

**PERSONALIZED STRESS MANAGEMENT PLAN USING
AYURVEDIC PRACTICES AND CREATIVE THERAPIES.**

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ACTIVITY CREATION AND PREDICTING STRESS LEVEL BASED ON ACTIVITY PERFORMANCE

Project Proposal Report

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Declaration of The Candidate & Supervisor

We declare that this is our own work and this proposal does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or Institute of higher learning and to the best of our knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidates are carrying out research for the undergraduate Dissertation under my supervision.



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Abstract

Stress is a pervasive issue in modern society, adversely impacting mental and physical health. Traditional stress management approaches, such as lifestyle changes and pharmaceutical treatments, often face challenges related to long-term sustainability and accessibility. Ayurveda, an ancient Indian system of medicine, provides a holistic method for managing stress by harmonizing the body, mind, and spirit through creative activities. Despite its potential, Ayurveda is underutilized due to limited practitioner availability, accessibility issues, and skepticism about its scientific basis. AyurAura addresses these challenges by merging Ayurvedic principles with advanced AI-driven biometric analysis. This innovative app delivers personalized stress relief recommendations based on biometric data from users' eyes and breathing patterns, complemented by The Perceived Stress Scale. By providing tailored activity plans directly to users via smartphones, AyurAura overcomes the scarcity of Ayurvedic practitioners and ensures broader accessibility. The app's AI capabilities enhance the accuracy of stress assessments, thereby increasing user trust through scientific validation. AyurAura offers a broad range of non-pharmaceutical therapies, including art therapy with mandalas and personalized raga music therapy, designed to cater to individual needs and enrich the stress management experience through creative and cultural practices. It also incorporates predictive analytics to forecast future stress levels based on behavioral patterns, helping users anticipate and manage stress proactively. Key features include a dynamic progress tracker with daily updates on mood and energy levels, visually engaging charts, and personalized feedback to refine stress reduction strategies. An AI-driven chatbot provides continuous motivation and practical advice, supporting users in their journey toward improved stress management. In summary, AyurAura combines AI-driven biometric analysis with Ayurvedic principles to offer a holistic, accessible, and scientifically validated approach to long-term stress management and well-being.

Keywords: Stress Management, Ayurveda, AI-driven Analysis, Biometric Data, Predictive Analytics

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List of Abbreviations

Table 1 Table of Abbreviations

AI	Artificial Intelligence
ML	Machine Learning
CNN	Convolutional Neural Networks
SVM	Support Vector Machines
ARIMA	Auto Regressive Integrated Moving Average
NLP	Natural Language Processing

1. INTRODUCTION

1.1 Background

Stress is a constant challenge in modern society, affecting both mental and physical health. It is defined as the body's response to perceived threats or demands, initiating a range of physiological and psychological reactions. This response, while adaptive in the short term, can lead to significant health issues when experienced chronically. Persistent stress can have profound and detrimental effects on health, contributing to conditions such as anxiety, depression, cardiovascular diseases, and a weakened immune system [1]. Therefore, it is essential to understand stress's multifaceted nature and its extensive impact on overall well-being in order to develop effective management strategies [2].

In today's fast-paced world, stressors such as demanding work environments, societal pressures, and financial uncertainties contribute significantly to elevated stress levels [3]. These pressures foster a state of constant tension and overwhelm, complicating efforts for individuals to achieve a balanced mental state and maintain overall health [4]. The increasing prevalence of stress-related health issues underscores the urgent need for innovative, effective, and accessible stress management solutions [5].

The increasing prevalence of stress-related health issues underscores the urgent need for innovative, effective, and accessible stress management solutions. A creative activity-based mobile application presents a promising solution to stress management by offering users accessible tools and techniques for relief. This approach allows individuals to integrate stress-reducing activities into their daily routines effortlessly. By providing a variety of therapeutic options and personalized recommendations, the app supports users in managing stress effectively and improving their overall well-being. Figure 1 illustrates the ratings of various challenges individuals face in managing stress, demonstrating the widespread difficulty in traditional approaches and the potential benefit of integrating creative activities into stress management



Figure 1 challenges in managing stress

By addressing these barriers, our mobile application offers a practical and engaging alternative for managing stress. It empowers users to incorporate therapeutic activities such as mandala drawing and raga music therapy into their routines, providing a more accessible and personalized approach to stress management. This solution not only helps individuals manage their stress more effectively but also promotes long-term well-being and balance. Figure 2 depicts what approaches people find as effective stress relief activities via an application.

