MoodTracker

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Project Guide
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Outline

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Introduction

- In today's fast-paced world, emotional well-being plays a crucial role in our overall quality of life. Our web application is designed to help individuals gain insights into their current emotional state through the power of sentiment analysis.

- Built using HTML, CSS, JavaScript, and Python, this user-friendly platform allows users to input their thoughts, which are analyzed to predict their mood.

- The application not only identifies the user's emotional state but also offers personalized suggestions to improve their mood, such as exercises, music,etc.

- By combining technology and mental well-being, this solution aims to provide users with real-time support to enhance their mental health.

Motivation

- Many individuals struggle to understand or express their emotions. Our application helps bridge this gap by offering instant mood predictions based on user input, empowering users to reflect on their emotional state.

- Unlike traditional therapy or counseling, this tool is available anytime, anywhere, offering an accessible first step towards mental wellness for those who may not have immediate access to professional help.

- The increasing focus on AI and machine learning for personalized care and well-being being an inspiring factor.

Objectives

- To implement the Mood-tracking feature using Bidirectional-LSTM.

- To recommend Music, Movies and Exercise based on the detected mood

- To implement AI Chatbot using gemini api and gradio.

- To implement daily diary to allow users to log ther daily moods.

- To implement a MoodGraph using Chart.js.

Literature Survey of the existing system

Title	Author(s)	Year	Outcomes	Methodology	Demerits
Mindset: An Android-Based Mental Wellbeing Support Mobile Application [1]	Malaika Samuel, C.P. Shirley	2023	Developed an Android app providing tools for mental well-being like mood tracking, journaling, music, and communication.	Systematic review of 216 mobile apps, using Cognitive Behavioral Therapy (CBT), mindfulness, and professional support.	Hard to keep users using the app over time, may not follow professional therapy guidelines closely, and could have problems keeping user data safe.
Mobile Application for Mental Health Using Machine Learning [2]	Mendis E.S., Kasthuriarachchi L.W., Samarasinha H.P.K.L.	2022	Created a mobile app to detect stress, anxiety, and depression using machine learning algorithms.	Machine learning (Random Forest, CNN), DASS-21 scale for mental illness detection.	Requires extensive datasets for accurate predictions, lacks personalized recommendations based on user history, and has potential data privacy issues.

Mental Health Mobile Apps to Empower Psychotherapy: A Narrative Review [3]	Federico Diano, Michela Ponticorvo, Luigia Simona Sica	2022	Explored the integration of mobile apps with psychotherapy, focusing on blended therapy.	Narrative review of mobile apps supporting psychotherapy, including evidence-based approaches (CBT, ACT).	Some apps may simplify mental health issues too much, don't allow direct interaction with therapists, have mixed quality, and may not work the same for everyone. There are also privacy risks with storing sensitive data.
Mental Health App Design with Mood Tracking & Self-Reflection Feature [4]	HizkiaST	2021	Developed an app (Moodyan) for mood tracking and self-reflection to improve emotional self-awareness.	Double Diamond design process: user interviews, user personas, wireframes, and prototype testing.	Limited to self-reporting, lacks integration with professional therapy tools, and may not engage users long-term.

Limitations of existing systems

➢ **Accessibility Challenges**

● Many mood-tracking applications are available but not universally accessible.

● Language barriers prevent people from using them effectively.

● Premium features are often locked behind paywalls, making it hard for low-income users to access all functionalities.

● Some apps do not offer flexible tracking options, preventing users from tailoring the experience to their unique mental health needs.

➢ **Recommendation with personalization**

● Many existing systems do not adapt well to rapid mood fluctuations, often providing recommendations based on an initial mood reading without adjusting for changes in real-time.

● Existing platforms may struggle with accurately detecting complex or mixed emotions, leading to inappropriate recommendations that fail to improve the user's mood effectively.

