التنبؤ بأمراض القلب باستخدام النموذج الخطي للغابات العشوائية الهجين في شبكة إنترنت الأشياء

Prediction of the heart disease using the hybrid random forest linear model (HRFLM) in IoT network

قدمت هذه الأطروحة إلى قسم شبكات المعلومات في كلية تكنولوجيا المعلومات جامعة بابل استكمالاً لمتطلبات درجة البكالوريوس في علم شبكات المعلومات للأكاديميين.

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Abstract

The integration of the Internet of Things with machine learning in dierent disciplines has benefited from recent technological advancements. In medical IoT, the fusion of these two disciplines can be extremely beneficial as it allows the creation of a receptive and interconnected environment and oers a variety of services to medical professionals and patients. Doctors can make early decisions to save a patient's life when disease forecasts are made early. IoT sensor captures the data from the patients, and machine learning techniques are used to analyze the data and predict the presence of the fatal disease i.e., heart diseases . The goal of this research is to make a smart patient's health monitoring system based on machine learning that helps to detect the presence of a disease in patient early and accurately. For the implementation, it uses the existing dataset from the Cleveland database of UCI repository of heart disease patients. In order to detect the presence of the fatal disease, a hybrid approach, combining the power of the random forest algorithm with a linear model, known as the Hybrid Random Forest Linear Model (HRFLM), to predict heart disease in an IoT network.

The performance of the proposed model is evaluated by using four evaluation metrics i.e., accuracy, precision, recall, and F1-Score. The proposed model outperformed in terms of accuracy (96%), precision (99%), and F1-Score (95%). However, the recall (91%) . With the help of this proposed patient's health monitoring system, doctors will be able to diagnose the presence of the disease earlier.