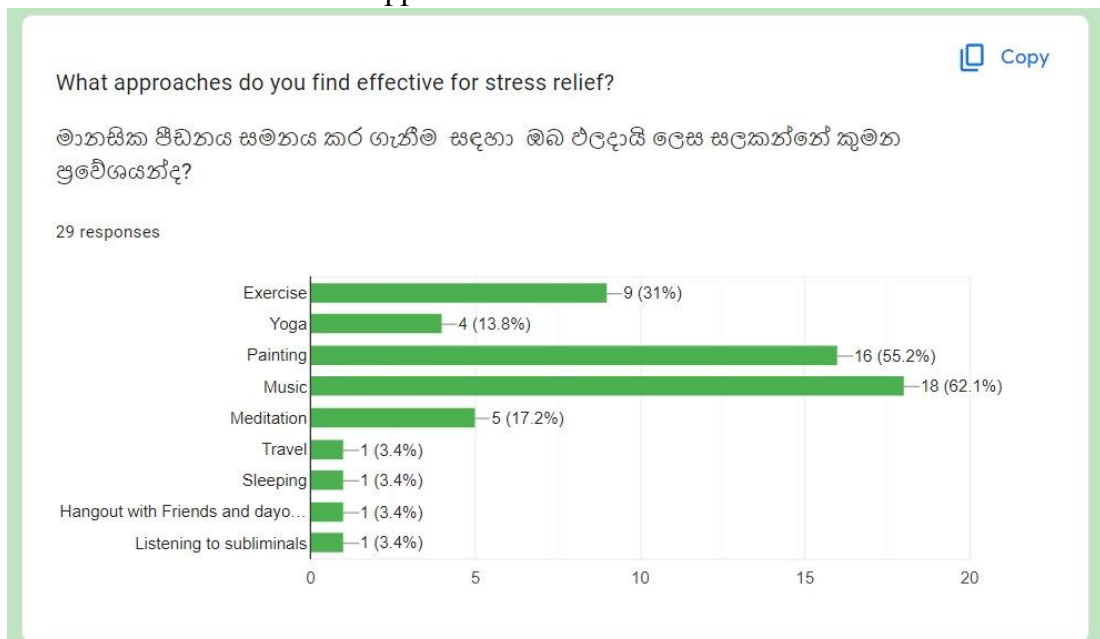


Figure 2 User preference for Stress reduction approaches

To address the diverse levels of stress experienced by individuals, our solution offers a variety of activities tailored to enhance well-being. These activities, including mandala drawing and raga music therapy, are designed to address specific doshas and varying levels of stress [6]. Mandala drawing, for instance, will be developed in collaboration with Ayurvedic experts to ensure that the visual and symbolic elements incorporated are effective in balancing each dosha [7]. These carefully designed mandala patterns will be aligned with the unique characteristics of each dosha, facilitating relaxation and balance.

Additionally, raga music therapy will be curated to address dosha imbalances and varying stress levels. Collaborating with music therapists and Ayurvedic practitioners, we will identify specific ragas that are beneficial for balancing doshas and alleviating stress [8]. Custom playlists will be developed for each dosha and stress level, selecting ragas that promote relaxation and foster a sense of harmony.

Our platform seeks to harmonize ancient Ayurvedic practices with contemporary techniques to provide a comprehensive stress management tool. By integrating activities such as mandala drawing and raga music therapy, we offer a solution that not only addresses immediate stress but also fosters long-term well-being and balance [9]. As stress remains a significant concern in today's world, our approach provides a simple, accessible, and culturally attuned method for individuals to manage their stress and enhance their overall quality of life.

Incorporating these ancient practices into a modern digital platform allows users to engage with stress management techniques in a convenient and personalized manner. The dynamic nature of our solution ensures that users receive tailored support, addressing their unique stress profiles and preferences. This integration of traditional wisdom with contemporary technology offers a holistic approach to stress management, supporting users in achieving greater overall health and well-being.

1.2 Literature Review

Stress reduction is a critical area of study in contemporary mental health research, given its extensive effects on both psychological and physiological well-being. As awareness of the impact of stress grows, various strategies, from traditional practices to modern digital solutions, have been investigated. This literature review explores the role of Hindustani ragas and mandala making in stress management, highlighting recent research and technological advancements that have made these practices more accessible and effective.

Hindustani ragas, an integral component of Indian classical music, have been recognized for their therapeutic potential in stress management. [8] These melodic frameworks are designed to evoke specific emotional responses, making them particularly effective in alleviating stress and promoting relaxation. Research on the "MusiHeal" [8] app has shown that certain ragas, when used in a therapeutic context, can significantly reduce stress levels and enhance overall emotional well-being. This study emphasizes the importance of music therapy as a non-invasive method for managing stress, especially through the culturally rich tradition of Hindustani ragas.

In addition to music therapy, mandala making has emerged as a powerful tool for stress relief. Mandalas, which are intricate geometric designs rooted in spiritual symbolism, have been traditionally used to foster mindfulness and emotional balance. [10] With the advent of digital technology, mandala art therapy has been transformed, allowing users to engage in this practice through various online platforms and mobile applications. Recent studies on the digital transformation of mandala art therapy reveal that these tools maintain the therapeutic benefits of traditional methods while providing greater accessibility. This digital shift has enabled a broader audience to incorporate mandala making into their daily routines, thereby supporting stress reduction and enhancing mental well-being.

The incorporation of advanced sleep science and relaxation techniques into digital platforms has revolutionized how we approach sleep improvement. Apps like "BetterSleep" [11] offer a comprehensive suite of features designed to enhance sleep

quality through personalized audio content, including nature sounds, binaural beats, and Solfeggio frequencies, paired with guided meditations and bedtime stories. These tools not only help users fall asleep faster but also promote lasting sleep habits by integrating science-backed methods like sleep tracking, chronotype analysis, and breathing exercises. By offering customizable sleep experiences, these platforms make it easier for individuals to achieve restful and restorative sleep, ultimately improving overall well-being.

