Digital Journal W/ Mood Tracking

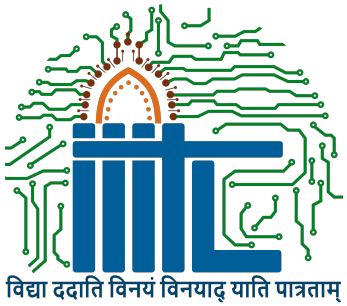
A project report submitted in partial fulfillment of the requirements for 6th sem

B.Tech. in Information Technology

by

Ayush Kumar LIT2020024
Shivam Chandra LIT2020064
Aman Anand LIT2020068
Aryan Mogha LIT2020071

under the guidance of
Dr. Niharika Anand



Indian Institute of Information Technology, Lucknow
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Declaration of Authorship

We, **Ayush Kumar [LIT2020024]**, **Shivam Chandra [LIT2020064], Aman Anand [LIT2020068]** and **Aryan Mogha [LIT2020071]**, declare that the work presented in "**[Digital Journal W/ Mood Tracking**" is our own. We confirm that:

- This work was completed entirely while in candidature for B.Tech. degree at Indian Institute of Information Technology, Lucknow.
- Where we have consulted the published work of others, it is always cited.
- Wherever we have cited the work of others, the source is always indicated. Except for the aforementioned quotations, this work is solely my/our work.
- We have acknowledged all major sources of information.

Signed:

(Ayush) (Shivam) (Aman) (Aryan)

Date:

CERTIFICATE

This is to certify that the work entitled "**[Digital Journal W/ Mood Tracking**" submitted by **Ayush Kumar [LIT2020024], Shivam Chandra [LIT2020064], Aman Anand [LIT2020068]** and **Aryan Mogha [LIT2020071]** who got his/her name registered on **Jul 2020** in partial fulfillment of 6th semester, Bachelor of Technology in Information Technology under Indian Institute of Information Technology, Lucknow during the year 2023, is absolutely based upon their own work under the supervision of **Dr. Niharika Anand**, Department of Information Technology, Indian Institute of Information Technology, Lucknow - 226 002, U.P., India that neither this work nor any part of it has been submitted for any degree/diploma or any other academic award anywhere before.

Dr. Niharika Anand
Assistant Professor(Information Technology)
Indian Institute of Information Technology, Lucknow
Pin - 226002, INDIA

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Lucknow
May 23

Ayush Kumar LIT2020024
Shivam Chandra LIT2020064
Aman Anand LIT2020068
Aryan Mogha LIT2020071

ABSTRACT

This project aims to explore the use of digital journal and mood tracking as a means of promoting mental health and wellbeing.The prevalence of mental health issues has been on the rise in recent years, and there is a growing need for effective and accessible interventions.Writing journals is considered to be an effective method of self-regulation intervention and has been associated with positive outcomes among medical population.

We thoroughly collected data on existing applications in this field over their features and limitations. Qualitative data collected through various surveys, statistics and tests conducted by national library of medicine.

After extensive research we found that though some journaling apps already exist in the market only a handful of them target mental health and incorporate journaling with other features to achieve the same and even less of them are intelligent enough to incorporate technologies like AI and NLP to detect mood.Some things are better executed by one app, but at the cost of neglecting other possible features that the competitors are offering.

Through our project we have tried to fill this gap by incorporating all the benefits these applications provide along with automatic mood detection with the help of sentiment-analysis.We also aim to integrate a GPT based chatbot for a chatbot with better conversational skills to feel more human. Users will also have option to keep their journals public if they would like to receive feedback from others.

Lastly, though this product can't completely replace professional help but can act as a great tool for people with mild issues.

Contents

Chapter 1

Introduction

1.0.1 Background and Context

Digital journal with mood tracking aka MoodJournal is relevant in the context of mental health and well-being. Mood journals are used to help individuals track their emotional states over time, which can help them identify patterns and triggers for mood changes, and develop strategies to manage their emotions.The use of mood journals is supported by research in the field of psychology, which has shown that keeping a mood journal can be an effective way to identify and manage emotions, reduce symptoms of anxiety and depression, and improve overall well-being.

1.0.2 Role of Self-Help Strategies in Promoting Mental Health

While there are many effective treatments for mental health conditions, such as therapy and medication, not everyone has access to or chooses to pursue professional treatment. Self-help strategies are an alternative approach that individuals can use to promote their mental well-being and manage symptoms of mental health conditions.These strategies can range from physical activities like exercise and mindfulness meditation to cognitive and emotional techniques like journaling and self-reflection. Research has shown that self-help strategies can be effective in reducing symptoms of depression and anxiety, improving self-esteem, and enhancing overall well-being. Mood journaling is one such self-help strategy that has gained popularity in recent years

1.0.3 Need for Mood Journal Application

Traditional mood journaling typically involves keeping a written diary or log of daily mood fluctuations and associated thoughts, feelings, and behaviors. However, with the proliferation of mobile devices and the increasing use of technology in daily life, there is a need for a more convenient and accessible way to track moods and emotions. This is where a mood journal application can be particularly useful.By leveraging the power of technology, a mood journal application can also provide users with real-time feedback, reminders, and insights based on their mood data, helping to promote self-awareness, positive behavior change, and improved mental well-being.

1.0.4 Problem Statement

There is no involvement of AI or NLP in the collection of mood for tracking purposes in any of these existing apps, though some of them use AI to calculate results or for chatbot purposes. Mood and emotions are simply tracked by directly asking the user for them as inputs.

1.0.5 Objectives

MoodJournal aims to fill this gap by incorporating all the benefits these applications provide along with automatic mood detection with the help of sentiment-analysis. We also aim to integrate a GPT based chatbot for a chatbot with better conversational skills to feel more human. Users will also have option to keep their journals public if they would like to receive feedback from others.

1.0.6 Scope

Methodology

The mood journal application will be developed using a software development approach that involves gathering requirements, designing and prototyping, implementation, testing, and deployment.Techstack used to build the web application include Reactjs, Nodejs, Expressjs, Firebase, MongoDB.

Data Collection

The mood journal application will allow users to input their emotional states by writing about their emotions. The application will store the data in a secure database for future analysis.

Analysis

The mood journal application will enable users to visualize their mood trends over time through the use of charts and graphs.

Overall, the scope of the mood journal project is to develop a digital tool that can help individuals manage their emotions and improve their mental well-being.

Chapter 2

Literature Review

2.0.1 Introduction

Digital journaling and mood tracking have become increasingly popular tools for individuals seeking to improve their emotional well-being.The development of digital mood journal applications has made it easier than ever for individuals to track their moods and monitor their mental health. In this literature review, we will examine the research we did on mood journal applications and their effectiveness in improving mental health outcomes.

2.0.2 Search Strategy

We conducted a search of multiple databases including PubMed, PsychINFO, and Google Scholar using the keywords "mood journal application", "digital mental health tools", "mood tracking", and "mental health outcomes". We also examined the reference lists of relevant articles to identify additional sources.

2.0.3 Summarization

Online Positive Affect Journaling in the Improvement of Mental Distress and Well-Being [3]

Background

Positive affect journaling (PAJ), an emotion-focused self-regulation intervention, has been associated with positive outcomes among medical populations. It may be adapted for Web-based dissemination to address a

need for scalable, evidence-based psychosocial interventions among distressed patients with medical conditions.

Objective

This study aimed to examine the impact of a 12-week Web-based PAJ intervention on psychological distress and quality of life in general medical patients.

Methods

A total of 70 adults with various medical conditions and elevated anxiety symptoms were recruited from local clinics and randomly assigned to a Web-based PAJ intervention (n=35) or usual care (n=35). The intervention group completed 15-min Web-based PAJ sessions on 3 days each week for 12 weeks. At baseline and the end of months 1 through 3, surveys of psychological, interpersonal, and physical well-being were completed.

Results

Patients evidenced moderate sustained adherence to Web-based intervention. PAJ was associated with decreased mental distress and increased well-being relative to baseline. PAJ was also associated with less depressive symptoms and anxiety after 1 month and greater resilience after the first and second month, relative to usual care.

Conclusion

Web-based PAJ may serve as an effective intervention for mitigating mental distress, increasing well-being, and enhancing physical functioning among medical populations. PAJ may be integrated into routine medical care to improve quality of life.

To get a full view of the research you can check out the Bibliography section

2.0.4 Critique

While existing research suggests that mood journal applications can be effective in improving mental health outcomes, some studies have limitations. For example, many studies have small sample sizes and limited

follow-up periods. Additionally, the specific features and capabilities of mood journal applications that lead to the greatest improvements in mental health outcomes are not well understood.

2.0.5 Market Research for MVP

We did our own research related to the Market Landscape and need for such a web application .

We found that roughly 56 million Indians suffer from depression and 38 million suffer from some anxiety disorder and 300 million globally.

Some potential target markets for mood tracking app:

- Individuals with mental health conditions such as anxiety, depression.
- Those interested in emotional well-being and self-care.
- Healthcare providers and therapists as a part of their clinical practice.
- Employers and workplace wellness programs.
- General users interested in self-awareness and personal growth.
- Children with learning or social interaction challenges.
- Tackle substance abuse.

These users can use the app as a tool to monitor their moods, identify patterns, and gain insights into their emotional well-being. Moreover, according to World Health Organisation (WHO), India's mental health workforce is severely understaffed, this product though can't completely replace professional help but can act as a great tool for people with mild issues.

Also, recent events such as lockdown during COVID-19 pandemic saw increase in number of people looking for such products due to increase in overall anxiety in the population and people not being able to follow up with their therapists directly due to safety restrictions.

Competitive Landscape

Though some journaling apps already exist in the market only a handful of them target mental health and incorporate journaling with other features to achieve the same and even less of them are intelligent enough to incorporate technologies like AI and NLP to detect mood.

We tried compiling a few applications which as closer to Digital Journal W/ Mood Tracking in their implementation and target the same user base.

