and positive activities based on user emotions and interaction history. Firebase integration ensured secure data storage and smooth real-time synchronisation across the application.

The overall testing results showed that the proposed system provides a more interactive, accessible, and personalised mental wellness experience compared to traditional mental health applications. The system demonstrated efficient performance, user-friendly interaction, and improved emotional engagement through the integration of AI and gamification techniques.

TABLE 2. Performance Analysis of the Proposed System

Parameters	**Results**
AI Chatbot Response	Real-time and accurate
Mood Tracking	Successfully implemented
Journaling Feature	Functional
Counseling Support	Available
Gamification Features	Improved user engagement
Recommendation System	Personalised suggestions generated
Data Synchronization	Real-time synchronisation achieved
User Interface	User-friendly and interactive

Table 2 shows the performance analysis of the proposed system. It explains the main features and their results, such as accurate chatbot responses, successful mood tracking, personalised recommendations, and a user-friendly interface. The table highlights how the system improves user engagement and overall functionality.

The splash screen of "SupporHive" as shown in Fig 2 creates a calm and relaxing feeling with its soft green glow and smooth breathing animation. It guides users through an "Inhale" breathing exercise with a timer and simple controls, helping them feel peaceful, focused, and stress-free from the moment they open the app.

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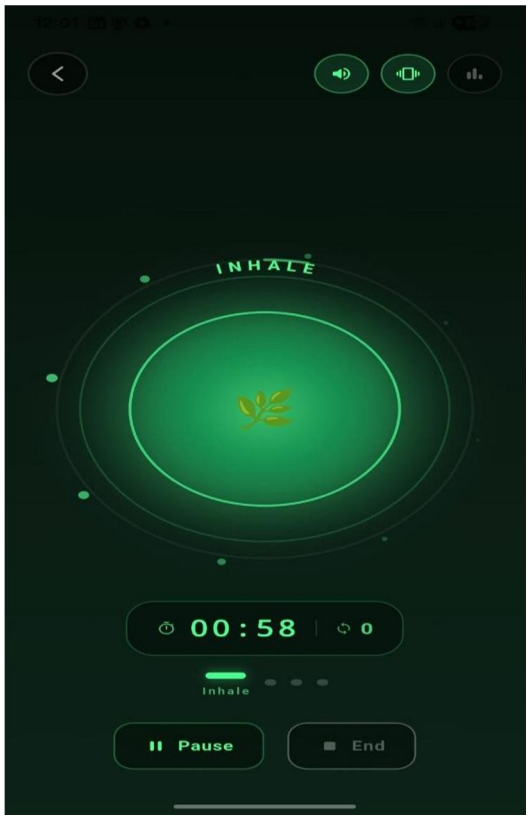


Fig 2. Splash Screen



Fig 3. Home Page

The home screen of "SupporHive", as shown in Fig 3, offers a warm and welcoming experience with greetings, daily inspiration, and wellness tools. It provides quick access to features like the Daily Diary, Wellness Quiz, and mental health tracking, creating a supportive space for users to reflect, relax, and care for their well-being. Also, it has Search, Profile, Game and Counselling tabs.

