PROJECT PLAN

Journey

Trinity Dhillon, Daniel Sirias, Michael Campos, Brandon Budhan, Emilia Szynwald, & Zaira Garcia

1. Executive Summary

Journey is a mobile journaling application that allows users to write daily journal entries, where an AI model conducts sentiment analysis to keep a daily record of the user's feelings. Journey's motivation is to enhance the journaling experience by serving as an emotional outlet, and allowing users to track their emotional stress on a daily basis. By providing a compartmentalized record of their emotions, users can keep track of their emotional patterns, and can access the content of particular journal entries to reflect and realize possible triggers for negative emotions.

Our team's intention with Journey is to promote self awareness of mental health by creating a streamlined, accessible mobile application. Journey's target audience is users of any age and background looking to improve or become more aware of patterns and habits regarding their mental health.

2. Business Outline

2.1 Problem Statement

Users struggle to track short-term emotional fluctuations and identify long-term mental health patterns, lacking accessible tools to systematically document, analyze, and share emotional states with trusted individuals or professionals.

2.2 Solution

Journey serves as an emotional outlet, allowing people to track emotional stress on a regular basis, and write a small blurb regarding how they are feeling. Users can track their emotions through structured journaling and AI-generated insights, while securely sharing reports with friends or licensed professionals.

2.3 Unique Value Proposition

How is it different from similar apps?

1. Journey allows for a more comfortable and informal record database for patient use or general use to any user signed up.
2. The user's mood is being analyzed through text mining AI model analysis and will output a percentage of how the person is feeling that day in regards to an analyzed emotion.
3. It is functional as patient documentation to any licensed therapist without conforming to medical constraints such as the HIPAA Act, prohibiting you from giving unauthorized medical advice.

3. Software Outline

3.1 Core Features

An AI-powered journaling app that analyzes daily entries for emotional patterns, while enabling secure sharing of sentiment reports or journal content with trusted friends and mental health professionals.

3.2 Tech Stack

Version Control & CI/CD

- Git – Local version control for tracking changes.
- GitHub – Centralized repository hosting.
- GitHub Actions – Continuous integration and deployment pipelines.
- Panser – AI Agent to analyze codebase for security vulnerabilities in the codebase.

Frontend (Cross-Platform)

- Expo – Streamlined environment for building React Native apps across iOS, Android, and Web.
- React Native – Core framework for cross-platform development.
  Tamagui – UI kit optimized for performance and design consistency across platforms.
- Axios – Promise-based HTTP client for making API requests from the app.

Backend

- Firebase – Backend-as-a-Service for authentication, database (Firestore), hosting, and serverless functions.

AI Model & Data Analysis

- Pandas - Data manipulation and preprocessing.
- Numpy - Numerical computing and array operations.
- Scikit-learn (sklearn) - Machine learning toolkit; includes Multinomial NB (Naive Bayes)
- MultinomialNB - Naive Bayes classifier used for text classification tasks.
- NLTK - Natural Language Toolkit for text preprocessing and tokenization.
- Seaborn - Statistical data visualization based on matplotlib
- Pandas – Data manipulation and preprocessing.