Summarising the features in a tabular format here:

Table 2.1: Features of Apps related to Mood tracking and digital journal

Features	**Reflectly**	**Wysa**	**Youper**	**Daylio**	**eMoods**
Automatic Mood Detection	No	No	No	No	No
Public/Shareable Journals	No	No	No	No	Yes
Graphical Tracking of Moods	Yes	No	Yes	Yes	Yes
Chatbot Integration	No	Yes	Yes	No	No
Professional Therapist Support	No	Yes	No	No	No
CBT	No	Yes	Yes	No	No
Mood Tracker	Yes	Yes	Yes	Yes	Yes
Medication Tracker	No	No	No	No	Yes
Sleep Tracker	No	No	No	No	Yes
Self-help exercises	No	Yes	Yes	No	No
Crisis Support	No	Good	Minimal	No	No
Price	Rs.1750/year	Rs.4999/year	$69.99/year	Rs.960/year	$5/month - $10/month

2.0.6 Synthesis

Overall, existing research suggests that mood journal applications can be effective tools for improving mental health outcomes. However, more research is needed to identify the specific features and capabilities that lead

to the greatest improvements in mental health outcomes. Additionally, larger, more robust studies with longer follow-up periods are needed to fully understand the effectiveness of mood journal applications.

2.0.7 Conclusion

In conclusion, mood journal applications have the potential to be effective tools for improving mental health outcomes. However, more research is needed to fully understand their effectiveness and identify the specific features and capabilities that lead to the greatest improvements in mental health outcomes. This literature review will inform the development of a new mood journal application that incorporates evidence-based features and capabilities to improve mental health outcomes.

Chapter 3

Methodology

3.0.1 Technology Stack

Front-end: ReactJS, which is a popular JavaScript library for building user interfaces.
Back-end: NodeJS and ExpressJS, which are widely used for server-side development in JavaScript.
Database: MongoDB, a NoSQL database for storing user data.
Authentication: Firebase, a widely used authentication service for user authentication and authorization.
We are using a npm package called 'concurrently' which enables us to run the client and the server side on a same terminal at the same time.

3.0.2 Project Development

The development of the web app follows an Agile methodology, with iterative development cycles and regular updates to the project backlog. Git, a widely used version control system, is used for source code management, and the project is hosted on a remote repository of GitHub.

3.0.3 Sentiment Analysis Algorithm [2]

The Natural Language Processing (NLP) package from NodeJS called 'natural' provides a sentiment analysis algorithm that is used in the Mood Journal web app to calculate the sentiment of a piece of text (diary entry). The algorithm works by summing the polarity of each word and normalizing it with the length of the sentence.

The sentiment analysis algorithm uses AFINN-165, a list of English words rated for valence with an integer between -5 (negative) and +5 (positive), as the vocabulary for sentiment analysis. This package is integrated into the web app's back-end, which is built using NodeJS and ExpressJS.

The sentiment analysis algorithm is a crucial feature of the web app, as it allows users to track their mood over time and gain insights into their emotional well-being. By analyzing the sentiment of diary entries, users can understand their emotional patterns and take steps to improve their mental health.

In summary, the NLP package from NodeJS provides a powerful sentiment analysis algorithm that is essential to the Mood Journal web app's functionality. By integrating this algorithm into the web app's back-end, users can track their mood and gain insights into their emotional well-being, helping them to improve their mental health.

If we have set some ranges judging on the range of value the algorithm outputs, we have divided feelings in 5 categories, i.e. Very Negative, Negative, Neutral, Positive, Very Positive. And we have classified feelings having value greater than 0.5 as Very Positive, greater than 0 but less than 0.5 as Positive. Similarly, for values less than -0.5 it is very negative and for values greater than -0.5 but less than 0 as Negative.

3.0.4 Technical Implementation of Sentiment Analysis

Currently mood journal is using 'natural' (https://www.npmjs.com/package/natural) to analyse text for sentiments, natural has hardcoded valence for words using AFINN lexicon which is used to calculate sentiment for the given piece of text.

```
const natural = require("natural");
const aposToLexForm = require("apos-to-lex-form");
const SpellCorrector = require("spelling-corrector");
const SW = require("stopword");
const spellCorrector = new SpellCorrector();
spellCorrector.loadDictionary();
const analyze = (content) => {
const lexedContent = aposToLexForm(content);
const casedContent = lexedContent.toLowerCase();
const alphaOnlyContent = casedContent.replace(/[^a-zA-Z\s]+/g, "");
```

```
const { WordTokenizer } = natural;
const tokenizer = new WordTokenizer();
const tokenizedContent = tokenizer.tokenize(alphaOnlyContent);
tokenizedContent.forEach((word, index) => {
tokenizedContent[index] = spellCorrector.correct(word);
});
const filteredContent = SW.removeStopwords(tokenizedContent);
const { SentimentAnalyzer, PorterStemmer } = natural;
const analyzer = new SentimentAnalyzer("English", PorterStemmer, "afinn");
const analysis = analyzer.getSentiment(filteredContent);
return analysis;
};
module.exports = analyze;
```

In future, based on user testing we will comparing other methods of sentiment analysis as well such as pretrained Tensorflow.js models and the more accurate method of analysis will be adopted.

3.0.5 Public and Private Journals

Users can choose to make their diary entries public or private according to their preference. Public journals can be read by other users as well, while private journals are only visible to the respective user.

3.0.6 Data Collection and Storage

The web app collects and stores diary entries, mood data, and user preferences such as public/private entries using Firebase and MongoDB databases.

3.0.7 Graph and Calendar Insights

The web app provides users with insights into their mood over a period of time through graphs and calendars. ApexCharts, a React library for creating interactive charts, is used to display mood trends graphically. FullCalendarReact, a React library for displaying calendars, is used to show mood entries on a calendar.

3.0.8 Uplift Section

The web app has a section called "Uplift" which provides guided meditation. The guided meditation is based on UCLA Health guided meditation sessions and aims to help users improve their mood.

3.0.9 Therapist Bot

The web app includes a Therapist Bot that takes text inputs from users about their feelings and provides solutions to lift their mood. The Therapist Bot uses the GPT-3.5 turbo model from OpenAI, which is optimized for the app's requirements. GPT-3.5 Turbo is part of the Large Language Model (LLM) AI, which can understand and generate natural language or code.

3.0.10 Technical Implementation of Therapist Bot

Following is a code snippet of a express server acting as a therapist bot. We have incorporated this in our app to link OpenAI's GPT [1] to our app to provide a more human interaction as a therapist-bot.

```
const express = require("express");
require("dotenv").config();
const { Configuration, OpenAIApi } = require("openai");
const bodyParser = require("body-parser");
const app = express();
app.use(bodyParser.json());
const configuration = new Configuration({
apiKey: process.env.OPEN_AI_KEY,
});
const openai = new OpenAIApi(configuration);
app.post("/analyze-sentiment", async (req, res) => {
try {
const { prompt } = req.body;
const response = await openai.createChatCompletion({
model: "gpt-3.5-turbo",
messages: [
{
role: "system",
content:
"You are a mental therapist bot, you are supposed to help people feel
```

```
better and help them with their psychological issues. ",
},
{ role: "user", content: `${prompt}` },
{
role: "assistant",
content:
"Provide insights based on the given prompt to help the user overcome
their issues.",
},
],
max_tokens: 64,
temperature: 0,
top_p: 1.0,
frequency_penalty: 0.0,
presence_penalty: 0.0,
stop: ["\n"],
});
return res.status(200).json({
success: true,
data: response.data.choices[0].message.content,
});
} catch (error) {
return res.status(400).json({
success: false,
error: error.response
? error.response.data
: "There was an issue on the server",
});
}
});
const port = process.env.PORT || 5000;
app.listen(port, () => console.log(`Server listening on port ${port}`));
```

3.0.11 Testing and Deployment

The web app undergoes rigorous testing to ensure its functionality, performance, and security. Unit testing, integration testing, and end-to-end testing are conducted using appropriate testing frameworks and tools. Once the testing phase is complete, the web app is deployed to a production environment on a cloud platform called Vercel integrated with github.

3.0.12 Evaluation

To evaluate the effectiveness of our Mood Journal, we will conduct user surveys and collect feedback from users regarding the accuracy of the sentiment analysis, usefulness of the mood tracking feature,any issues or bugs and effectiveness of the therapist bot in providing uplifting

suggestions. We will also compare the average polarity scores with the user's self-reported mood to assess the accuracy of our sentiment analysis.User feedback is considered for further enhancements and updates to the web app.

3.0.13 Ethical Considerations

The web app ensures user privacy and data security by following industry standards and best practices for data handling and storage. User consent is obtained for collecting and using their data. The web app also provides proper attribution and follows terms of service and usage guidelines of third-party APIs and libraries used in the project.

In conclusion, the methodology for the Mood Journal Web App project involves using a technology stack consisting of ReactJs, NodeJs, ExpressJs, Firebase, and MongoDB, implementing a sentiment analysis algorithm based on a vocabulary of polarized words, allowing users to make entries public or private, providing insights through graphs and a calendar, incorporating a Therapist Bot powered by the GPT-3.5 Turbo model from OpenAI, following agile development practices, conducting user testing, and ensuring ethical considerations throughout the development process.

