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Serenova - A Garden of Emotions for Well Being

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Abstract **- Emotions and mental health are a major determinant to the overall wellbeing and not everyone is able to manage their emotions being overwhelmed by daily stress and without the availability of the right tools. There are not interesting features in most of the present day mood tracking software and hence it is difficult to maintain them in long term. Serenova's answer is interactive technology to teach users to manage and perceive their emotions. With the help of ML, Serenova decodes the actions of users and the nature of emotions, and represented them as a visual garden in which the flowers represent positive feelings and the weeds, negative feelings. Mindfulness games and activities, which help to maintain emotional balance, are also provided in the application. Emotion tracking, visual feedback and interaction helps users gain insight into the emotional patterns and improve their mental health over the course of time with Serenova.**

Keywords: Mental health, Machine Learning, Emotion tracking, Visual feedback, Mindfulness.

I. INTRODUCTION

Mental health issues like stress and anxiety are increasingly common events in life and digital technologies can help with emotional well-being. Serenova is an AI-powered journaling app which uses transformer-based sentiment models to process the user's entries and depicts their emotions in the form of a visual garden: flowers for positive and weeds for negative emotions. Emotion management is facilitated through games and mindful activities, and elements such as progress tracking, streaks, and live data sync make it more consistent for users. Serenova uses AI, gamification and self-care techniques to encourage regular emotional reflection and mental health.

II. EXISTING SYSTEM

Most mood and mental health applications today are restricted in their ability to track mood and mental health because they involve simple input such as choosing a mood or logging. Most of the new apps that are out there to track mood and mental health are limited because they are based on a simple input, like selecting a mood or journaling, which can become repetitive and boring after a while. They may not be comprehensive enough to provide real-time analysis, AI capabilities, or even certain other features like mindfulness, breathing exercises, or physical activities in a single app, forcing the users to switch among various applications. Likewise, the lack of visual feedback, emotional tracking, and immersive experience can hinder users from gaining insight into their emotional patterns or from being motivated. Gamification features such as rewards, streaks, interactivity, and other such elements are crucial for creating a habit, as without them the user's engagement and effectiveness are reduced in the long term. This illustrates a clear need for more intelligent, dynamic and engaging solutions, such as the Serenova application.

III. PROPOSED SYSTEM

Serenova is an emotional wellness application based on the ML approach, which uses a transformer-based sentiment analysis model to analyze the entries from the user's journal. The detected emotions become pictorialized in a garden with flowers corresponding to positive feelings and weeds to negative ones. Users can remove weeds by playing games and mindfulness activities. The system also provides a dashboard to track journaling activity and emotional progress. It is done with the help of Flutter, Fast API, and Firebase for real-time features.

IV. METHODOLOGY

4.1 Architecture

It begins with the user typing a journal entry with the description of thoughts and feelings. This text is analyzed with the system based on natural language processing to identify emotions as positive, negative, or neutral. According to the outcome, the virtual garden is adjusted, the flowers symbolizing positive emotions and weeds the negative emotions. In case of the negative emotions, the user is advised to provide mindfulness exercises or games. Having fulfilled these activities, the weeds become flowers and are improved emotionally. Timelines and streaks are also part of the system to have the users maintain a regular emotional wellness.

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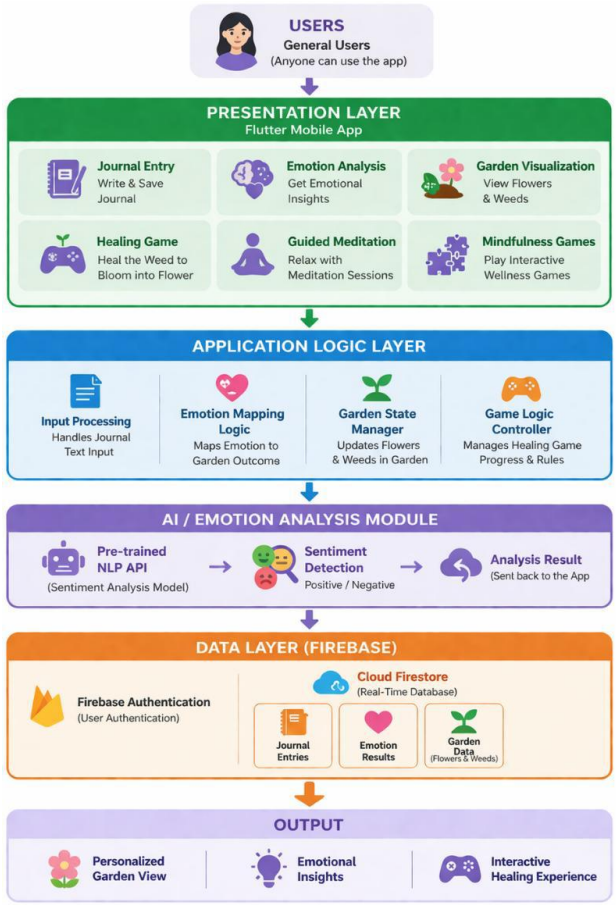
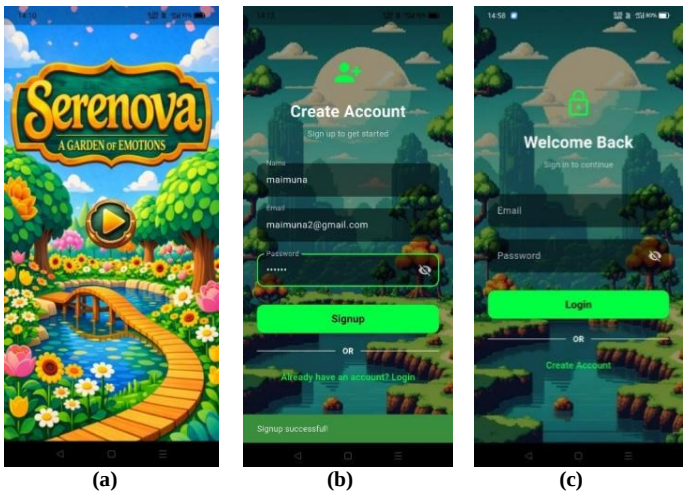