Similarly, the practice of meditative coloring, particularly with mandalas, has gained popularity as an effective stress management technique. This activity allows individuals to engage in a focused and calming task, which can lead to a meditative state and subsequent stress reduction. The availability of free mandala designs online, such as those offered by platforms like Domestika, [12] has made this practice more accessible, encouraging a wider audience to utilize meditative coloring as a means of stress relief. This simple yet effective method supports mindfulness and provides a creative outlet for managing stress.

Integrating Ayurvedic principles with modern AI and ML technologies offers a promising approach to stress management. Research indicates that combining these ancient practices with contemporary data analytics can result in personalized wellness plans tailored to individual stress patterns and lifestyle factors. By leveraging AI algorithms, users can receive customized recommendations that enhance the efficacy of Ayurvedic treatments, illustrating the potential for a synergistic approach to stress management. [13]

In conclusion, the integration of Ayurvedic principles with physical activity, alongside advanced AI and ML technologies, represents a comprehensive and innovative approach to stress management. By blending these time-tested therapeutic practices with cutting-edge technology, this strategy offers a robust solution to managing stress in today's fast-paced world. The fusion of Ayurvedic principles, such as dosha-balancing mandala art and raga music, with sophisticated AI algorithms allows for a personalized and dynamic approach to stress reduction. AI-driven tools can analyze user data to provide tailored recommendations, while machine learning models predict

stress patterns and offer proactive solutions. This combination not only enhances the effectiveness of stress management but also ensures that it is adapted to the individual needs and preferences of users.

Furthermore, this approach bridges the gap between ancient wisdom and modern technology, making traditional practices more relevant and accessible to contemporary, tech-savvy users. By incorporating interactive elements like mandala drawing and raga music therapy into a mobile platform, users can engage with stress-relief activities seamlessly within their daily routines. The result is a more holistic, engaging, and personalized stress management experience. This innovative solution not only preserves and honors the rich traditions of Ayurvedic practices but also leverages technological advancements to improve accessibility and effectiveness. By combining these two therapeutic modalities, the system offers a more comprehensive and adaptable strategy for managing stress, ultimately contributing to better mental and physical well-being for its users.

1.3 Research Gap

The existing research on stress management predominantly explores individual interventions, such as music therapy and mandala art, without integrating these activities into a comprehensive solution that aligns with Ayurvedic principles. For example, studies have highlighted the effectiveness of Hindustani ragas in stress reduction and the therapeutic benefits of mandala art therapy in public mental health services. However, these studies tend to focus on single modalities rather than a holistic, multi-faceted approach that is central to Ayurveda.

Moreover, there is a significant knowledge gap in the application of modern technologies, such as machine learning, for real-time stress level prediction based on user interaction with these activities. The “BetterSleep” application, for instance, offers personalized sleep and relaxation solutions but does not integrate real-time stress prediction or Ayurvedic principles into its framework [3]. Similarly, platforms like “Domestika” provide access to digital mandala art content but lack the capability to dynamically assess and respond to users' stress levels as they engage with the content.

Our proposed solution seeks to fill these gaps by integrating multiple Ayurvedic activities into a cohesive mobile application, enhanced by machine learning and real-time data processing. This innovative approach allows for the prediction of users' stress levels based on their engagement with the activities, providing personalized interventions that are both immediate and tailored to their specific needs. By combining traditional Ayurvedic practices with modern technology, our solution offers a novel and comprehensive tool for effective stress management, addressing the limitations of current research and contributing to the advancement of mental health solutions.

Table 2 Research Gap

Features	Music therapy app “MusiHeal”	Digital transformation of mandala art therapy	Relax Melodies	Meditative Coloring	Proposed Solution
Provides Ayurvedic activities (mandala arts, music, yoga, DIY kit)	✓	✓	✓	✓	✓
Predicts current stress level based on activity performance	✗	✗	✗	✗	✓
Uses Ayurveda	✗	✗	✗	✗	✓
Mobile application solution	✓	✓	✓	✗	✓
Real-time data processing	✓	✗	✗	✓	✓
Uses Machine learning	✗	✗	✗	✗	✓
Automated system	✗	✗	✗	✓	✓

1.4 Research Problem

The prevalence of stress and its harmful effects on both mental and physical health is an escalating concern, particularly in high-stress environments like medical education. While numerous stress management techniques are available, they often fall short in offering a comprehensive, personalized, and easily accessible solution that integrates multiple therapeutic approaches. For instance, current applications and services like "BetterSleep" and Domestika provide valuable tools for relaxation and mental health but lack a holistic approach that combines various therapeutic modalities into a single, cohesive platform.

Furthermore, these existing solutions typically overlook individual differences in stress responses and the Ayurvedic concept of dosha imbalances, which are crucial for tailoring interventions to each user's unique needs. This gap is evident when compared to traditional methods like Hindustani ragas and mandala art therapy, which, while effective in isolation, do not offer the flexibility to adapt to diverse user profiles and changing stress levels.

Moreover, there is a significant underutilization of modern technologies such as machine learning and real-time data processing in the dynamic prediction and management of stress. Unlike static interventions, these technologies can analyze user data continuously, offering more precise and timely stress management solutions. The absence of such advanced features in existing products highlights a critical gap in the current landscape of stress management tools. Addressing this gap requires a novel approach that integrates Ayurvedic principles with cutting-edge technology, providing a personalized, adaptive, and holistic solution to effectively manage stress in various contexts, including highly demanding environments like medical education.