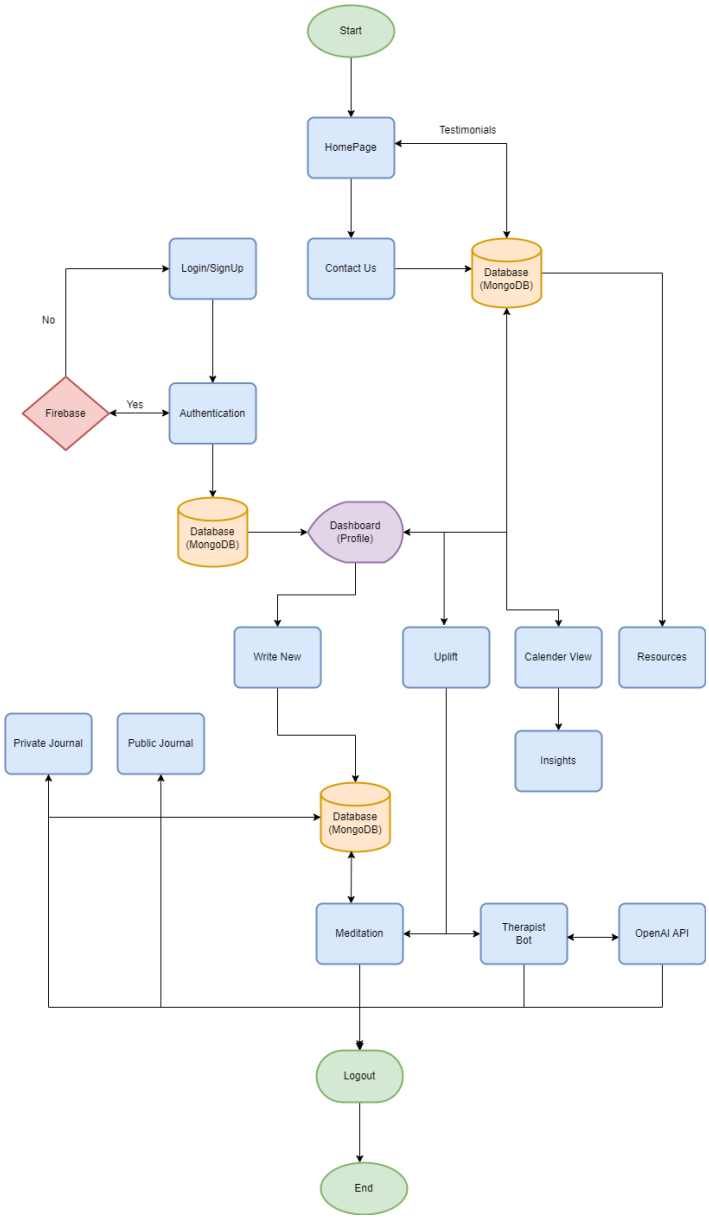
3.0.14 Directory Tree/File Structure

```
|-- client
|   |-- package.json
|   |-- package-lock.json
|   |-- public
|   |   |-- favicon.ico
|   |   |-- index.html
|   |   |-- logo192.png
|   |   |-- logo512.png
|   |   |-- manifest.json
|   |   |-- robots.txt
|   |-- README.md
|   |-- src
|   |   |-- App.css
|   |   |-- App.js
|   |   |-- assets
|   |   |   |-- 404.svg
```

```
|   |   |   |-- airobot.json
|   |   |   |-- audios.js
|   |   |   |-- calendar.svg
|   |   |   |-- contact.svg
|   |   |   |-- Forgot password.svg
|   |   |   |-- header_image.svg
|   |   |   |-- icon-4.png
|   |   |   |-- icon-5.png
|   |   |   |-- login.svg
|   |   |   |-- meditation.svg
|   |   |   |-- MeditationUplift.svg
|   |   |   |-- poetry.svg
|   |   |   |-- Psychologist.svg
|   |   |   |-- reading.svg
|   |   |   |-- signup.svg
|   |   |   |-- smiley_calendar.png
|   |   |   |-- typing.svg
|   |   |-- components
|   |   |   |-- animations
|   |   |   |   |-- AIRobot.jsx
|   |   |   |-- AudioPlayer.jsx
|   |   |   |-- Calendar.jsx
|   |   |   |-- ControlledCarousel.jsx
|   |   |   |-- DashboardLayout.jsx
|   |   |   |-- GraphView.jsx
|   |   |   |-- NavigationBar.jsx
|   |   |   |-- PostCardView.jsx
|   |   |   |-- PostCommentView.jsx
|   |   |   |-- ProtectedRoute.jsx
|   |   |   |-- Quotes.jsx
|   |   |   |-- Sidebar.jsx
|   |   |   |-- styles.scss
|   |   |   |-- Testimony.jsx
|   |   |-- config
|   |   |   |-- firebase.js
|   |   |-- contexts
|   |   |   |-- UserAuthContext.js
|   |   |-- index.css
|   |   |-- index.js
|   |   |-- pages
|   |   |   |-- AddReview.jsx
```

```
|   |   |   |-- auth
|   |   |   |   |-- ForgotPassword.jsx
|   |   |   |   |-- LogIn.jsx
|   |   |   |   |-- SignUp.jsx
|   |   |   |-- ContactUs.jsx
|   |   |   |-- dashboard
|   |   |   |   |-- Insights.jsx
|   |   |   |   |-- PostViewPage.jsx
|   |   |   |   |-- PrivateJournals.jsx
|   |   |   |   |-- PublicJournals.jsx
|   |   |   |   |-- Uplift.jsx
|   |   |   |   |-- WriteNew.jsx
|   |   |   |-- Home.jsx
|   |   |   |-- NotFound.jsx
|   |   |-- reportWebVitals.js
|   |   |-- utils
|   |       |-- formatDate.js
|-- package.json
|-- package-lock.json
|-- README.md
|-- server
    |-- config
    |   |-- db.js
    |-- index.js
    |-- middleware
    |   |-- authMiddleware.js
    |-- models
    |   |-- Comment.js
    |   |-- Post.js
    |   |-- Testimonial.js
    |   |-- User.js
    |-- routes
    |   |-- authRoutes.js
    |   |-- commentRoutes.js
    |   |-- miscRoutes.js
    |   |-- postRoutes.js
    |-- utils
        |-- nlp.js
```

3.0.15 Process Flow Diagram

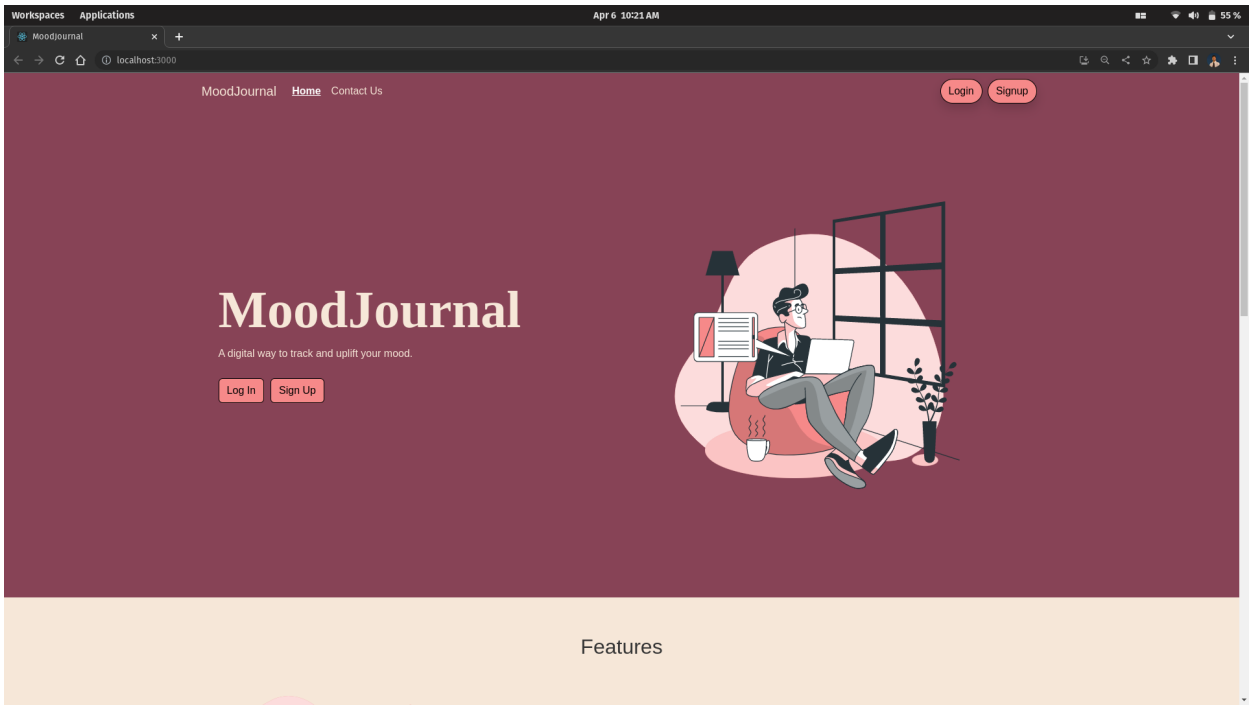


Chapter 4

Simulation and Results

In this section we will going over all the part of our app one by one simulating a user's workflow. After loading up the website, user will be greeted by the home screen.

4.0.1 Home Page



The home page provides users with introduction to all the features offered. With options to Login/Signup (if not already logged in) either with

email/password or using Google Auth. We are leveraging Firebase for this.