Figure 1: Architecture

4.2 Authentication and Database

Serenova's user login and registration is through Flutter-based user interface. Firebase Authentication securely validates credentials and creates unique user IDs. Journal entries, timestamps, number of flowers and weeds, and completed activity slots are stored in real time in Cloud Firestore.



(a) (b) (c)

Figure 2: (a) Landing page, (b) Signup, (c) Login

4.3 Journal Module

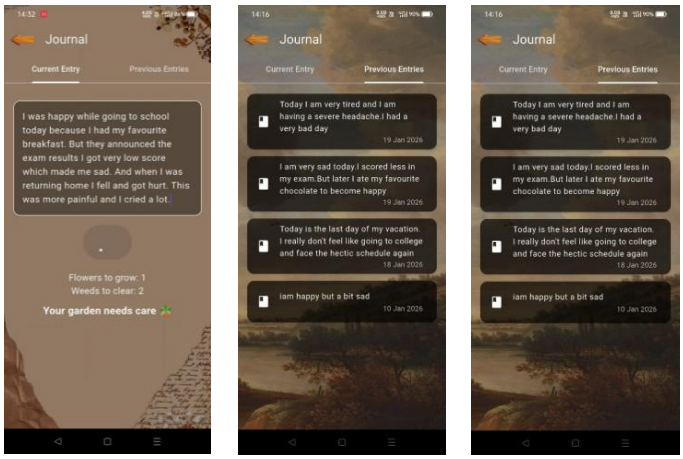
In the Journal module, users can write reflections, which are then analyzed with pre-trained RoBERTa models for sentiment analysis. The evaluated models are:

- DistilRoBERTa (82% accuracy)
- RoBERTa Base (88% accuracy)
- Twitter RoBERTa (93% accuracy)

Twitter RoBERTa was chosen because of its outstanding performance on emotional text. The NLP model produces Positive, Neutral, and Negative Sentiment Probabilities. The following formulas are used to get neutral scores as well, in which positive and negative scores are equally distributed:

- Final Positive Score = Positive +(Neutral/2).
- Final Negative Score = Negative +(Neutral/2)

These scores will be used to decide how many flowers and weeds will be located in the emotional garden. When the weeds are equal to or outnumber the flowers, the journaling is temporarily restricted so that they can maintain their emotional balance. Past journal entries are fetched from Firestore and shown in a chronological order.



(a) (b) (c)

Figure 3: (a) Journal Analysis, (b) Previous Journals, (c) Journal Lock

4.4 Garden Module

The Garden module is a visual representation of emotional states using the results of sentiment analysis, in the form of flowers and weeds. Flutter StreamBuilder and Cloud Firestore allow for real-time synced updates and syncing UI.

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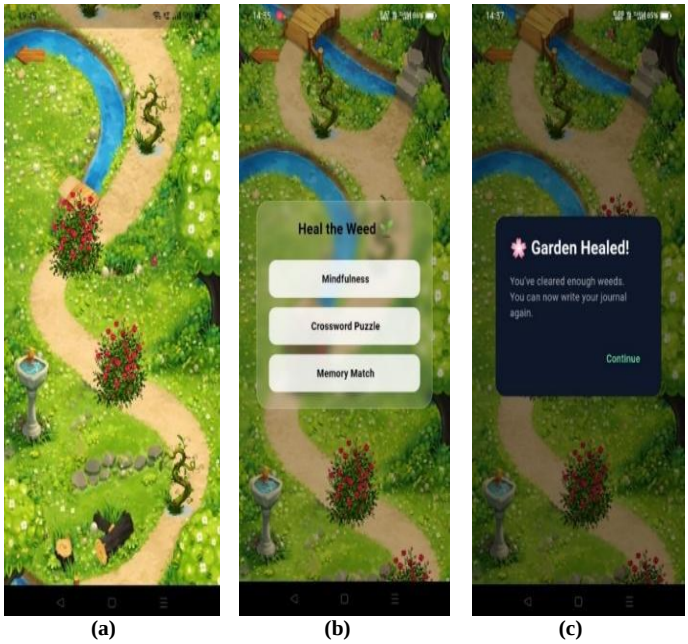