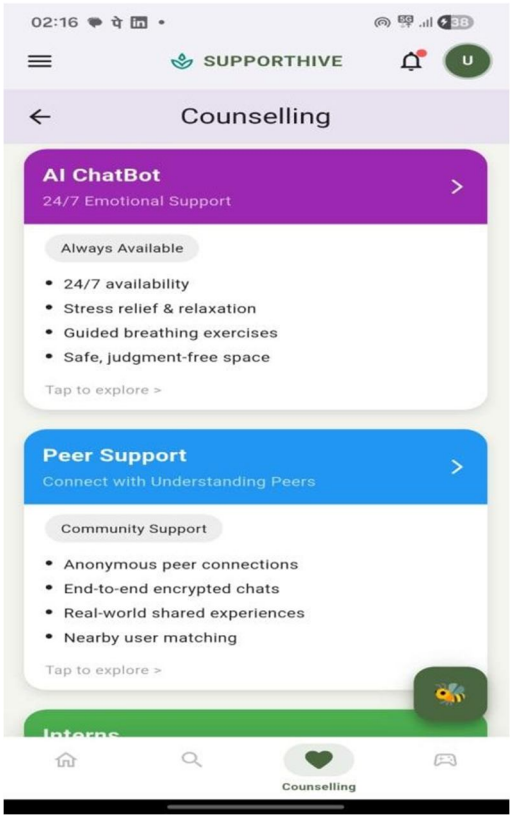


Fig 4. Counselling Section1

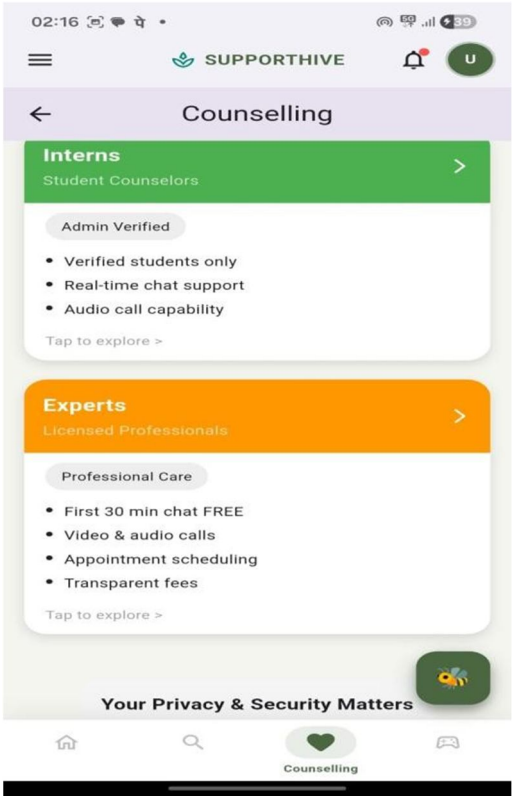


Fig 5. Counselling Section2

The counselling section of "SupporHive", as shown in Fig 4 and Fig.5, is designed to make emotional support easy and accessible for everyone. Users can choose from AI chat support for instant guidance, peer support for connecting with understanding individuals, student interns for friendly conversations, or licensed experts for professional help. The clean and welcoming interface creates a safe space where users can seek support comfortably and confidently whenever they need it.

VIII. MATHEMATICAL MODEL

The mathematical model of the given system "SupportHive" represents the flow of user input, emotional analysis, AI processing, and personalised wellness recommendations. The system takes emotional data from users through mood tracking, journaling, and chatbot interaction, processes it using AI-based analysis, and generates suitable emotional support and wellness activities.

A. Mathematical Representation

Let,

- U= Set of users
- M= Mood input provided by user
- J= Journaling data
- C= Chatbot interaction data
- R= Recommended wellness activities
- W= Wellness score of the user The system input can be represented as:

$$Input=\{M+J+C\} \quad \square\square\square$$

The emotional analysis function is:

$$E=f(M,J,C) \quad (2)$$

Where:

- E= Emotional state detected by the system
- f= AI-based emotional analysis function The recommendation function is represented as:

$$R = g(E) \quad (3)$$

Where:

- R= Personalised recommendations by the system
- g= Recommendation function based on emotional analysis

The overall wellness score is calculated as:

$$W=(M+J+C)/3 \quad (4)$$

Where:

- W= Wellness score
- M= Mood tracking score
- J= Journaling activity score
- C= Chatbot interaction score

A higher value of Windicates better emotional wellness and user engagement.

B. Time Complexity

The time complexity is:

$O(n)$

Where:

- n represents the number of user interactions, mood records, chatbot responses, journal entries, and recommendation processes.

Since the system mainly performs sequential processing for mood analysis, recommendation generation, journaling, and user activity handling, the overall execution time increases linearly with the amount of user data.

C. Space Complexity

The space complexity of the system is:

$$O(n)$$

Where:

- n represents the amount of stored user data, such as mood tracking records, journaling history, chatbot conversations, and recommendation data.