4.0.2 Sign Up

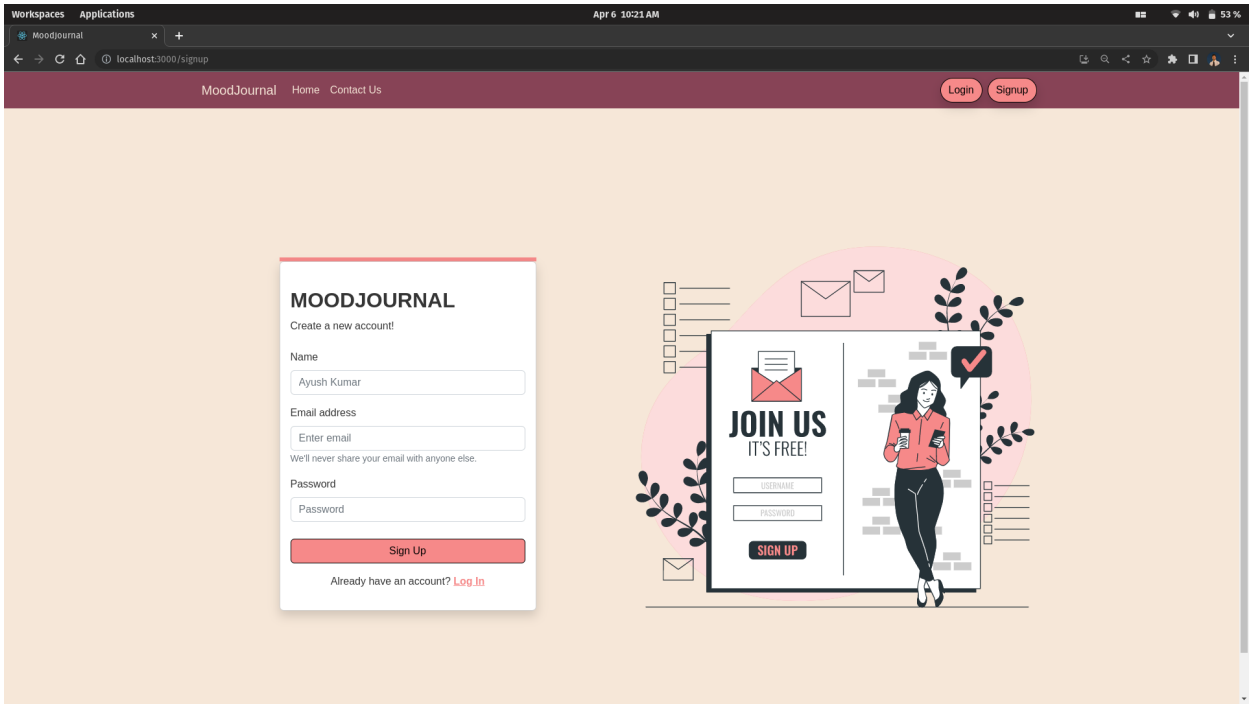


Figure 4.1: Sign-up Page

4.0.3 Login Page

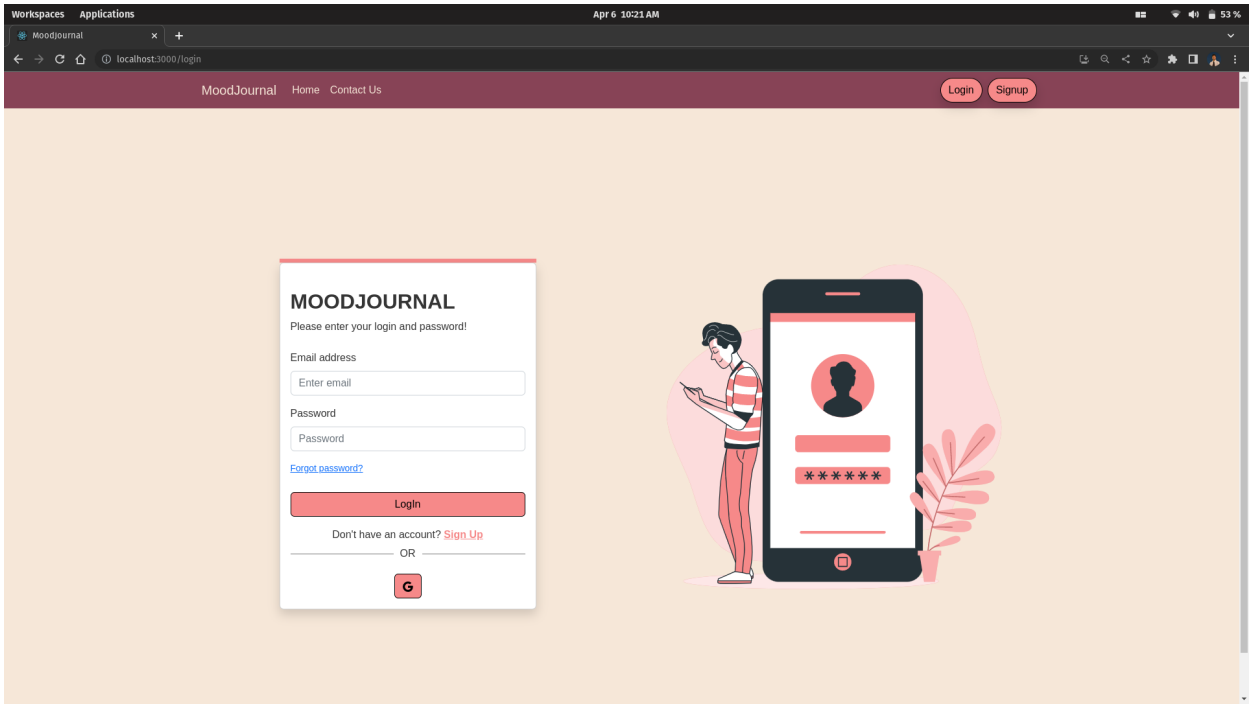


Figure 4.2: Login Page

This page provides options to login either with credentials or with Google Auth. This also has a redirect to forgot password page, just in case.

4.0.4 Forgot Password

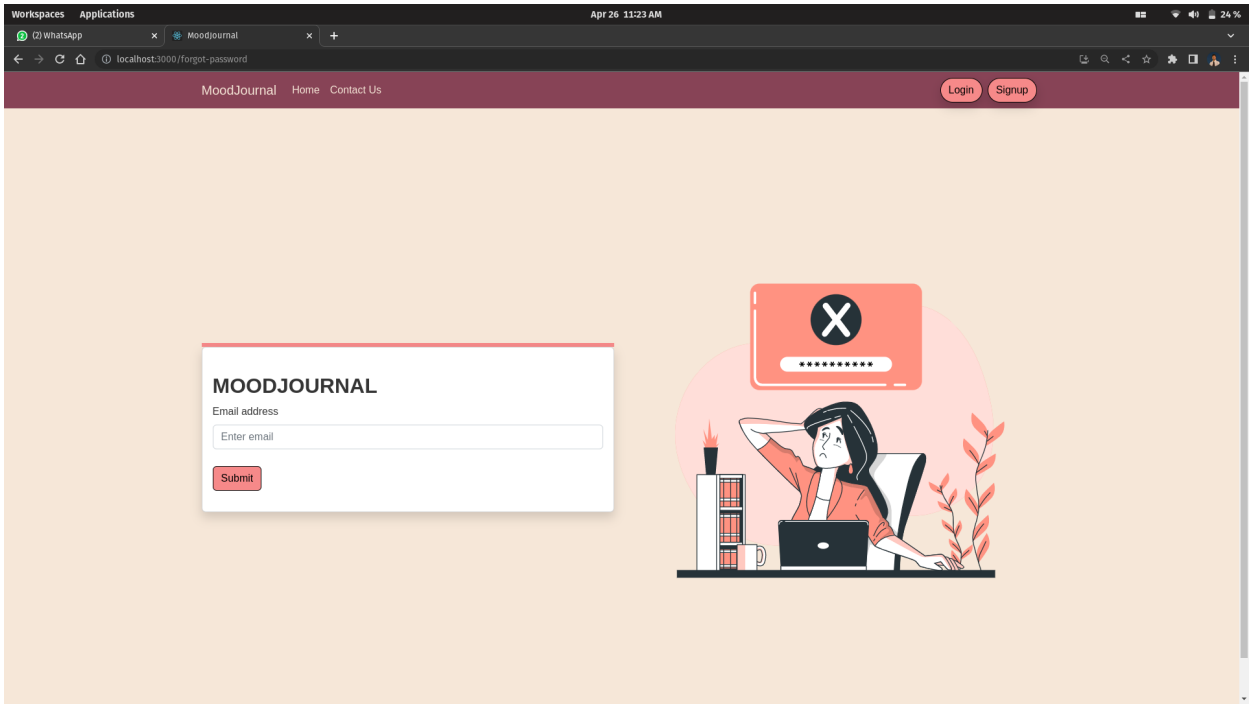


Figure 4.3: Forgot Password page

4.0.5 Contact us

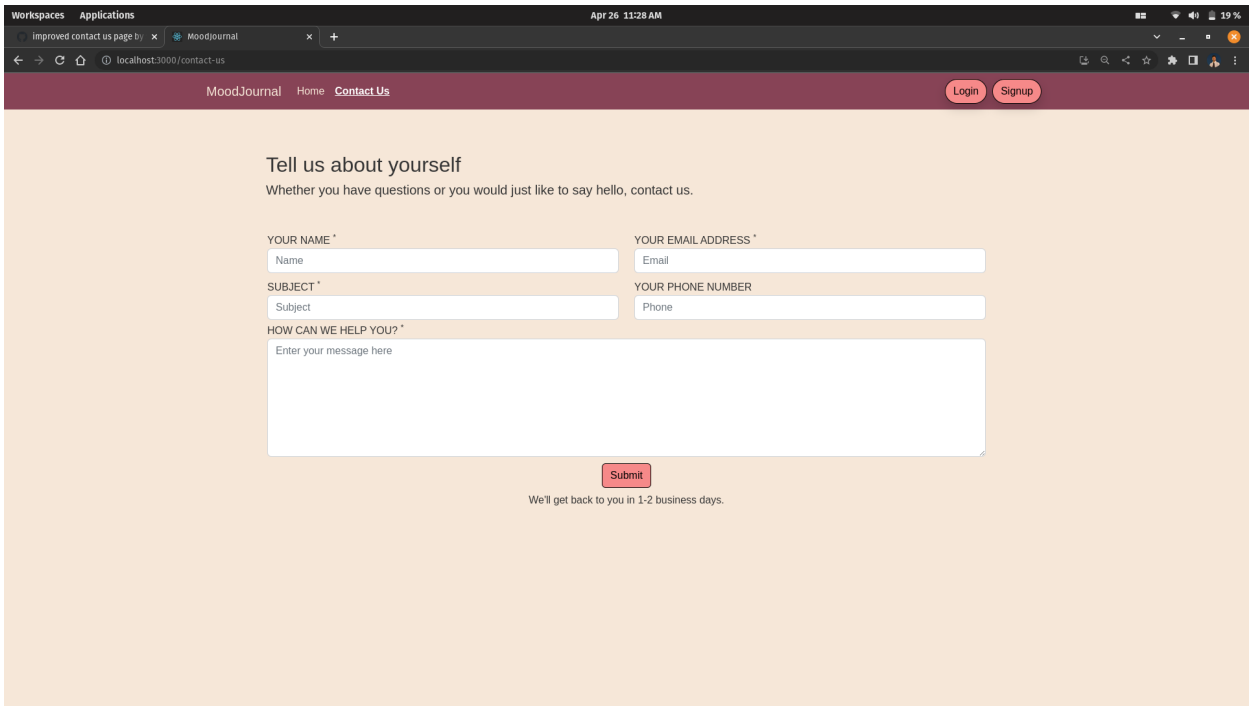
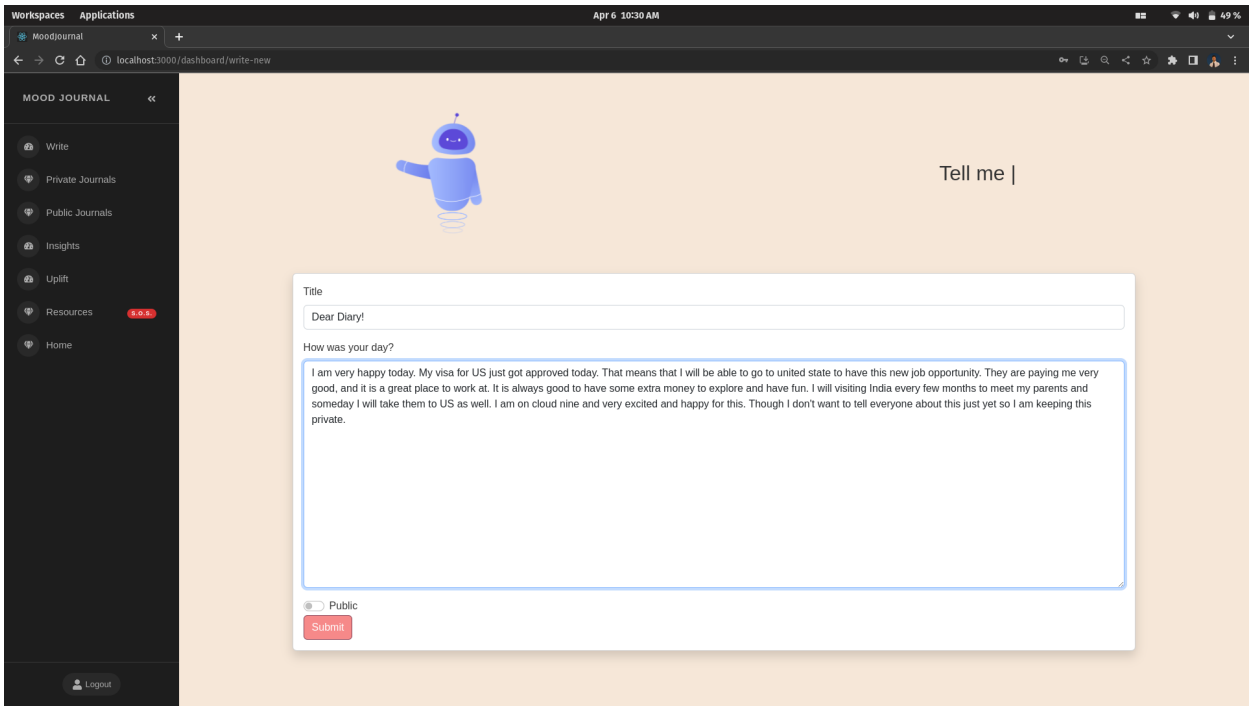


