MindSage: A Mental Wellness Webapp

System Design

York University

EECS 3311: Software Design

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Contents

Introduction

MindSage is an interactive mental wellness web app that tracks users' moods and allows them to journal their thoughts. It provides them with AI-driven insights and recommendations on how they may improve their overall mental well-being. The team's inspiration for this app came from their observations of personal struggles that permeate every population given the current social, economic, and political climate. As upper-year university students – our own experiences have also played a role in the creation and design of the web app. We hope users can find a brief moment of respite from the daily hustle and bustle of life through MindSage.

High-Level System Overview

Users interact with frontend UI through the following:

1. Registering/logging in to their personal account
2. Writing journals
3. Inputting current mood through mood sliders
4. Checking grounding/relaxation techniques in moments of stress and anxiety
5. Making to-do lists, crossing items off, and watching their plant flourish
6. See their mood trends and journalling streaks through a dashboard

The frontend sends API requests to the backend. The backend uses Flask to process requests and stores/receives data from the database (Supabase). Depending on the request, HuggingFace API is used to analyze mood patterns and detect trigger words to provide crisis resources and personalized activities. The frontend then displays this data.

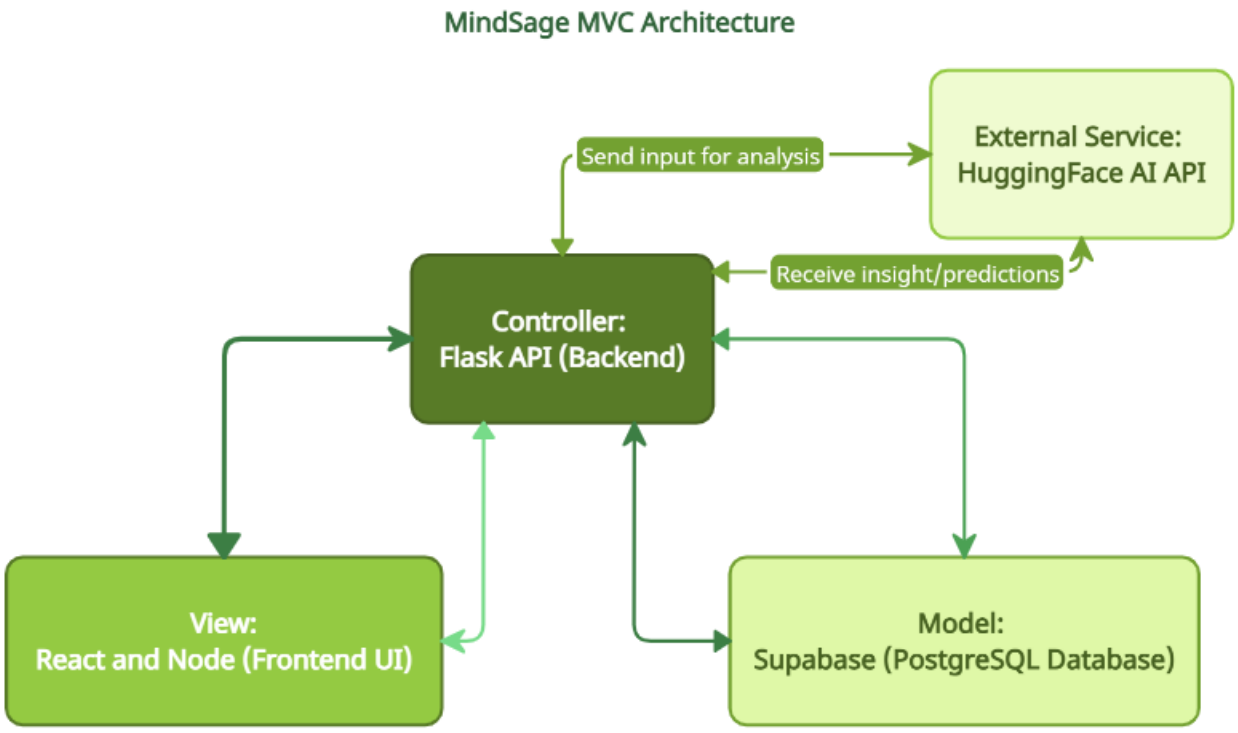
System Environment and Dependencies

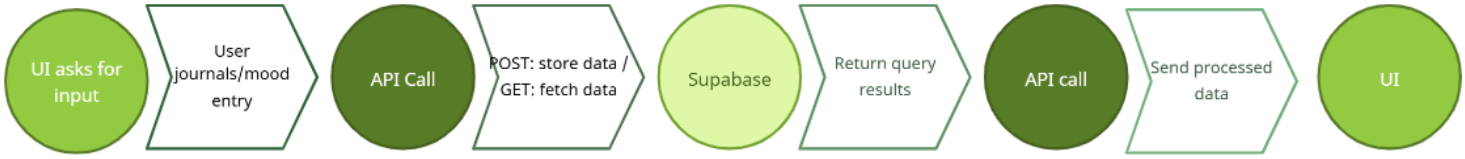
The web app can run Windows, macOS, and Linux operating systems. We used Python and JavaScript for backend and frontend respectively. To be more specific: we used Flask for backend along

with React and Node.js for the frontend. For the database, we used Supabase which is and open-source platform built on PostgreSQL. Finally, for our AI models, we used HuggingFace API.

Software Architecture Diagram

We used an MVC architecture diagram:

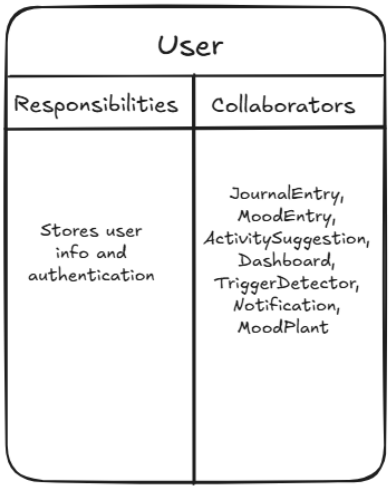


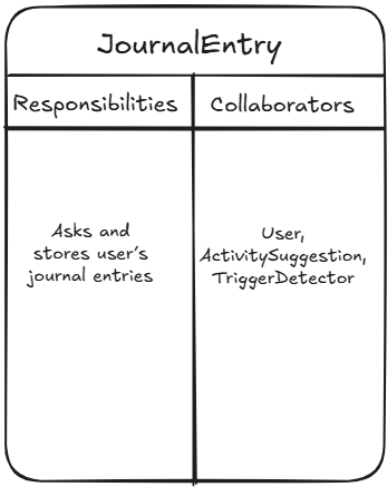


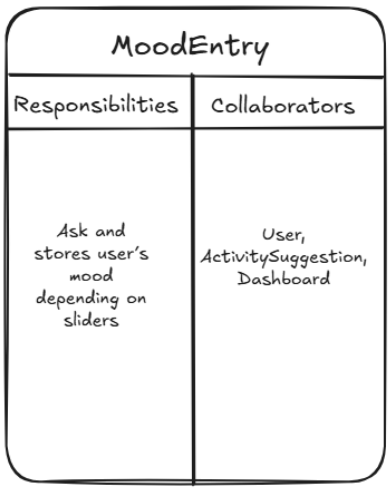
MVC Architecture: User Perspective View

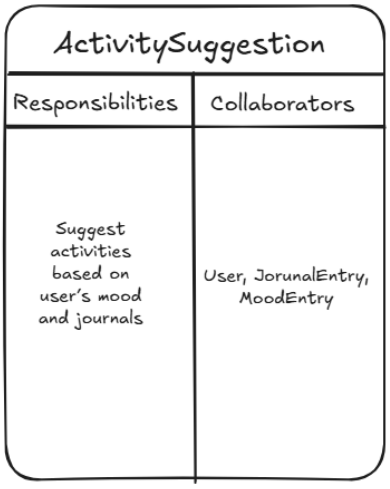
CRC Cards

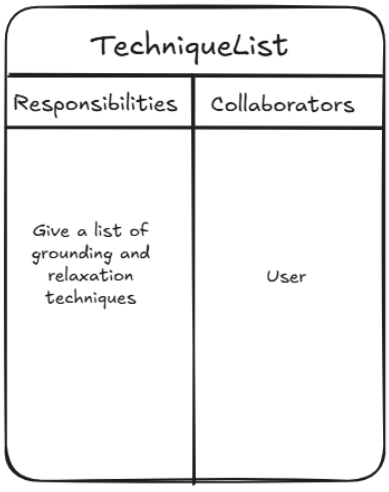
The following is how our CRC Cards look like:

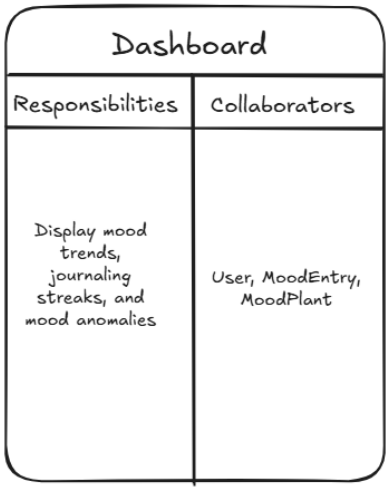


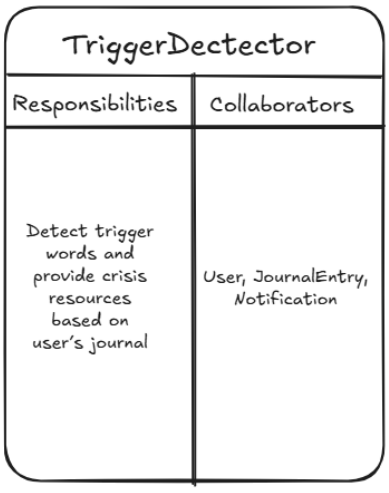


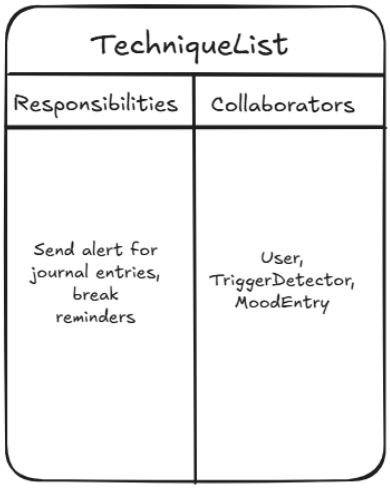


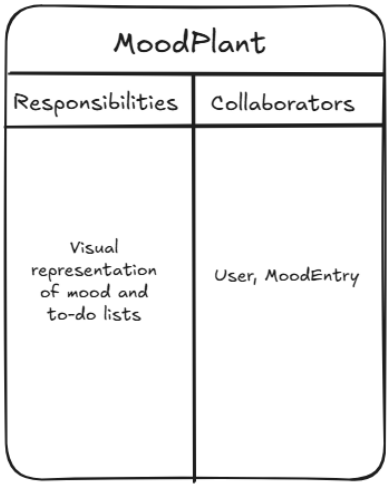












Conclusion

With the raising awareness of mental health challenges and lifestyle changes to maintain mental health well-being, MindSage is a web app that can be used to monitor users' current state of mind and provide an interactive space to take a break from their usual hectic life. This System Design document provides an overview of MindSage's architecture, data flow, and implementation strategy. With Supabase handling authentication and data storage, our Flask backend serves as an API layer while AI/ML services enhance the UI experience with mood analysis and crisis detection.