Problem statement

➤ With the rise of mental health issues like anxiety and depression, there is a need for real-time mood management tools. Current systems struggle with emotional complexity and lack personalization. This project aims to create a web solution that uses advanced sentiment analysis and personalized recommendations to help users improve their emotional well-being.
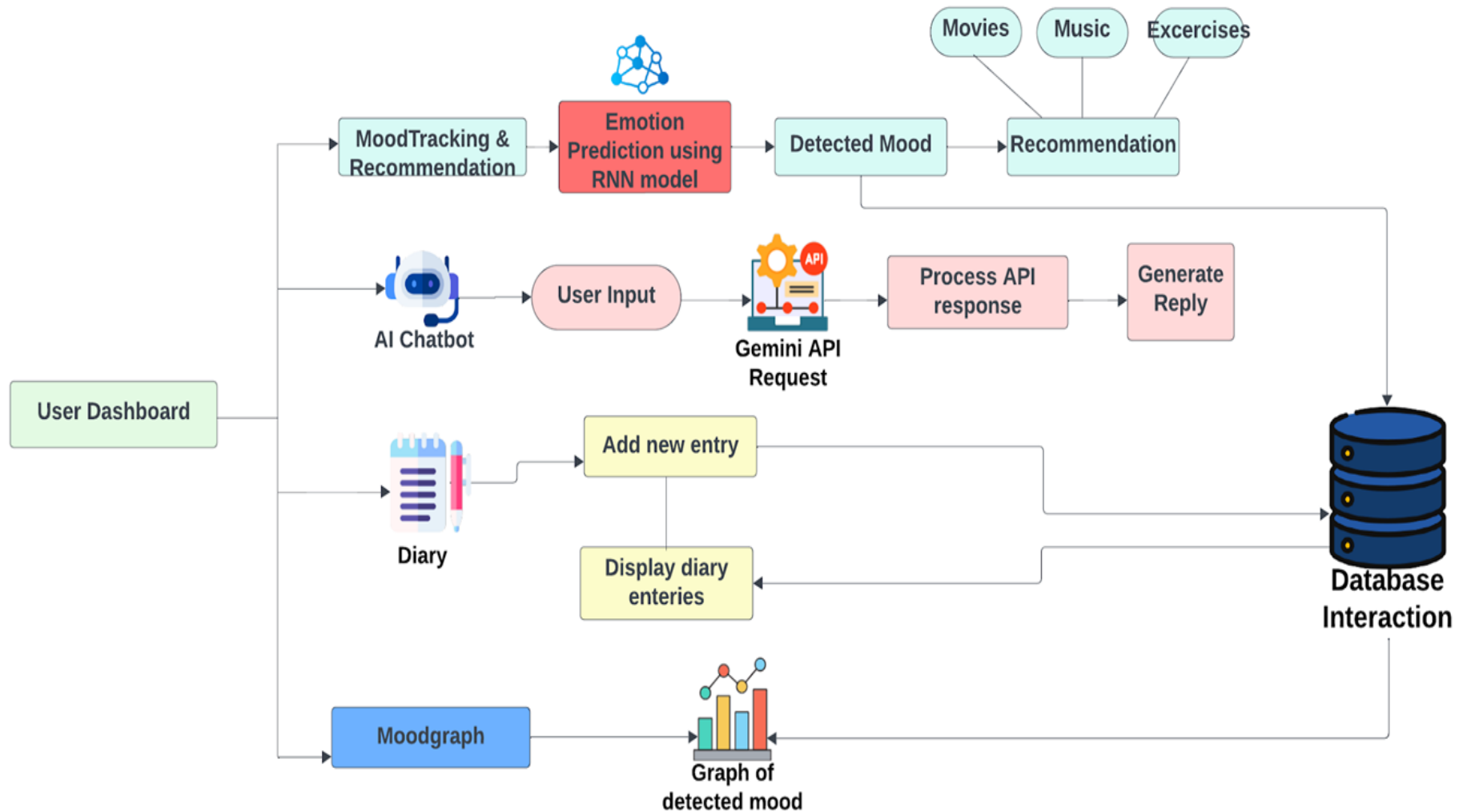
1) **MoodTracker:**