Figure 4.4: Contact Us page

This page has a form for users to share feedback or complaints. The form is directly submitted as an email to our support email which is later responded to manually.

4.0.6 Write New Post



This page takes input of the entry from the user. The input when submitted is posted to the express server and then ran through the sentiment-analysis algorithm. The calculated score of the content along with other details and then added to the MongoDB interface.

Example:
I spent the day with my family and friends at a local park. We had a picnic and played games together, and I felt so happy and grateful to have such wonderful people in my life. The sun was shining and the birds were singing, and I felt like everything was perfect in that moment.
Valence: 0.52

I had been working at my job for years, but I was recently let go due to budget cuts. I felt a sense of sadness and uncertainty about my future. I didn't know how I was going to pay my bills or support myself without a steady income.
Valence: -0.17

4.0.7 Private Journal

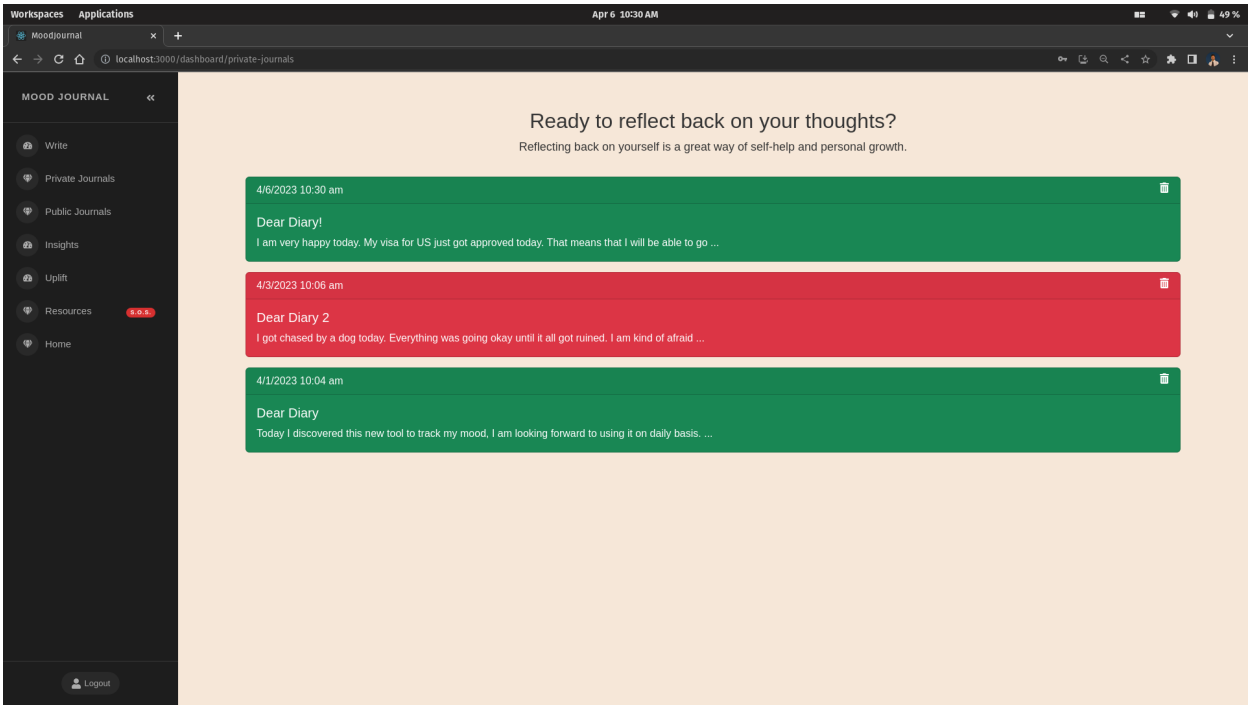


Figure 4.5: Private Journals

This page has all the private visibility post submitted by the user. This lets user to later reflect on their thoughts. It is proved to be a great method of self-help. The posts are color coded based on their sentiment, red for a negative sentiment, yellow for neutral and green for a postive sentiment. This lets user target the posts directly based on the type of content they want to read.

4.0.8 Public Journal

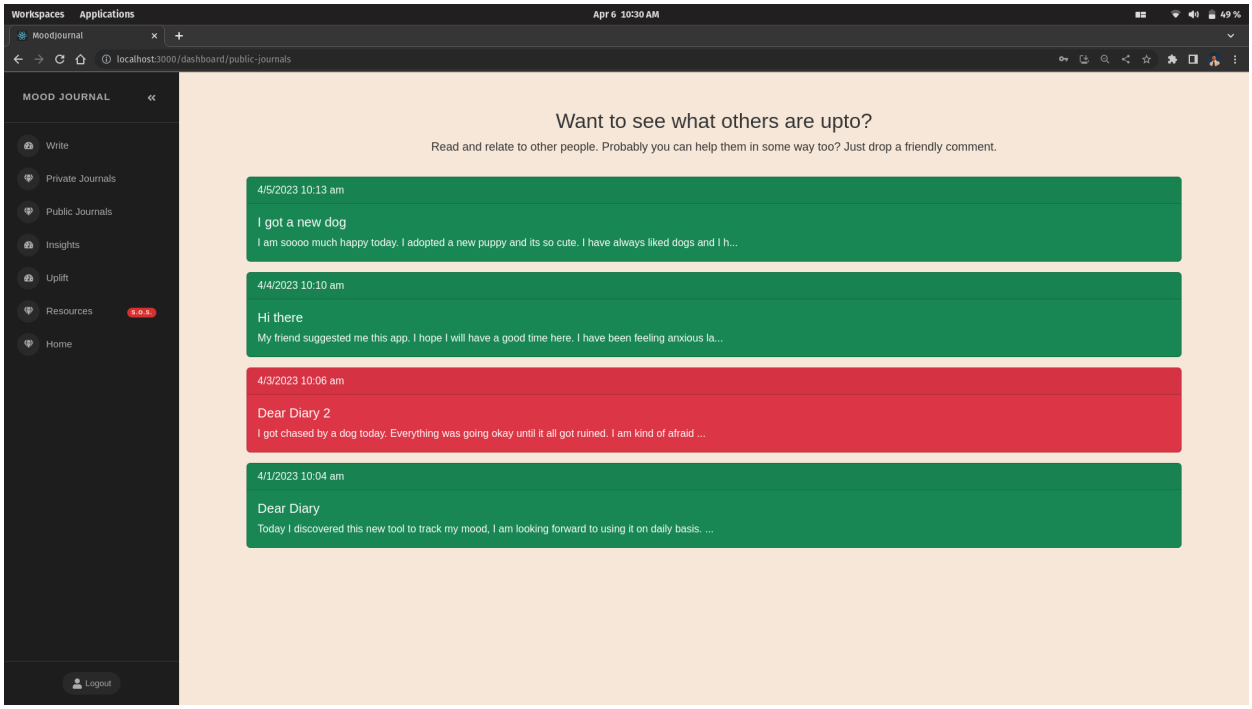


Figure 4.6: Public Journals

This page has all the public visibility post submitted by the user. This lets user to relate to others or provide a friendly positive feedback to each other as comments. The posts are color coded based on their sentiment, red for a negative sentiment, yellow for neutral and green for a postive sentiment. This lets user target the posts directly based on the type of content they want to read.