2. OBJECTIVES

2.1 Main Objective

To develop a dynamic module within the mobile application that offers a variety of stress-relief activities such as mandala arts, music therapies and predicts users' current stress levels based on their engagement with these activities.

2.2 Specific Objectives

Design and Develop Activity Modules:

- To create and integrate interactive modules that offer stress-relief activities such as mandala art, music therapy, and breathing exercises, ensuring a cohesive user experience

Implement User Engagement Tracking:

- To develop algorithms to monitor and record user interactions with the activity modules, capturing data to assess engagement and its impact on stress levels.

Develop Stress Level Prediction Model:

- To build a machine learning model to predict users' stress levels based on their engagement with the provided activities, refining the model through data-driven insights.

Integrate System and Develop Mobile Application:

- To seamlessly integrate the stress-relief modules and prediction model into a user-friendly mobile application, ensuring smooth functionality and accessibility.

3. METHODOLOGY

3.1 Project Overview

Building on the foundational elements already described, the AyurAura system extends its capabilities through additional features and technologies designed to enhance the user experience and the accuracy of stress management interventions.

The app's user interface (UI), created using Flutter, is not only intuitive but also customizable, allowing users to tailor the appearance and functionality to their preferences. This flexibility ensures that the app is accessible and engaging for a diverse user base, accommodating various levels of tech-savviness and personal comfort.

In terms of data management, Firebase's real-time capabilities are further leveraged to provide instant feedback and updates, ensuring that users can track their stress levels and receive recommendations without delay. The secure cloud infrastructure also supports data synchronization across devices, allowing users to switch between smartphones and tablets seamlessly.

The integration of Convolutional Neural Networks (CNNs) for biometric data analysis is enhanced with transfer learning techniques, enabling the model to improve its accuracy over time by learning from a growing dataset of user inputs. This continuous learning approach ensures that the system adapts to new patterns of stress, offering increasingly precise predictions and recommendations.

The ARIMA model, traditionally used for time series forecasting, is coupled with a Bayesian framework to improve the confidence intervals of stress predictions. This hybrid approach allows users to not only see projected stress levels but also understand the uncertainty associated with these forecasts, enabling more informed decision-making.

Reinforcement Learning (RL) within AyurAura is designed to adapt dynamically to user feedback, adjusting the stress-relief activities in real-time. This adaptability is critical, as it allows the system to personalize the experience based on each user's unique response to different activities. Over time, the RL algorithm refines its understanding of what works best for each individual, leading to increasingly effective interventions.

The Random Forest model, used for analyzing complex behavioral data, is augmented with feature importance analysis, which helps identify the most significant factors contributing to a user's stress. This insight allows the system to offer more targeted advice, focusing on the behaviors that have the greatest impact on the user's stress levels.

To complement these predictive models, the AI chatbot is integrated with Natural Language Processing (NLP) capabilities, allowing it to understand and respond to user queries more naturally. The chatbot can recognize emotional cues in user interactions, offering empathy and support that feels more human-like. It also integrates with external health and wellness APIs, providing users with a broader range of resources, such as guided meditation sessions, breathing exercises, and lifestyle tips.

The dynamic progress tracker, besides visualizing mood and energy levels, also offers predictive insights, warning users of potential stress spikes based on their historical data and current behavior. This proactive feature empowers users to take preventive action before stress becomes overwhelming.

Ethical considerations extend beyond data privacy and consent. AyurAura incorporates an ethical AI framework that ensures transparency in decision-making processes, enabling users to understand how their data is being used and how recommendations are generated. The system also includes an option for users to opt out of certain data collection practices, giving them full control over their personal information.

In conclusion, AyurAura's development is marked by a sophisticated blend of modern technologies and ethical practices. The use of Flutter, Firebase, CNNs, ARIMA, Reinforcement Learning, Random Forests, and an AI chatbot culminates in a comprehensive, adaptive, and user-centric stress management solution. This system not only adheres to scientific rigor but also respects the user's autonomy and privacy, making it a pioneering tool in the field of personalized health and wellness. Figure 4 offers a graphical representation of the system, showcasing the intricate interplay between its various components to deliver a holistic stress management experience.