   Users can provide their current condition in a statement format and their current mood will be tracked.
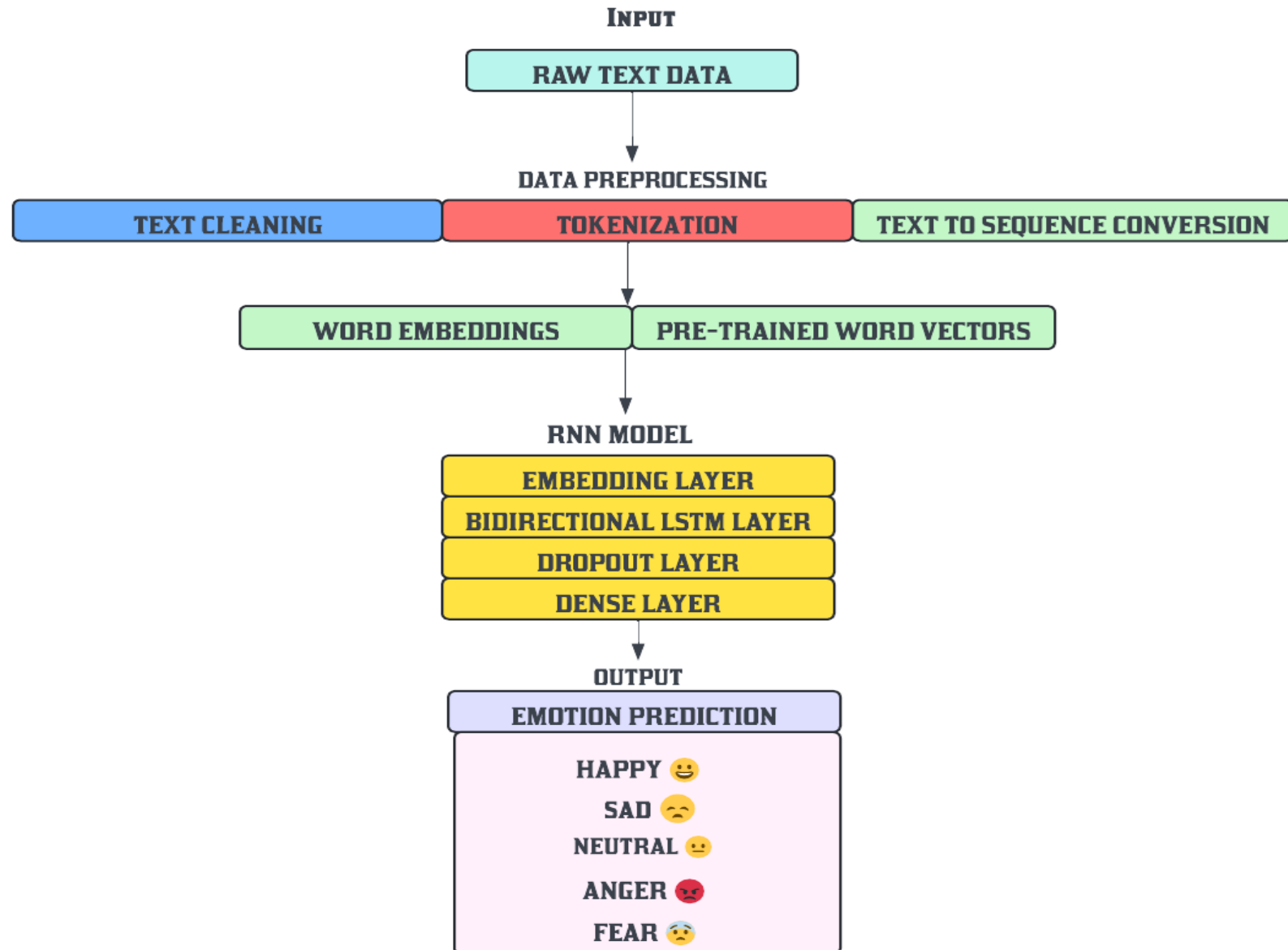
2) **Personalised Recommendations:**

   Users will be provided with recommendations based on their tracked moods.