4.0.9 Post View

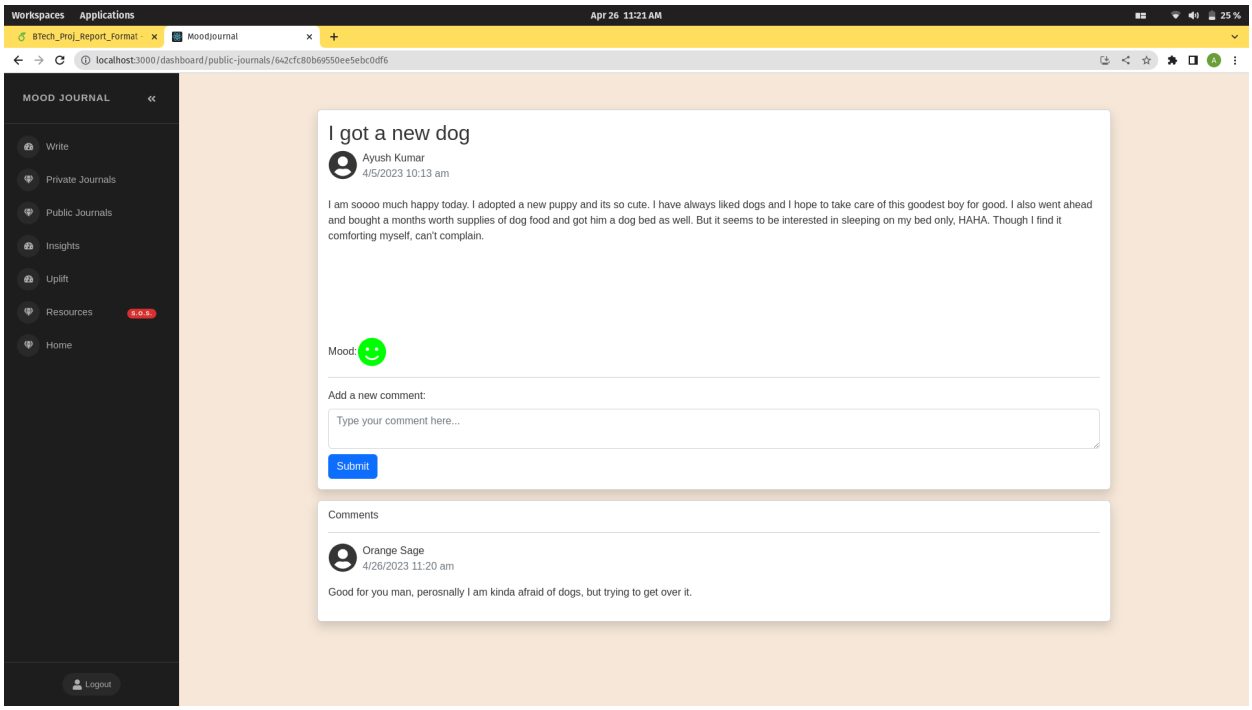


Figure 4.7: Post view page

This is the page shows the actual post by the user. This has color-coded emoticons as visual representation based on the sentiment-analysis algorithm for easier reference. Users can also comment on their or other's posts(if public) to provide a friendly feedback.

4.0.10 Calender View

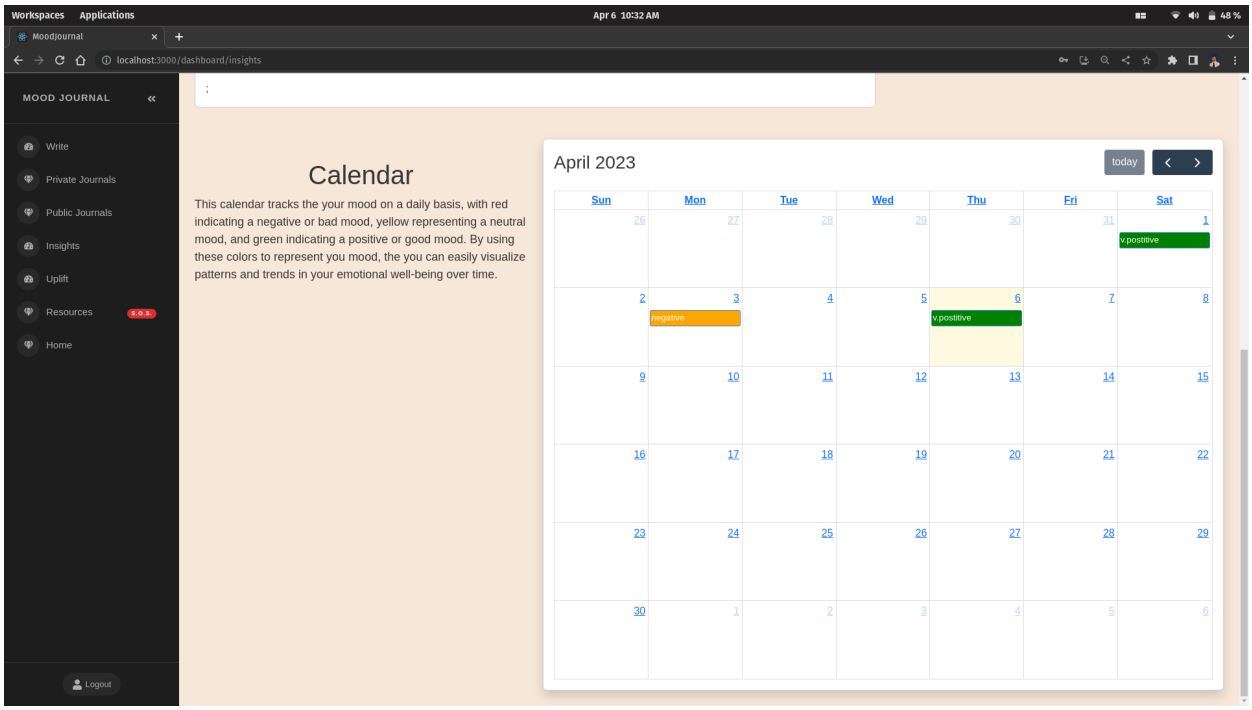


Figure 4.8: Calendar Component

This calendar tracks the your mood on a daily basis, with red indicating a negative or bad mood, yellow representing a neutral mood, and green indicating a positive or good mood. By using these colors to represent you mood, the you can easily visualize patterns and trends in your emotional well-being over time.

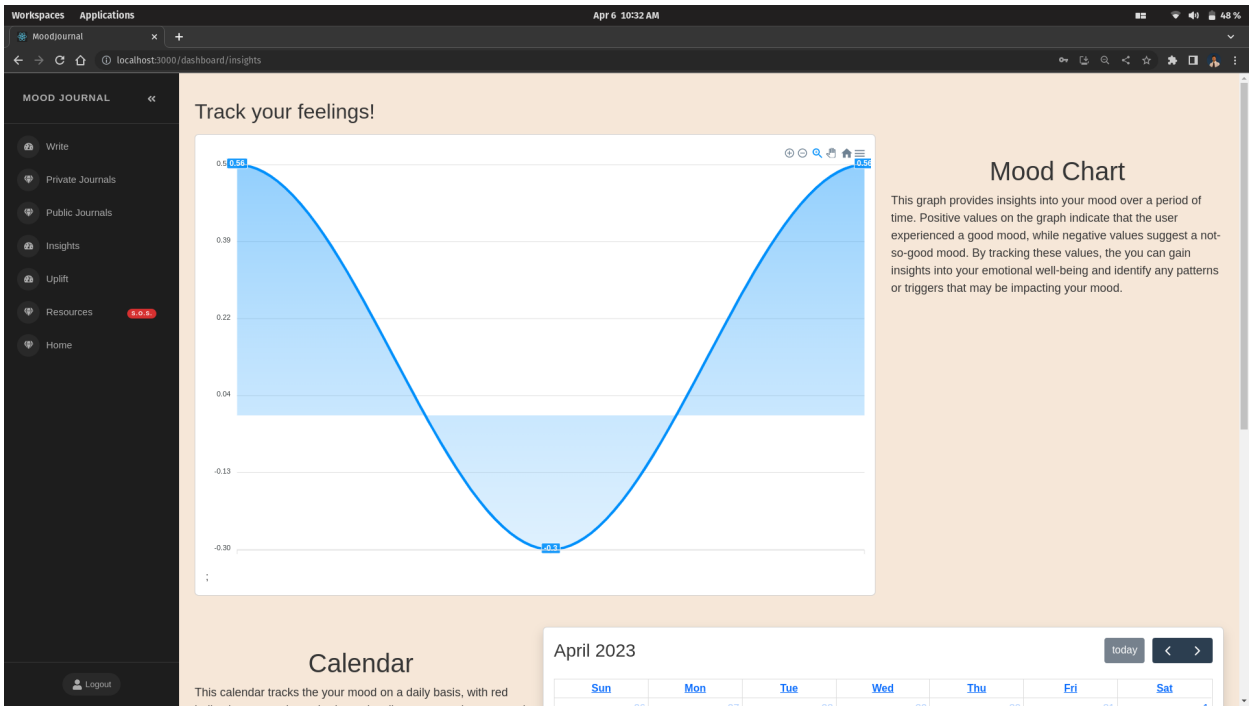


Figure 4.9: Graph Component

This graph provides insights into your mood over a period of time. Positive values on the graph indicate that the user experienced a good mood, while negative values suggest a not-so-good mood. By tracking these values, the you can gain insights into your emotional well-being and identify any patterns or triggers that may be impacting your mood.

These records can be shared with a professional therapist and can help you get a more informed feedback. Many therapists already recommend tracking your thoughts and emotions and this tool can greatly ease the process.

