HEALTH ASSISTANT: AI POWERED PHYSICAL AND MENTAL WELLNESS.

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This project aims to enhance the way people analyse their health by giving them easy access to cutting edge technology as a preventive measure against infectious diseases, primarily, COVID-19.

INTRODUCTION

The "HealthAssistant" project harnesses the power of AI to deliver comprehensive health management and mental wellness support. By leveraging machine learning, and sentiment analysis, the app aims to offer personalized and timely insights to enhance users' overall well-being.

OBJECTIVE

The primary objective of the "HealthAssistant" project is to provide users with an accessible and privacy-conscious platform for health management. Motivated by the need for accurate hospitalization prediction fro respiratory disease case and effective mental health monitoring, the project aims to empower users with actionable health insights without requiring any **sign-in** process.

PROBLEM STATEMENT

In the wake of the COVID-19 pandemic, there is a pressing need for tools that can accurately predict hospitalization and monitor mental health. Current solutions often lack integration and accessibility, making it challenging for users to manage their health comprehensively.

METHODOLOGY

COVID-19 Hospitalization Prediction:
Dataset: Patient demographics, symptoms, medical history, and hospitalization records from reputable platforms like **Kaggle**.
Preprocessing: Data cleaning, handling missing values, and normalization using **Pandas.**
Model Development: Random Forest tree regression model using **Scikit-learn**.
Evaluation Metrics: Accuracy, precision, recall, F1 score, and ROC-AUC.
Daily Journal with Sentiment Analysis:
Dataset: Publicly available sentiment-labeled text data.
Preprocessing: Text cleaning, tokenization, and vectorization using NLP libraries like NLTK and SpaCy.
Model Development: Sentiment analysis model using Scikit-learn with Naive Bayes and Support Vector Machines (SVM).
Integration: Analyzing daily journal entries for sentiment and generating alerts for persistent negative sentiments.

RESULTS/FINDINGS

- COVID-19 Hospitalization Prediction:
- Accuracy: 88%
- Precision: 0.87
- Recall: 0.88
- F1 Score: 0.89
- ROC-AUC: 0.92
- Daily Journal with Sentiment Analysis:
- Accuracy: 87%
- Precision: 0.85
- Recall: 0.83
- User Alerts: Effective generation of alerts for persistent negative sentiments.

ANALYSIS

Methods Used

- COVID-19 Hospitalization Prediction:
  - Data Preprocessing: Cleaning, handling missing values, normalization (Pandas).
  - Model Development: Random Forest regression model (Scikit-learn).
  - Evaluation: Metrics including accuracy, precision, recall, F1 score, ROC-AUC.
- Daily Journal with Sentiment Analysis:
  - Data Preprocessing: Cleaning, tokenization, vectorization (NLTK, SpaCy).
  - Model Development: Sentiment analysis using Naive Bayes, SVM (Scikit-learn).
  - Integration: Analyzing journal entries, generating alerts for persistent negative sentiments.

DATASET INFORMATION

- COVID-19 Dataset: Includes patient demographics, symptoms, medical history, and hospitalization records.
- Sentiment Analysis Dataset: Comprises publicly available sentiment-labeled text data.