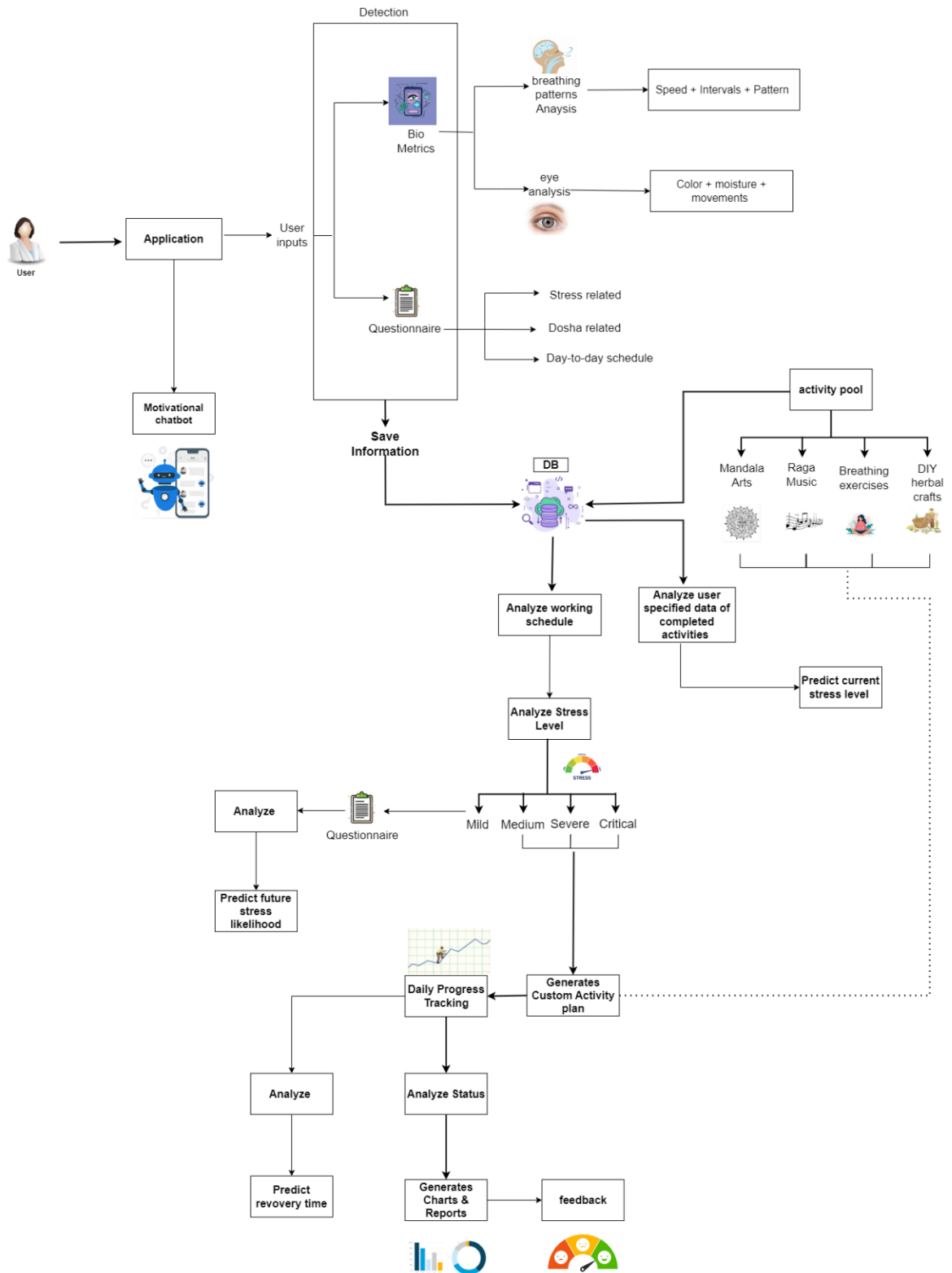


Figure 3 System Overview Diagram

3.2 Individual Component

Offer activity collection and predict stress level based on activity engagement

The proposed dynamic module within the mobile application represents a sophisticated and responsive approach to stress management, leveraging a blend of innovative technologies and therapeutic practices. This multifaceted system offers a curated selection of stress-relief activities, including mandala art and music therapy, which are meticulously designed to align with individual emotional states and promote relaxation.

Upon selecting an activity, users engage deeply in either the intricate creation of mandala designs or the soothing experience of music therapy. The app, developed using Flutter, captures a comprehensive range of engagement metrics in real time. These metrics encompass session duration, the complexity and style of mandala designs, color preferences, and specific types of music therapy chosen. This detailed real-time tracking provides valuable insights into user interactions, facilitating a nuanced understanding of their preferences and engagement patterns with the stress-relief activities.

In addition to monitoring these metrics, the application incorporates Natural Language Processing (NLP) techniques to analyze textual inputs from users. This includes feedback, mood descriptions, and other written communications. NLP analysis enables the application to gain deeper insights into the user's emotional state, allowing it to generate more tailored and nuanced recommendations based on the detailed emotional feedback provided.

The data collected during user interactions is securely stored in Firebase, which offers robust scalability and data integrity. Firebase's real-time database capabilities are crucial for managing large volumes of data while maintaining user privacy and adhering to data protection regulations. The secure storage solution supports the application's need to process and analyze data dynamically, enabling responsive and adaptive stress management interventions.

On the backend, Flask powers the data processing and integration of advanced machine learning algorithms. The K-means clustering algorithm plays a pivotal role in

analyzing user engagement patterns and behaviors. It evaluates factors such as engagement consistency, time spent on activities, and recurring user choices. By clustering users based on similar engagement profiles, the application can more accurately predict stress levels and offer personalized recommendations. For instance, users identified as experiencing high stress may receive recommendations for more intensive therapeutic activities, while those demonstrating progress might be guided towards maintenance activities that help sustain their improved state.

The insights derived from K-means clustering are instrumental in refining the application's stress management strategies. These insights allow for the development of tailored interventions that address specific user needs, optimizing the effectiveness of the stress-relief activities. The application's ability to adapt its recommendations based on real-time data and user feedback ensures that users receive support that is both relevant and effective.