The system uses Firebase cloud storage and local databases to manage user information efficiently while supporting scalable data handling and real-time synchronisation.

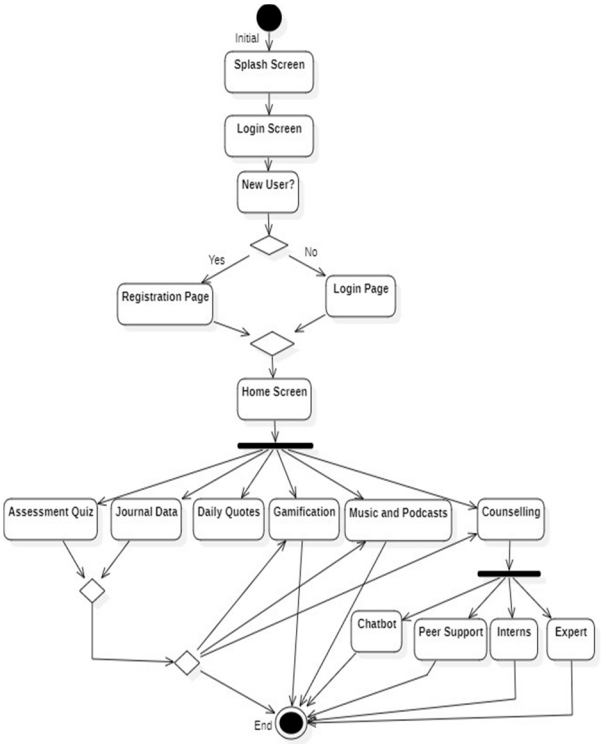


Fig. 6 Flow Chart

The Fig.6 Flow Chart of the SupportHive application illustrates the complete workflow of the system by representing the sequence of activities performed by the user and the application. It provides a clear visualisation of how the system behaves in response to different user actions and showcases the logical flow between various modules. This diagram is beneficial for understanding navigation patterns, decision-making points, conditional flows, and concurrent activities within the application.

The workflow begins when the user launches the application, which first displays the splash screen. After the initial loading process, the user is directed to the login screen. At this stage, the system checks whether the user is new or already registered. If the user is new, they are guided to the registration page, where they can create an account. Upon successful registration, the user is redirected back to the login screen to authenticate their credentials. In the case of existing users, the system immediately takes them to the home page after successful login. Once the user reaches the home page, they can choose from a variety of features provided by SupportHive. These include completing the assessment quiz, writing or viewing journal entries, exploring gamified activities for stress relief, accessing music or podcasts for relaxation, or entering the counselling section for emotional support.

Each module has its own internal workflow but follows a consistent pattern where the user selects an activity, interacts with the module, and receives the corresponding output or system response. Within the counselling section, the activity flow branches further. The user can choose to communicate with the AI Chatbot or opt for human support through peer supporters, interns, or professional experts. Depending on the user's choice, the system either initiates a chat-based session or connects the user to an audio or video call using integrated communication services.

IX. SIMULATION RESULT

The simulation of "SupportHive" was performed to observe the overall working flow and user interaction within the platform. The system successfully handled emotional input processing, chatbot communication, mood updates, and wellness recommendation generation in a smooth and responsive manner.

The AI-based support system provided interactive communication, while gamification features encouraged regular user participation. The application also maintained stable performance during data synchronisation and user activity management.

The simulation results show that the proposed system can provide an accessible, interactive, and user-friendly environment for digital mental wellness support.