System Design

MoodTracker

Data Flow diagram

INPUT

RAW TEXT DATA

DATA PREPROCESSING

| TEXT CLEANING | TOKENIZATION | TEXT TO SEQUENCE CONVERSION |

| WORD EMBEDDINGS | PRE-TRAINED WORD VECTORS |

RNN MODEL

EMBEDDING LAYER
BIDIRECTIONAL LSTM LAYER
DROPOUT LAYER
DENSE LAYER

OUTPUT

EMOTION PREDICTION

HAPPY 😀
SAD 😞
NEUTRAL 🙂
ANGER 😡
FEAR 😨

Technologies

- ➤ **Datasets :**
  - ► ManyEmotions (Rows: 385750, Columns: 2)
  - ► Emotion (Rows: 21000, Columns: 2)
- ● **Algorithm:** Bidirectional - Long Short Term Memory
- ● **Api:** Google Gemini

- ● **Software Used:**
  1. HTML5 + CSS3
  2. JavaScript ES2024
  3. Python 3.12.1
  4. VS Code 1.93.1
  5. Flask Framework 8.0
  6. Jupyter Notebook 7.2.1
  7. Git + Github

- ● **Libraries:**
  1. Tensorflow
  2. Numpy
  3. Pandas
  4. Matplotlib
  5. NLTK
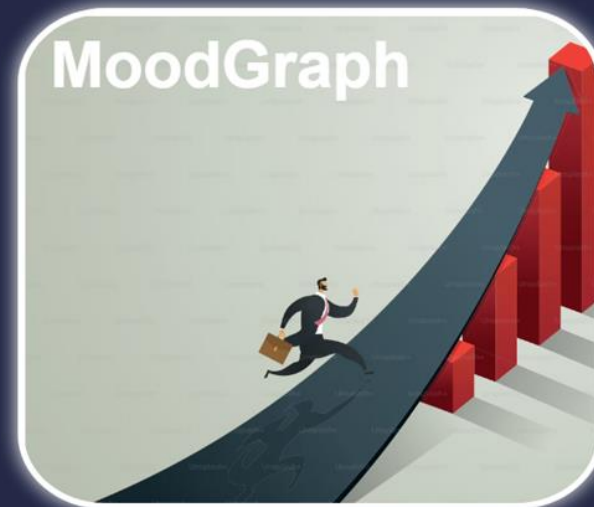 6. Streamlit
  7. Gradio

Methodologies

1. **Data Preprocessing:**

   - Cleaning Text (Removing punctuation, URLs, Numbers, Stopwords)

   - Tokenizing & Padding

   - Splitting Dataset (Train & Test)

2. **ML-Techs :**

   - Word Embedding

   - Sequence Neutral Networks (Use of Conv1D & Bidirectional LSTM)

   - Dropout Layers (Regularization)

Implementation

Conclusion

This project aims to address the limitations of current mood prediction systems by integrating advanced sentiment analysis, multimodal emotion detection, and personalized recommendations. By providing real-time, accessible support, the solution will help users better understand and manage their emotional well-being, contributing to improved mental health outcomes.

References

[1]Malaika Samuel, C.P. Shirley,Mindset: "An Android-Based Mental Wellbeing Support Mobile Application" Publisher: "International Journal of Computer Applications", Volume 183, Pages 23-27, 2023. https://ieeexplore.ieee.org/document/10266239

[2] Mendis E.S., Kasthuriarachchi L.W.Samarasinha H.P.K.L:"Mobile Application for Mental Health Using Machine Learning" Publisher: "IEEE Xplore, Proceedings of the 2022 International Conference on Artificial Intelligence and Mechatronics", Volume 2, Pages 45-50, 2022. https://ieeexplore.ieee.org/document/10025036

[3] Federico Diano, Michela Ponticorvo, Luigia Simona Sica, Mental Health Mobile Apps to Empower Psychotherapy: "A Narrative Review" Publisher: "Journal of Psychotherapy Integration", Volume 32, Pages 56-67, 2022. https://ieeexplore.ieee.org/document/9967663

[4] HizkiaST, "Moodyan: Mood Tracker & Self-Reflection App" Publisher: "Journal of Health Informatics Research", Volume 34, Pages 112-120, 2021. https://bootcamp.uxdesign.cc/moodyan-mood-tracker-self-reflection-app-e7e2f15c43

Thank You...!!