This comprehensive and adaptive system is designed to continuously evolve in response to each user's unique needs and behaviors. By integrating advanced technologies such as machine learning, AI, NLP, the K-means clustering algorithm, Flask, Flutter, and Firebase, the application performs sophisticated analyses of user behavior. This integration fosters the delivery of highly personalized stress-relief interventions, supporting long-term mental well-being and resilience.

Moreover, the application's dynamic nature ensures that it remains responsive to changes in user needs over time. As users engage with the app and their stress levels fluctuate, the system adapts its recommendations accordingly. This ongoing adjustment not only enhances the immediate effectiveness of the stress-relief activities but also contributes to sustained mental health improvements.

The holistic, user-centric experience provided by this application goes beyond traditional stress management solutions. By combining ancient therapeutic practices like mandala art and raga music with cutting-edge technology, the application offers a unique and innovative approach to stress management. This approach respects and integrates traditional wisdom while leveraging modern technology to make stress management more accessible, personalized, and effective. As a result, users receive a comprehensive support system that aligns with their personal stress management

goals, promotes ongoing well-being, and enhances their overall quality of life.

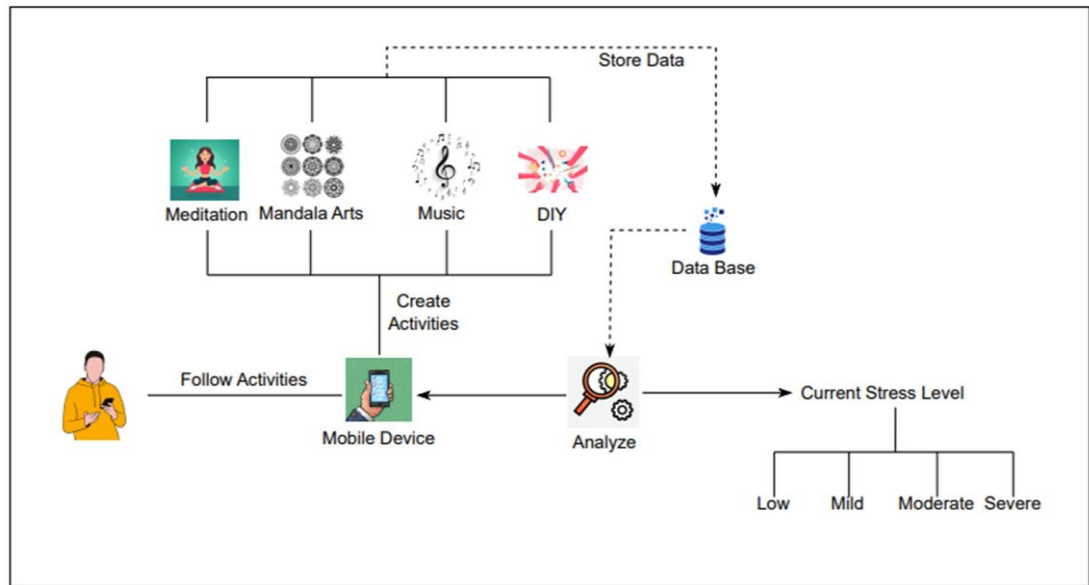



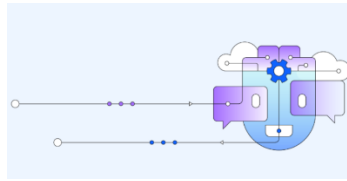


Figure 4 Flow of the system diagram - Individual Component

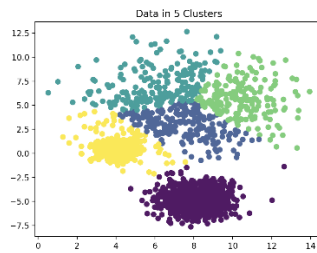
3.3 Tools and Technologies

Table 3 Tools and Technologies

 <p>The Firebase logo consists of a stylized flame icon made of two overlapping circles, one yellow and one red, with the word "Firebase" in a sans-serif font below it.</p>	<p>Firestore is a platform by Google that helps developers create and manage mobile and web apps. It offers cloud-based tools like real-time databases for syncing data instantly, authentication services for secure logins, and cloud storage. Firestore also provides features like analytics, crash reporting, and performance monitoring to improve app quality. With its easy integration and scalability, Firestore is a go-to choice for building reliable and high-performance apps quickly.</p>
 <p>The Flutter logo features a blue stylized 'F' icon followed by the word "Flutter" in a sans-serif font.</p>	<p>An open-source toolkit from Google for building apps that work on mobile, web, and desktop from a single codebase. Launched in 2017, it's popular for creating high-performance apps with customizable, visually appealing UIs, thanks to its rich collection of widgets and tools. Flutter uses the Dart programming language and features hot-reload, letting developers see changes instantly without restarting the app. With strong community support, detailed documentation, and smooth integration across platforms, Flutter is a top choice for modern app development.</p>
 <p>The Flask logo shows a small illustration of a flask or beaker next to the word "Flask" in a serif font.</p>	<p>A lightweight and flexible web framework for Python, designed for quick and easy web development. Created by Armin Ronacher in 2010, Flask provides essential tools for building web applications while allowing developers to add libraries as needed. Its simplicity, modularity, and robust features like routing and templating (Jinja2) make it ideal for both beginners and experts. With strong community support and comprehensive documentation, Flask is a popular choice in the Python ecosystem.</p>



A field of AI that focuses on enabling computers to understand, interpret, and generate human language. By analyzing textual feedback, NLP can extract valuable insights about user experiences, helping to refine and personalize recommendations based on what users express in their own words.



