"SESSION BASED MEDICAL AND DOCTOR RECOMMENDATION SYSTEM"

CAPSTONE PROJECT

Course Code: CAP5001

"Project Proposal Report"

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Zeroth Review

Title of The Project	SESSION BASED MEDICAL AND DOCTOR RECOMMENDATION SYSTEM
Software Requirements	- **Operating System Compatibility:** Windows 10 or later - **Programming Language and Frameworks:** JavaScript, HTML/CSS, Python, Flask, scikit-learn, NumPy, Pandas, Matplotlib, SQLite and TensorFlow. - **Database:** SQLite - **Development Environment:** Visual Studio Code - **Version Control:** GitHub - **Preprocessing Tools:** OpenSSL for encryption, Metamask or other blockchain wallets for transaction management - **User Interface:** **web-based interfaces:** HTML, CSS, and JavaScript
Hardware Requirements	- **Processor:** Intel Pentium or More - **Ram:** 512 MB Ram and more - **Hard Disk:** PC with 20GB and more

Abstract

This project presents a session-based medical and doctor recommendation system designed to predict diseases based on user-reported symptoms and connect patients with suitable doctors. Utilizing a Kaggle dataset containing symptom-disease mappings, the system employs both machine learning (ML) and deep learning (DL) techniques for disease prediction. After evaluating various models, the K-Nearest Neighbors (KNN) algorithm emerged as the most reliable with a 93% accuracy rate. While Support Vector Machine (SVM) and Random Forest models demonstrated 100% accuracy during training, further analysis revealed significant overfitting, making them less suitable for real-world deployment.

To provide users with a seamless experience, the fine-tuned KNN model was integrated into a dynamic web application. The frontend was developed using HTML, CSS, and JavaScript, while Flask was used for backend operations and SQLite managed the database. The system, deployed on the Render platform, allows registered users to log in, enter symptoms, and receive accurate disease predictions along with doctor recommendations. Doctors can also register on the platform, offering a two-way interface that enhances healthcare connectivity. All doctor data was carefully curated from trusted sources, with a primary focus on professionals based in Vijayawada.

This project highlights the practical application of machine learning in the healthcare sector, demonstrating its potential to improve medical accessibility and decision-making. By emphasizing lightweight and efficient ML models, the system ensures high performance without compromising accuracy. Moreover, the development process underlines the importance of avoiding overfitting through thorough model evaluation, while the user-centric web design promotes ease of use and real-world applicability. Overall, this system represents a meaningful step towards intelligent healthcare solutions that bridge the gap between patients and providers.

Modules:

User/Patient Module:

- Handles patient and doctor registration, login, authentication, and session management. It ensures secure and personalized access for different types of users.

Symptom Input and Disease Prediction Module:

- Allows users to input symptoms and utilizes the K-Nearest Neighbors (KNN) algorithm to predict the most probable disease based on trained machine learning models.

Doctor Recommendation Module:

- Recommends suitable doctors based on the predicted disease and user's location, using a manually curated database of verified professionals in Vijayawada.

Doctor Management Module:

- Enables doctors to register, update their profiles, and manage their availability and specialization for patient recommendations.

Web Application & Database Module:

- Includes the frontend (HTML, CSS, JavaScript), backend (Flask), and database (SQLite) integration for data handling, UI interaction, and smooth functioning of all features.