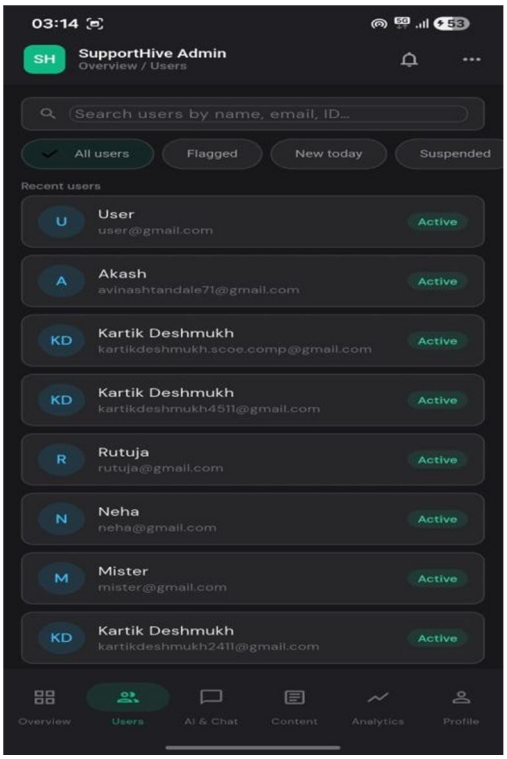


Fig 7. Admin Dashboard

The admin dashboard of "SupporHive", as shown in Fig.7, gives a clean and organised view of user management activities. It allows administrators to easily monitor users, check account statuses, filter categories like active or flagged users, and manage the platform efficiently through a modern and user-friendly interface.

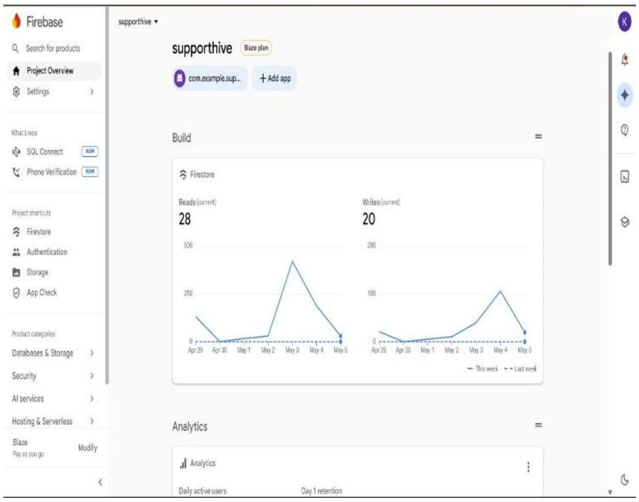


Fig 8. Firestore Analysis

The Firebase Firestore dashboard of the "SupportHive" project, as shown in Fig.8, is used to manage app data and monitor database activity. It shows read and write operations, helping track how the application is performing and handling user data.

X. CONCLUSION

Due to the stresses of academia, changes in their lifestyles, separation from society, and the no emotional support, there is a rising number of students and youth suffering from various mental disorders like tension, anxiety, and emotional instability. Despite the growing incidence of mental disorders among students and youth, they tend to resist visiting a psychiatrist or undergoing therapy sessions because of social stigma, expensive medical fees, and the unavailability of counselling facilities. This situation demands innovative mental wellness solutions that would be accessible, easy to use, and technologically advanced.