4.0.11 Uplift Section

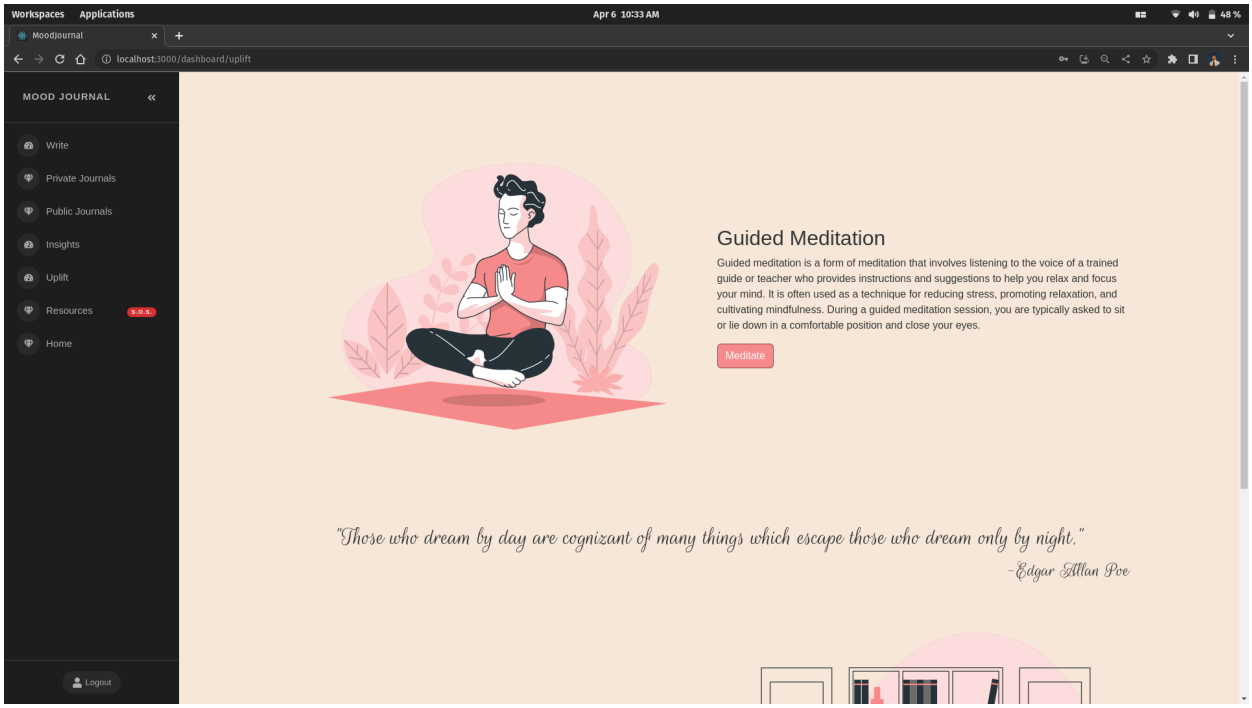


Figure 4.10: Example image

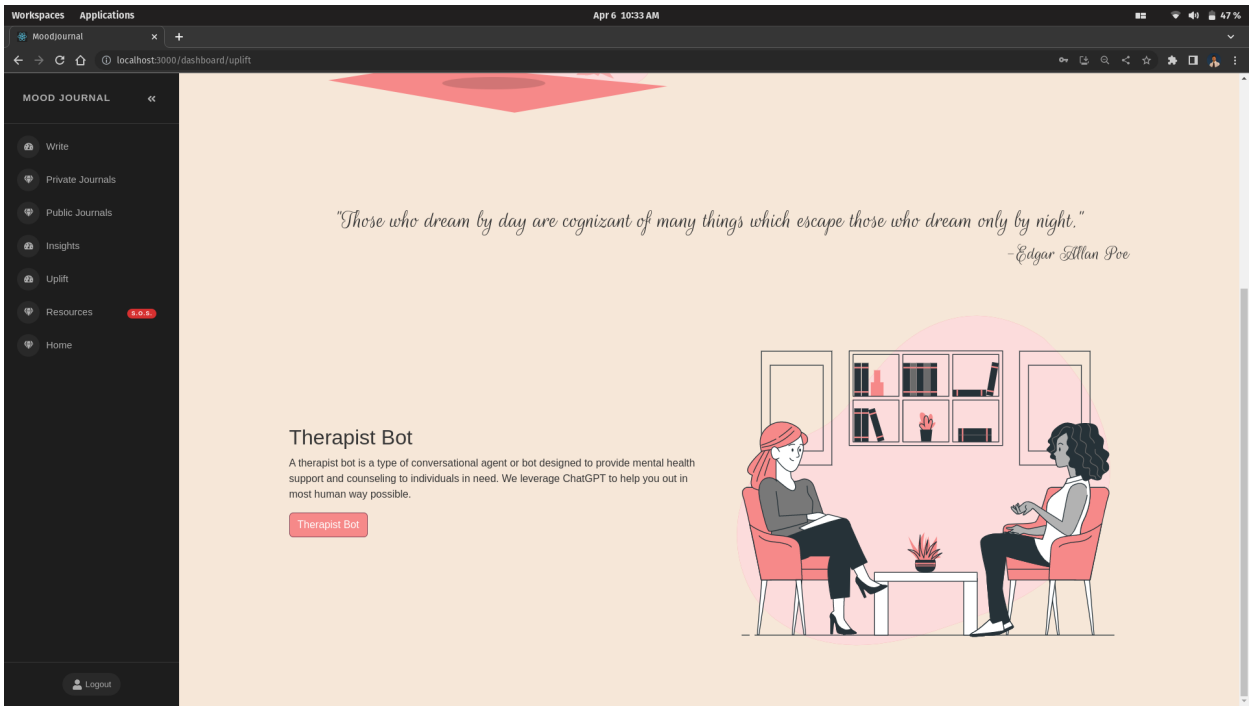


Figure 4.11: Example image

This page has links to ways for users to uplift their mood. Currently, it has two ways including Meditation and virtual consultation by a GPT-3.5 powered chatbot. The page also shows a random quote fetched every as a way to boost morale and motivation.

Meditation

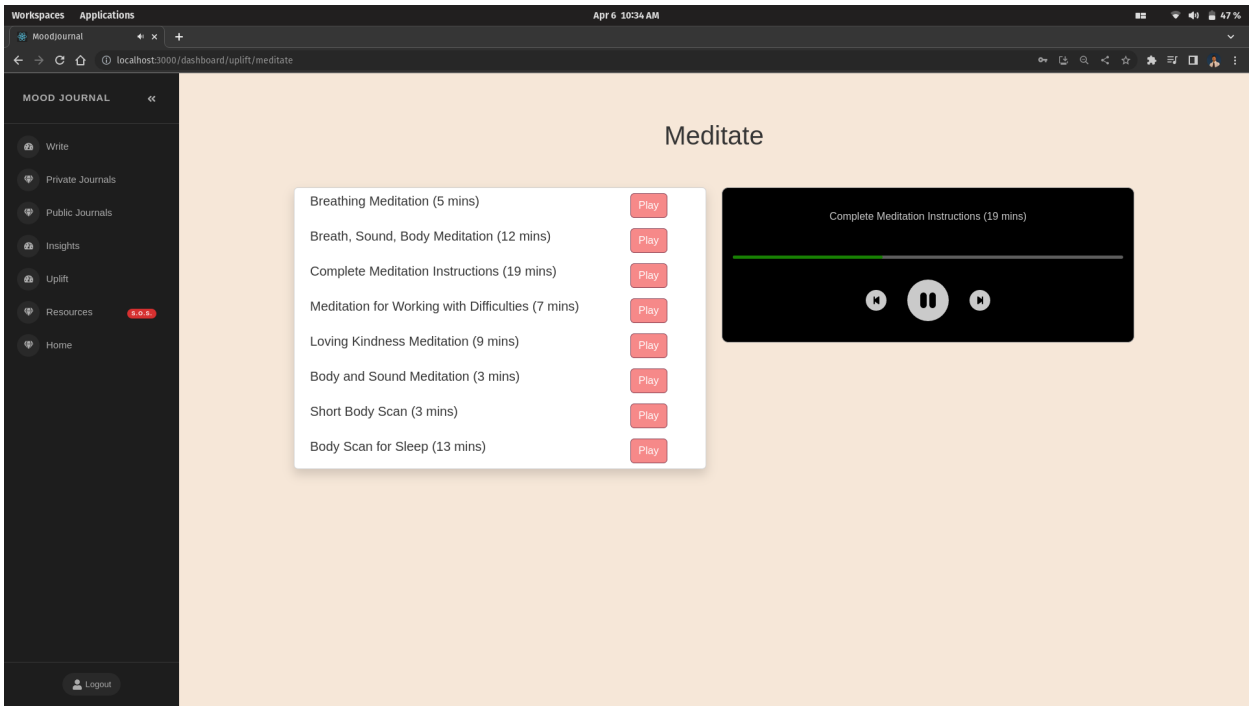


Figure 4.12: Meditation Page

Meditation is a great way of self-help. We are leveraging UCLA Health's guided meditation audio clip for this purpose. We have different clips based on types of meditation which user can play and follow along.

Therapist bot

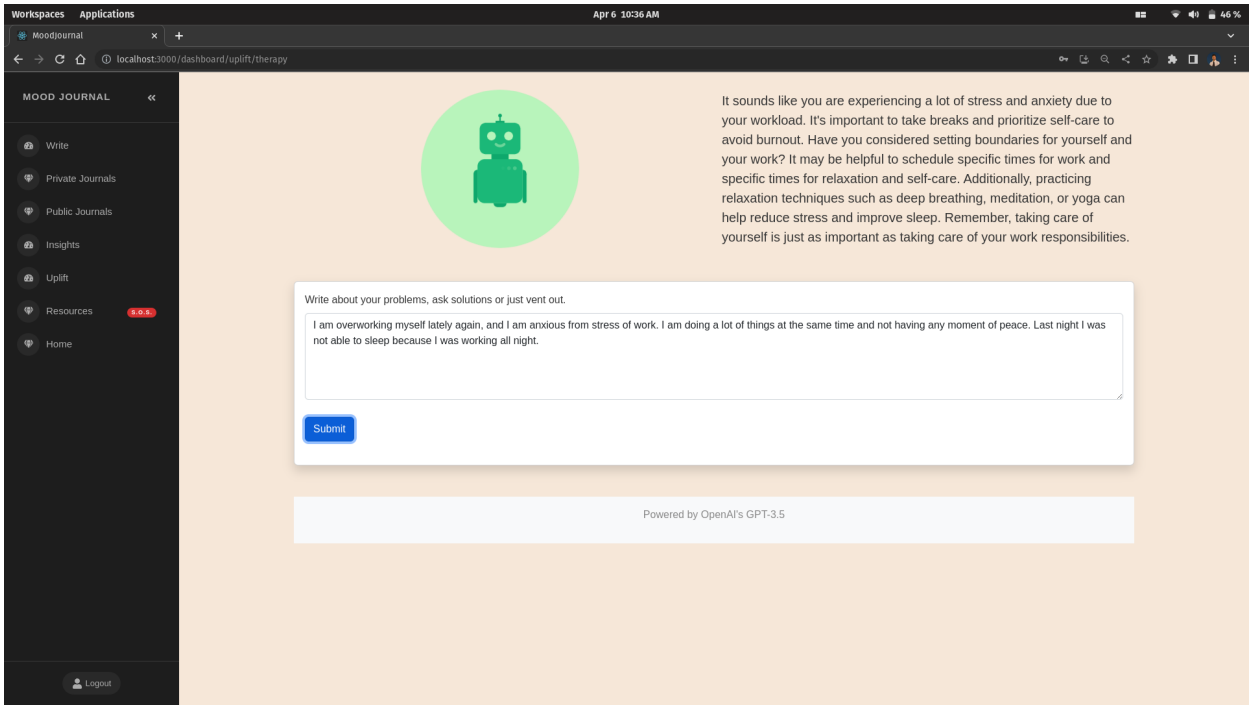


Figure 4.13: Example image

We are leveraging OpenAI's GPT-3.5-Turbo model to have a human way of consultation for users to resolve their psychological issues and get a positive feedback. This benefits from positive reinforcement as a method of response. The input prompt is sent to the express server as run through OpenAI's JavaScript API to provide a response to the user.