(K means Algorithm) A popular machine learning algorithm used for clustering data into groups based on similarity. It works by dividing users into clusters with similar characteristics or preferences, allowing for more targeted and personalized activity recommendations based on these groupings.

4. Gantt Chart and Work Breakdown chart

Table 4 Gantt chart

No	Assessment / Milestone	2023-2024														
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	
1	Project discussion workshop															
2	Topic evaluation															
2a	Select a topic															
2b	Select a supervisor															
2c	Topic Evaluation form submission															
3	Project proposal report															
3a	Project proposal presentation															
3b	Create Project Proposal individual															
3c	Create Project Proposal group															
4	Develop the system															
4a	Identifying functions															
4b	Database designing															
4c	Implementation															
4d	Unit testing															
4e	Integration testing															
5	Progress Presentation - I															
5a	Project Status document															
5b	Create presentation document															
5c	Progress Presentation – I (50%)															
6	Research Paper															
6a	Create the Research Paper															
7	Progress Presentation - II															
7a	Create presentation document															
7b	Progress presentation – II (90%)															
8	Final Report Submission															
8a	Final Report Submission															
8b	Application assessment															
8c	Project status document															
8d	Student logbook															
9	Final Presentation & Viva															
9a	Create final presentation															
9b	Final report submission															

5. Work Breakdown Chart

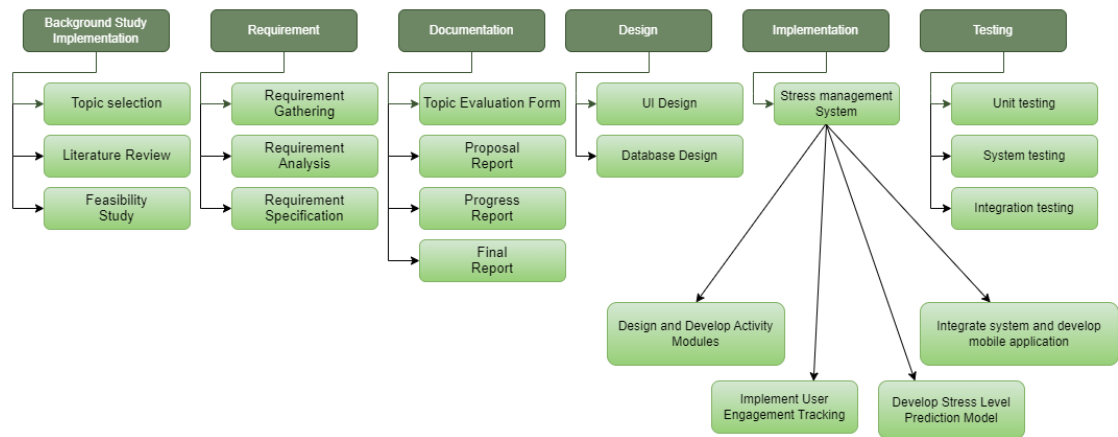


Figure 5 Work Breakdown Chart

6.Requirement Analysis

6.1 Functional Requirements

□ **Diverse Stress-Relief Activities:**

- **Activity Variety:** The app must offer a comprehensive selection of stress-relief activities, including yoga, meditation, art therapy, music therapy, and guided imagery. Each activity should be designed to address various aspects of stress, catering to different user preferences and needs. For instance, yoga sessions can range from gentle stretches to more intensive poses, while art therapy options might include mandala coloring and digital drawing exercises. Users should also have the option to customize their activity selections based on their current emotional state and personal preferences.

□ **User Progress Tracking:**

- **Daily Reminders:** The app must incorporate customizable notifications that gently remind users to engage in their chosen stress-relief activities. These reminders can be tailored to user preferences, including setting specific times for reminders or choosing from a variety of notification types (e.g., visual, auditory). The reminders should be designed to encourage consistent engagement without causing additional stress.
- **Engagement Logging:** The app must feature robust logging capabilities to accurately record user interactions with each activity. This includes tracking the duration, frequency, and type of activities completed. Detailed logs help users monitor their progress over time and provide data for personalized feedback and recommendations. The app should also support manual entry of activity details for users who engage in activities outside the app.

□ **Dynamic Stress Level Updates:**

- **Real-Time Adjustments:** The app must incorporate real-time data analysis to update and display the user's current stress level based on their activity engagement. This includes integrating biometric sensors (if available) or analyzing user-reported data to provide instant feedback on their well-being. The real-time updates should be presented in an easily understandable format, such as visual charts or progress bars, to help users gauge their stress levels and

adjust their activities accordingly.

□ **Data Analytics:**

- **Trend Analysis:** The system must employ advanced analytics to identify and interpret trends and patterns in user activity data. This analysis should focus on detecting changes in stress levels over time, evaluating the effectiveness of different activities, and recognizing any correlations between activity types and stress reduction. The insights gained from trend analysis should be used to generate actionable recommendations, such as suggesting new activities or modifying existing ones to better meet user needs.