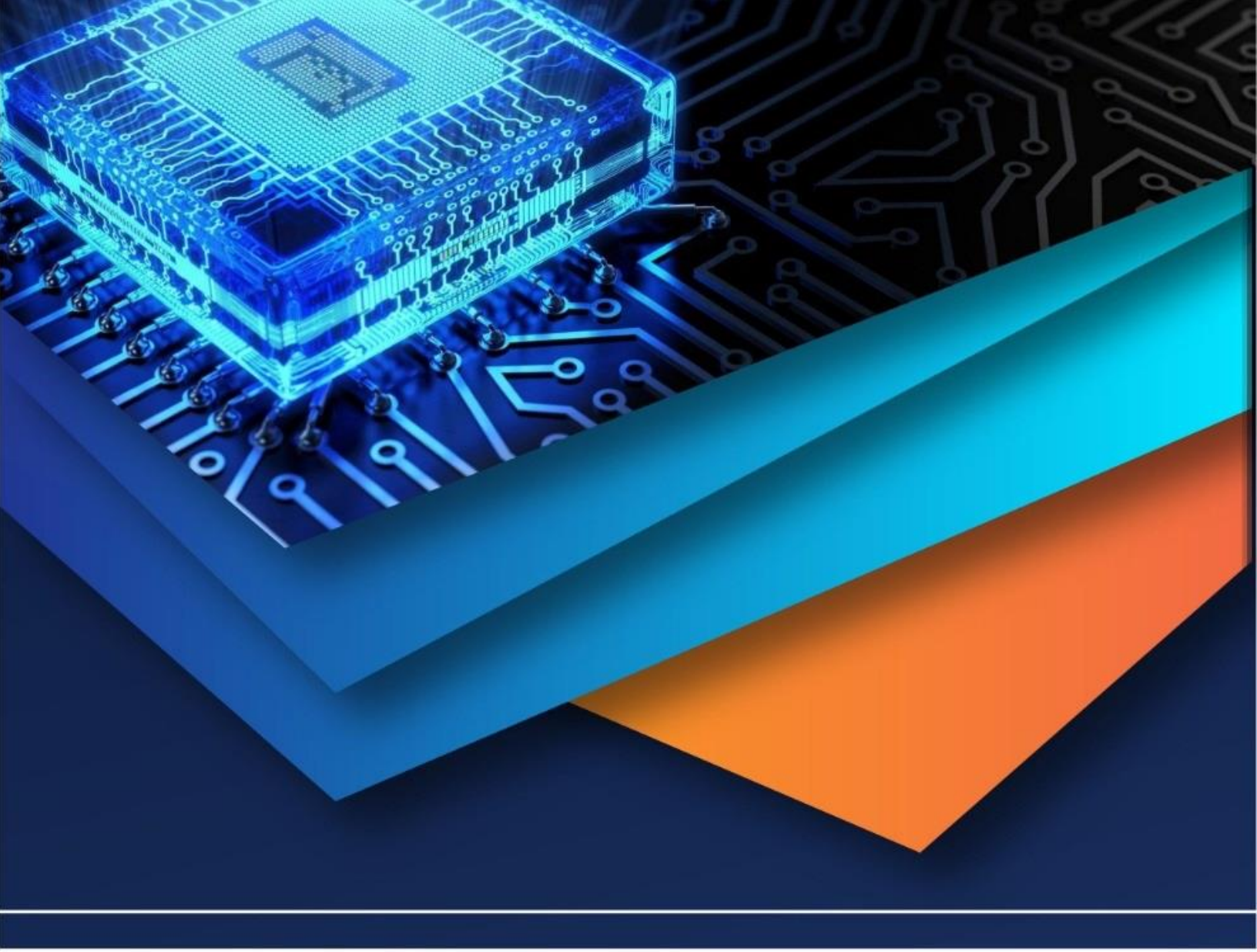
This study gives the development of a comprehension-based digital mental wellness solution called "SupportHive." It utilises artificial intelligence (AI), emotional support, and interactive wellness features, all incorporated in one software package.

The chatbot AI offers instant emotional support and interactive assistance, and the mood monitoring and journaling features enable users to comprehend and manage their emotional states. The gamification elements like reward points, badges, streaks, and wellness challenges make the application engaging for users and motivate them to maintain positive psychological well-being practices consistently. Moreover, the recommendation system suggests personalised wellness exercises consisting of music therapy, podcasts, and motivating videos based on user emotions and interactions. The implementation of Firebase cloud-based services and Flutter framework technology ensures that the system is safe, scalable, and can be accessed conveniently from mobile devices. Multi-tiered counselling through peers, internships, and expert professionals enhances the performance of the system significantly.

Overall, SupportHive provides a modern and intelligent approach to digital mental healthcare by combining emotional support, personalisation, and user engagement within a single ecosystem. The proposed system not only improves accessibility to mental wellness support but also creates a safe and encouraging environment where users can express emotions freely and receive timely assistance. The project demonstrates the potential of AI-powered applications in improving emotional well-being and promoting healthier mental lifestyles through technology-driven solutions.

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