**MODULES**

**Data Collection and Preprocessing Module:**

This module is responsible for collecting and preprocessing the data required for depression detection.

It includes data acquisition from sources like Twitter for the depression dataset and real-time video feed from the user's webcam.

Data preprocessing involves cleaning and structuring the data for analysis.

**Facial Analysis Module:**

The facial analysis module performs real-time facial expression recognition using live video streams from the webcam.

It detects facial landmarks and expressions to assess the user's emotional state.

This module can utilize computer vision and deep learning techniques.

**Chatbot Interaction Module:**

The chatbot interaction module engages the user in a natural language conversation.

It collects text responses from the user, analyzes their language, and assesses their emotional state.

Natural language processing (NLP) techniques are applied to understand user inputs.

**Depression Detection Model Training Module:**

This module is responsible for training machine learning and deep learning models for depression detection.

It uses the depression dataset from Twitter tweets to train the models.

Supervised learning algorithms like SVM, decision trees, and neural networks can be implemented.

**Model Testing and Evaluation Module:**

The model testing and evaluation module assesses the performance of the trained models.

It uses a separate dataset for testing and calculates accuracy, precision, recall, and other performance metrics.

**Model Selection and Integration Module:**

Based on the evaluation results, this module selects the best-performing depression detection model.

The selected model is integrated into the real-time system for live user assessment.

**Real-time Depression Detection Module:**

The real-time depression detection module continuously processes data from the user, combining facial analysis and chatbot responses.

It provides real-time feedback on the user's emotional state.

**User Validation and Feedback Module:**

This module involves user testing to validate the system's accuracy.

Users provide self-reported depression levels, and the system's output is compared to these self-reports.

Feedback from users is collected to further improve the system.

**Output and Recommendation Module:**

The output and recommendation module communicates the detected depression level to the user.

Depending on the level detected, it may provide recommendations, resources, or support information to the user.

**Data Privacy and Security Module:**

Ensures user data privacy and security throughout the system.

Implements encryption, user consent mechanisms, and data anonymization techniques.

**User Interface Module:**

Develops the user interface through which users interact with the system.

Creates a user-friendly experience for both video input and chatbot interactions.

**Database Management Module:**

Manages the storage and retrieval of user data, chat logs, and system records.

Ensures data integrity and accessibility.