3.3 Data Model

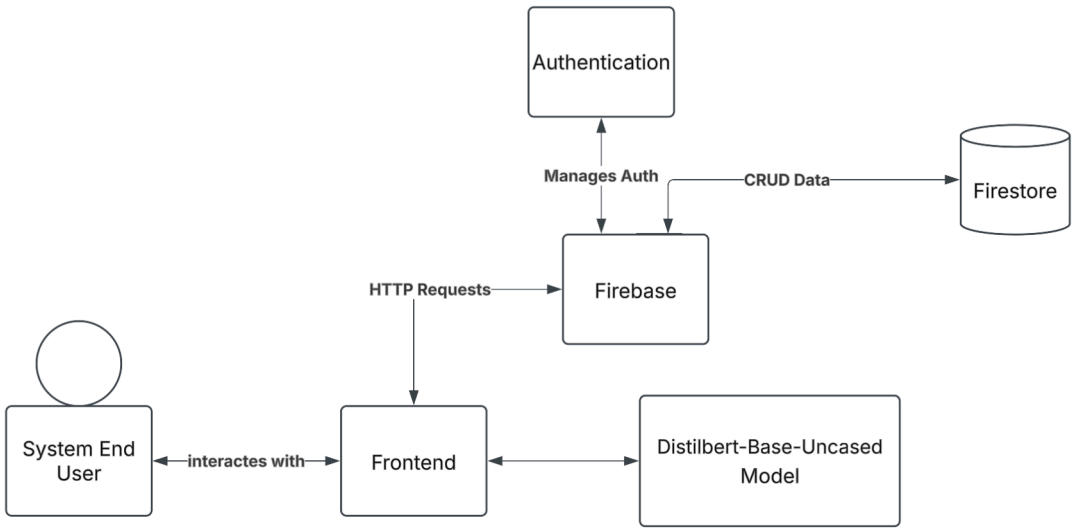

Figure 1. Displays the architecture model of the system. The frontend is developed using React Native with Expo. EAS is utilized to deploy the app for Android, iOS, and Web for system end users to access the app. The frontend communicates with Firebase Services to authenticate, and store data via HTTP requests. The frontend also communicates with the Disitilbert-Base-Uncased Model.

Distilbert-base-uncased

- DistilBERT-base-uncased (Figure 1) is a distilled version of the BERT base model, developed by Hugging Face. It is designed to be smaller, faster, and more efficient than the original BERT model while maintaining over 95% of its performance on language understanding tasks. The model uses knowledge distillation, a technique where a smaller model is trained to replicate the outputs of a larger "teacher" model. It has 40% fewer parameters and operates 60% faster than BERT, making it suitable for deployment in resource-constrained environments.
- NLP techniques, including TF-IDF and fine-tuning DistilBERT-base-uncased, were applied to classify emotions in tweets. By leveraging the model's ability to capture nuanced language patterns, an impressive 97% accuracy in emotion classification was achieved. This trained model is intended to be used for categorizing a person's emotions from journal entries, enabling deeper insights into emotional states through textual analysis. The results showcase the effectiveness of transformer models like DistilBERT for sentiment and emotion analysis, as well as their potential for applications requiring sophisticated emotion detection in various text formats.

3.4 Security & Compliance

- HTTPS for anonymized responses for privacy and Firestore Rules.
    - The system ensures authentication mechanisms to prevent unauthorized access. All user data, including responses in transit, shall be encrypted using secure protocols such as HTTPS to ensure data integrity, Role based access control with appropriate permissions depending on the user (individual, patient, or licensed professional) is upheld. Data that is stored will be held in the database.
- HIPAA-compliant features
    - The system will not have access to PHI documentation(Protected health information). This ensures no breach of HIPAA regulations.
    - The system does not replace a licensed professional but rather aids the, therefore does not interfere with any privacy regulations.
- Pensar’s AI Agent
    - This tool ensures that all code is secured to prevent data loss and code vulnerabilities. To ensure code integrity, all files shall be analyzed and detected using Pensar on git commits and pull requests.

4. Risks and Mitigation

- Facing a 24-hour hackathon deadline, inexperience with React Native/Expo, and AI data model integration challenges, risks are mitigated through:
    1. Prioritizing core features (risk limitation) to focus resources on critical functionality
    2. Leveraging Expo's prebuilt components (risk reduction) to accelerate development and avoid manual native code implementation
    3. Using pre-trained AI models like DistilBERT (risk transfer) to bypass time-intensive model training while maintaining performance

5. Market Potential

5.1 Target Audience

Journey is to three major audiences:

- Individual:
    - Users who utilize applications for personal diary entry and emotion tracking.
- Friend to friend usage:
    - Users who utilize the application for personal entry and motion tracking, and would like to share results and entries with other users as desired.
- Licensed Professional to patient
    - Users who are licensed professionals that would like to view their patients' emotional patterns, triggers, and progression.
    - Users who are patients to a licensed professional, who utilize the application for diary entry, emotion tracking and information sharing with their respective professional.

5.2 Market Size

From a professional scope, licenced professional users will have accessibility more informal, but valuable overview of a patient's emotional status while not having to meet with them as often, this will make it easier to not only keep track of multiple patients but also have a way to know how the user is doing outside of formal sessions.

5.3 Revenue potential

Application will be accessible at 3 price points:

1. Free access to users who will utilize applications for personal use. This price point would prevent users from sharing entries nor categorization with any other users.
2. Monthly $4.99 premium for friend to friend user sharing. With this tier, entries and categorization can be shared with other users but not users who are licensed professionals.
3. $20 monthly premium licensed to patients users, for every 20 patients registered under the professional. Premium is paid by the licensed professional.