Refer to Methodology and Appendix for detailed overview.

4.0.12 Resources

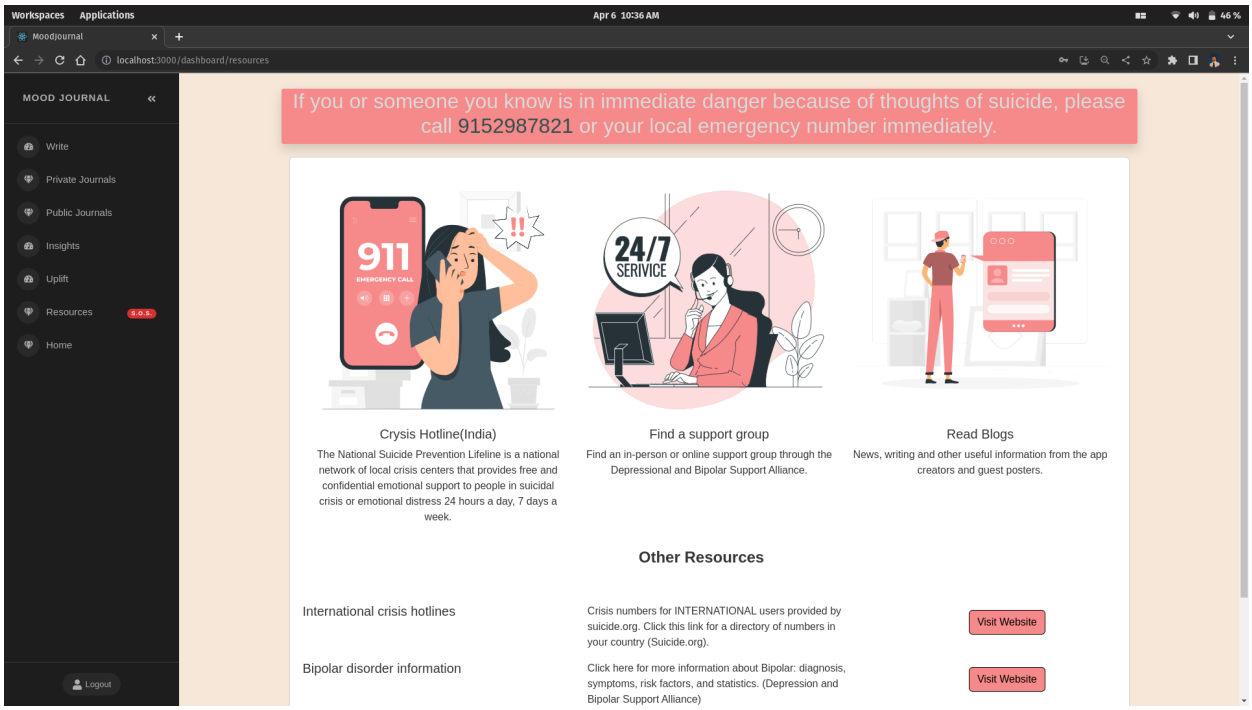


Figure 4.14: Resources Page

Chapter 5

Conclusion and Future Work

5.0.1 Conclusion

In conclusion, the Mood Journal app is an innovative and user-friendly tool for tracking and analyzing emotions. By allowing users to post their daily entries publicly or privately and analyzing their entries with sentiment analysis and natural language processing, the app provides valuable insights into the user's mood and behavior patterns. The app's calendar and graph features offer a visual representation of mood changes over time, making it easy for users to monitor progress and identify triggers. The app's Uplift section, featuring guided meditations, and the Therapist bot provide additional resources for improving mental health.

5.0.2 Future Developments

Looking towards the future, there are several exciting developments planned for the Mood Journal app. First, the addition of mentor sessions will provide users with personalized support and guidance from trained professionals. These sessions can help users to identify and address underlying emotional issues, providing them with the tools to improve their mental wellbeing. Additionally, self-help courses and mini-games for relaxation will be added, giving users an interactive and fun way to reduce stress and improve their mood.

Another important development in the works is the creation of a mobile app version of the Mood Journal. This will allow users to access the app from their smartphones, making it easier to track mood changes on-the-go. The mobile app version will also feature additional functionality and customization options, providing users with an even more personalized experience.

As the app continues to evolve, there are also opportunities for expanding the types of data analysis and insights available to users. For example, future updates could include the integration of wearable technology, such as heart rate monitors or sleep trackers, to provide even more detailed information about the user's emotional state. There is also potential for incorporating machine learning algorithms to predict and prevent potential mood fluctuations.

In summary, the Mood Journal app is a valuable resource for individuals looking to improve their mental health and wellbeing. With its innovative features, including digital mood tracking, sentiment analysis and natural language processing, and guided meditations, the app provides users with a comprehensive toolkit for emotional self-care. As the app continues to develop, adding mentor sessions, mini-games for relaxation, and a mobile app version, users will have even more resources at their disposal to improve their mental health and wellbeing.

Appendix Title Here

5.0.3 Sentiment Analysis

Sentiment analysis, also known as opinion mining, is a process of determining the sentiment or emotional tone expressed in a piece of text, such as reviews, social media posts, or customer feedback. Sentiment analysis can be a valuable tool for businesses and organizations to gain insights into customer opinions and feedback, monitor brand reputation, and make data-driven decisions.

The Natural package is a popular open-source natural language processing (NLP) library for Node.js that provides various functionalities for text analysis, including sentiment analysis. The Natural package offers an easy-to-use and flexible interface for performing sentiment analysis tasks efficiently.

To get started with sentiment analysis using the Natural package, you can follow the steps below:

Step 1: Install the Natural Package You can install the Natural package using npm, the Node.js package manager, by running the following command in your Node.js project:

```
npm install natural
```

Step 2: Load the Natural Package Once the Natural package is installed, you can load it in your Node.js application using the require() function, as shown below:

```
const natural = require('natural');
```

Step 3: Tokenization Before performing sentiment analysis, you need to preprocess the text by tokenizing it, which means breaking it down into individua l words or tokens. The Natural package provides built-in tokenization functions that you can use, such as WordTokenizer and TreebankWordTokenizer.

```
const tokenizer = new natural.WordTokenizer();
const tokens = tokenizer.tokenize("I love this product! It's amazing.");
console.log(tokens);
```

Step 4: Sentiment Analysis After tokenizing the text, you can use the SentimentAnalyzer class provided by the Natural package to perform sentiment analysis. The SentimentAnalyzer class uses a pre-trained sentiment analysis model based on machine learning algorithms.

```
const SentimentAnalyzer = natural.SentimentAnalyzer;
const stemmer = natural.PorterStemmer;
const analyzer = new SentimentAnalyzer("English", stemmer, "afinn");
const sentiment = analyzer.getSentiment(tokens);
console.log(sentiment);
```

In the example above, we created an instance of the SentimentAnalyzer class, specifying the language as English, the stemmer as PorterStemmer (a stemming algorithm), and the sentiment lexicon as "afinn" (which is a popular lexicon for sentiment analysis). We then passed the tokenized text to the getSentiment() function, which returns a sentiment score ranging from -5 (negative) to 5 (positive) based on the sentiment lexicon.

Step 5: Interpret the Sentiment Score The sentiment score returned by the SentimentAnalyzer class can be interpreted as follows:

Score < 0: Negative sentiment Score = 0: Neutral sentiment Score > 0: Positive sentiment

You can use the sentiment score to classify the sentiment of the text and take appropriate actions based on your application's requirements.

In conclusion, the Natural package provides a convenient and powerful tool for performing sentiment analysis in Node.js applications. By following the steps outlined above, you can easily implement sentiment analysis using the Natural package and gain insights from text data to make informed decisions.

5.0.4 GPT-3.5 Model

As an AI language model, GPT-3.5 by OpenAI is a state-of-the-art model that generates human-like text based on prompts provided by users. When using GPT-3.5, it's essential to be aware of its compatibility with different endpoints, as outlined in the OpenAI documentation available at https://platform.openai.com/docs/models/model-endpoint-compatibility.

The documentation provides details on the compatibility of the GPT-3.5 model with various endpoints, including the completions and chat endpoints. Endpoints define the different ways you can interact with the model and specify the inputs and outputs in the API calls.

As per the documentation, the GPT-3.5 model is designed to work with both the completions and chat endpoints. However, it's important to note that the GPT-3.5 model uses the completions endpoint as the recommended approach for most use cases. The chat endpoint, on the other hand, is intended specifically for conversational interactions and may require additional considerations, such as formatting messages and handling responses.

When making API calls to the GPT-3.5 model, it's crucial to ensure that you are using the correct endpoint and following the guidelines provided in the documentation. This includes properly formatting prompts, setting appropriate temperature and max tokens values, and handling responses based on the API's output format.

It's also worth noting that while GPT-3.5 is a powerful language model, it may have limitations, such as generating text that could be politically biased, offensive, or objectionable. It's important to review and moderate the outputs generated by the model to ensure they align with ethical guidelines and requirements of your application.

In conclusion, when working with the GPT-3.5 model, it's essential to refer to the documentation on model endpoint compatibility to ensure that you are using the appropriate endpoint and following best practices for API calls. By doing so, you can harness the capabilities of GPT-3.5 effectively in your language generation tasks while adhering to OpenAI's guidelines and recommendations.

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