6.2 Non-Functional Requirements

□ **Real-Time, Responsive Activity Tracking:**

- **Immediate Updates:** The system must deliver instantaneous and precise tracking of user activities, capturing data as it occurs. This involves leveraging real-time data processing technologies to ensure that all interactions, such as the duration of an activity or the complexity of mandala designs, are recorded with minimal latency. The tracking mechanism should be capable of handling high volumes of data and updates without performance degradation, providing users with accurate and up-to-date information about their engagement and progress.
- **Granular Data Collection:** The system should support detailed data collection, including metrics such as the frequency of activity engagement, session length, and variations in activity choices. This granular data allows for a deeper analysis of user behaviors and preferences, contributing to more tailored stress management recommendations.

□ **Dynamic Stress Level Updates:**

- **Real-Time Adjustments:** The system must continuously and automatically update and display stress levels based on ongoing user activity engagement. This involves integrating real-time analytics that reflect changes in user behavior and stress indicators promptly. For example, if a user engages in a calming activity, the system should immediately adjust and display a decrease in stress levels, providing instant feedback on the effectiveness of the activity.
- **Adaptive Feedback:** The stress level updates should be designed to adapt to changes in user behavior dynamically. For instance, if a user's stress level fluctuates due to external factors, the system should quickly adjust its feedback and recommendations to address these changes, ensuring that users receive relevant and timely guidance.

□ **Accessible Activities Without Extra Equipment:**

- **Ease of Access:** All stress-relief activities within the application should be designed to be performed without the need for additional equipment or resources. This ensures that users can easily participate in activities regardless of their location or available resources. For example, activities such as

mindfulness exercises, breathing techniques, and digital mandala coloring should be fully accessible within the app, eliminating the need for external tools or materials.

- **Inclusivity and Flexibility:** The design should prioritize inclusivity and flexibility, allowing users to engage in stress-relief activities in various environments and circumstances. The app should provide clear instructions and support to ensure that all activities are easy to follow and integrate seamlessly into users' daily routines.

□ **Simple, Engaging Feedback Mechanism:**

- **User-Friendly Interface:** The feedback mechanism should feature an intuitive and engaging interface that encourages users to interact and provide input effortlessly. This includes designing a clean and aesthetically pleasing layout with easy-to-navigate options for submitting feedback, tracking progress, and accessing recommendations. Visual elements such as interactive charts, progress bars, and motivational messages should enhance user engagement and satisfaction.

7.BUSINESS POTENTIAL.

The proposed AyurAura system showcases strong commercial potential within the rapidly expanding wellness and digital health sectors, effectively merging traditional Ayurvedic principles with advanced AI-driven solutions for stress management. The app's multifaceted commercialization strategy is meticulously crafted to maximize revenue, ensure broad adoption, and enhance user engagement.

1. **Monthly Subscription Model:** AyurAura will implement a freemium model, offering essential features for free, while premium functionalities are accessible through a monthly subscription priced at Rs.300. Premium offerings include advanced mandala art designs and exclusive guided meditation sessions and more. This competitively priced subscription is anticipated to attract a large user base, with the personalized nature of the services driving substantial growth in subscriptions, establishing a consistent revenue stream.
2. **Social Media Commercialization:** AyurAura's growth strategy will heavily leverage social media platforms to engage users and increase visibility. By curating content that aligns with the interests of wellness communities, the app can foster a loyal following. Strategies such as influencer collaborations, social media challenges, and campaigns promoting user-generated content are designed to boost brand awareness and app downloads. Moreover, targeted social media promotions will highlight the benefits of premium features, aiding in the conversion of free users into paying subscribers.
3. **Leveraging Hospital Partnerships:** Establishing partnerships with hospitals and healthcare providers presents a significant opportunity to integrate AyurAura into conventional healthcare practices. By offering a 50% discount on subscription fees to patients referred by hospitals, the app can be positioned as a key component of holistic post-treatment care, particularly for stress management. This partnership approach not only drives subscription growth but also bolsters the app's credibility within the healthcare sector, leading to a reliable stream of referrals and enhanced patient outcomes.

4. **Application Monetization:** In addition to subscription-based revenue, AyurAura is poised to generate income through in-app purchases, sponsored content, and strategic partnerships with wellness brands. Users will have the option to purchase additional services such as exclusive therapy sessions, custom art therapy kits, or Ayurvedic wellness products directly through the app. Collaborations with wellness brands for sponsored content and integrated offerings will open new revenue channels, while also enriching the user experience with complementary products and services.

8.BUDGET AND BUDGET JUSTIFICATION

Table 5 Budget Analysis

Category	Description	Estimated Cost
1. Internet	Cost for internet access required for research activities	8000.00
2. Stationary	Cost for research materials like notebooks, pens, etc.	3000.00
3. Documentation and Printing Cost	Cost for printing research reports, surveys, and other documents	4000.00
4. Server Cost	Cost for server usage for hosting research-related data	8000.00
5. Educational Survey Cost	Cost for online payments related to conducting surveys or gathering data	2000.00
6. Electricity	Cost for electricity used during research activities	5000.00
7. Transport	Cost for transportation to research sites or meetings	5000.00
Total Estimated Cost		35000.00

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