Universal Health Record with Disease Prediction using Multi-Layer Perceptron

ABSTRACT

The Universal Health Record (UHR) is an advanced platform designed to seamlessly store and manage comprehensive patient data, including historical medical consultations, diagnoses, prescribed treatments, and medications. By consolidating these records, the system empowers healthcare providers to deliver more precise and personalized care. At its core, the UHR features a sophisticated disease prediction model powered by Deep Neural Networks (DNN), XGBoost (XGB) and LightGBM, leveraging patient disease history, genetic information to generate highly accurate forecasts of potential health risks. This hybrid approach enhances predictive performance by capturing complex patterns, high-dimensional interactions, and boosting model efficiency, making it ideal for predicting disease progression and uncovering subtle correlations within medical data.. To enhance patient well-being, the platform integrates with Gemini API, enabling personalized health recommendations. Patient data is securely stored in MongoDB, and to ensure enhanced security and privacy, the system incorporates data encryption mechanisms to safeguard sensitive medical records against unauthorized access. while an intuitive front-end, built with HTML, CSS, and JavaScript, ensures seamless user interaction. By machine learning-driven predictive analytics with real-time health insights, the UHR system revolutionizes medical decision-making, ultimately improving patient outcomes and treatment efficacy.

DATE
06/02/2025

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