depression symptoms detection

# Description

#### **1. Real-Time Chat**

* Users can engage in conversations with an AI assistant, which is designed to:
  + Analyze user inputs.
  + Identify symptoms of depression based on their responses.
  + Provide empathetic and engaging responses tailored to the user's current and past conversations.

#### **2. General Mood and Symptom Tracking**

* **General Mood Score**:
  + Computed based on weighted analysis of depression symptoms, ranging from 0% (no signs of depression) to 100% (high likelihood of depression).
* **Symptom Scores**:
  + Individual symptoms such as anxiety, sadness, irritability, etc., are scored per conversation session.
  + These scores are saved and visualized to track trends over time.

#### **3. Data Visualization**

* **General Mood Graph**:
  + Displays the trend of the user's general mood scores across multiple sessions.
* **Symptom Graphs**:
  + Plots each symptom's score over time, allowing users to identify patterns and improvements in specific areas.
* **Interactive Visualization**:
  + Graphs include tooltips, markers, and labels for better interpretability.

#### **4. Privacy**

* **Federated**:
  + Data is saved locally, instead of being stored on a remote server
* **Anonymity**:
  + It is not associated to any user, name or real person.

# Technical architecture

#### **Data manager & Processor**

* **Built with Node.js**:  
  + Handles real-time communication using **Socket.IO (TCP)**.
  + Processes data storage and retrieval using **file-based JSON local storage**.
* **Key Functionalities**:  
  + **Start Chat**:
    - Generates initial questions based on past conversations or starts a generic conversation if no history exists.
  + **Chat Analysis**:
    - Analyzes user responses using ChatGPT and extracts scores for depression symptoms and general mood.
    - Summarizes each conversation and updates the summary of all past interactions at the end of each conversation.
  + **Data Storage**:
    - Stores user conversations, scores, and summaries in a structured JSON format.

#### **UI (Flutter)**

* **Built with Flutter**:  
  + Provides a seamless and interactive user interface.
  + Handles chat interaction, and data visualization.
* **Key Features**:  
  + **Chat Interface**:
    - Real-time chat bubbles with text wrapping and auto scrolling.
    - Supports starting and ending conversations dynamically.
  + **Data Visualization**:
    - **Fetches data on depression symptoms from Node client and the general mood scores across conversations (0**% to 100%), higher scores indicate higher probability of depression.
    - Uses Syncfusion charts to display graphs for symptoms and general mood.

# examples (screenshots)

#### 1. Chats

|  |  |
| --- | --- |
| **Starting a chat** |  |
| **Picking up the conversation after some time** |  |

#### 2. Visualization of data

|  |  |
| --- | --- |
| **First Set** |  |
| **Second Set** |  |
| **Third Set** |  |

#### 3. data storage

A screenshot of a computer

Description automatically generated

#### 4. Code samples

|  |  |  |
| --- | --- | --- |
| **UI Flutter** |  |  |
| **Node Client** |  |  |