(a) (b) (c)

Figure 4: (a) Garden, (b) Select Activity, (c) Healed Garden

4.5 Games and Mindfulness Activities

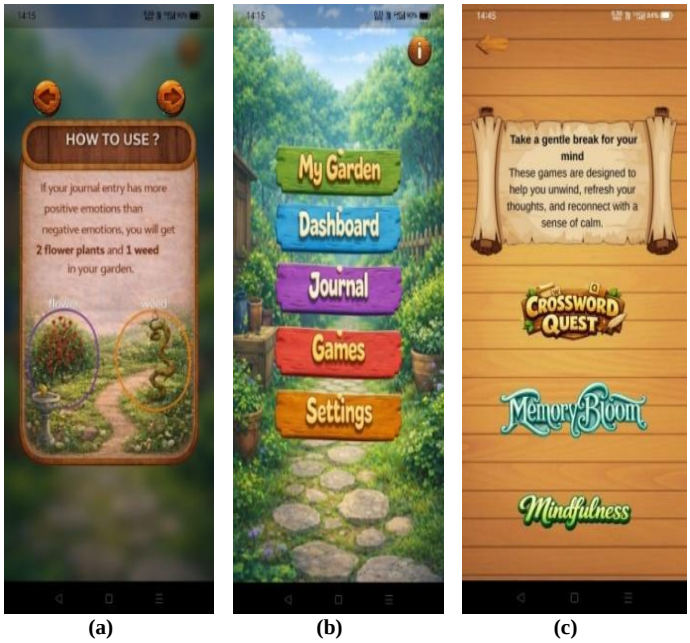
To enhance emotional balance, Serenova offers interactive features like Memory Match, Crossword puzzles and mindfulness exercises, etc. After completing these activities, the following events take place: The weeds are transformed into flowers in the garden interface.

(a) (b) (c)

Figure 5: (a) Memory Bloom, (b) Mindfulness, (c) Crossword Quest

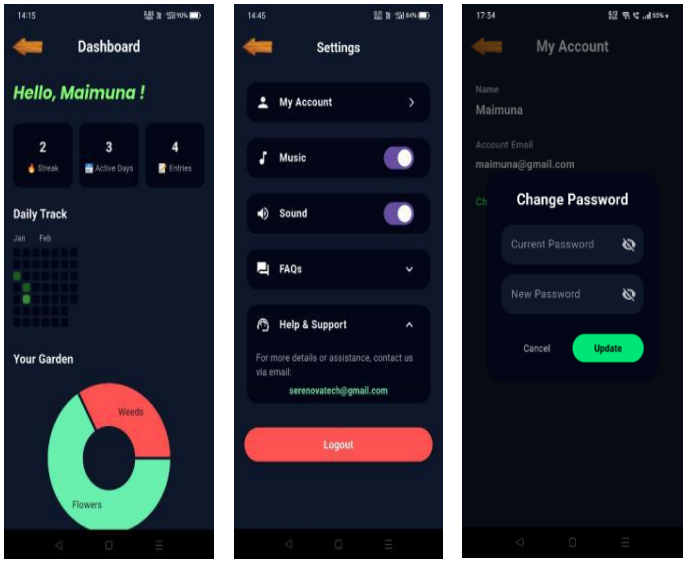
4.6 Additional Interfaces

It features a dashboard for activity visualization, instructions module for user guidance, and settings module for profile and preference management.



(a) (b) (c)

Figure 6: (a) Instructions, (b) Homepage, (c) Activities



(a) (b) (c)

Figure 7: (a) Dashboard (b) Settings, (c) My Account

4.7 Deployment and Technologies

The backend is created with Fast API, and the integration with the Hugging Face API is also created. The frontend is created with Flutter and Firebase Hosting. Firebase authentication, Cloud Firestore, and Roberta NLP models provide secure authentication, data storage, and sentiment analysis.

V. CONCLUSION

A combination of AI, emotion monitoring and interactive visualization, Serenova offers a novel approach to improving mental well-being. The platform can be utilized to

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comprehend how a person feels simply by portraying them as a visual garden of flowers portraying positive feelings, and weeds portraying negative feelings. The user will be encouraged to be more active and reflective by practicing mindfulness exercises and interactivity. In all, Serenova promotes emotional comprehension and empowers customers to take care of their mental well-being effectively.

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