LITERATURE SURVEY

Date : 10 Nov 2022
Project Name : Early Detection Of Chronic Kidney Disease Using Machine Learning
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ABSTRACT

Chronic kidney disease is a condition characterized by a gradual loss of kidney function over time. It is also known as chronic renal disease or CKD. This condition damages your kidneys and decrease their ability to filter wastes from your blood. If this condition worsens, wastes can build to high levels in your blood and make you feel sick. There are several other complications which may occur if the disease is not detected at the early stages. Therefore early detection and treatment is required to keep this disease from getting worse. The main goal of this project is to detect the chronic kidney disease using attributes from various medical tests. Attributes are investigated to distinguish which attributes may contain helpful information about the disease. The information says that it helps us to measure the severity of the problem and we make use of such information to build a machine learning model that predicts Chronic Kidney Disease

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Survey 1 :

AUTHORS : Vijendra Singh, Vijayan K. Asari, Rajkumar Rajasekaran

TITLE : A Deep Neural Network for Early Detection and Prediction of Chronic Kidney Disease

METHODS : This research objectives to create a deep neural network and compare its performance to that of other contemporary machine learning techniques. In tests, the average of the associated features was used to replace all missing values in the database. After that, the neural network's optimum parameters were fixed by establishing the parameters and running multiple trials. The foremost important features were selected by Recursive Feature Elimination (RFE). Hemoglobin, Specific Gravity, Serum Creatinine, Red Blood Cell Count, Albumin, Packed Cell Volume, and Hypertension were found as key features in the RFE. Selected features were passed to machine learning models for classification purposes. The proposed Deep neural model outperformed the other four classifiers (Support Vector Machine (SVM), K-Nearest Neighbor (KNN), Logistic regression, Random Forest, and Naive Bayes classifier) by achieving 100% accuracy. The proposed approach could be a useful tool for nephrologists in detecting CKD.

Survey 2 :

AUTHORS: Marwa Almasoud, Tomas E Ward

TITLE : Detection of Chronic Kidney Disease using Machine Learning Algorithms with Least Number of Predictors

METHODS : This paper aims to test the ability of machine learning algorithms for the prediction of chronic kidney disease using the smallest subset of features. Several statistical tests have been done to remove redundant features such as the ANOVA test, the Pearson's correlation, and the Cramer's V test. Logistic regression, support vector machines, random forest, and gradient boosting algorithms have been trained and tested using 10-fold cross-validation. Here an accuracy of 99.1 is achieved according to F1- measure from Gradient Boosting classifier. Also, it is found that hemoglobin has higher importance for both random forest and Gradient boosting in detecting CKD. Finally, the results are among the highest compared to previous studies but with less number of features reached so far. Hence, CKD can be detected at only $26.65 by performing three simple tests.

Survey 3 :

AUTHORS : G Nandhini, J Aravinth

TITLE : Chronic kidney disease prediction using machine learning techniques

METHODS : This paper reviews and analyzes the Chronic kidney disease (CKD) is a global health issue that causes a high rate of morbidity and mortality, as well as the onset of additional diseases. Early and error-free detection of CKD can be helpful in averting further deterioration of patient's health. These chronic diseases are prognosticated using various types of data mining classification approaches and machine learning (ML) algorithms. This Prediction is performed using Random Forest (RF) Classifier, Logistic Regression (LR) and K-Nearest Neighbor (K-NN) algorithm and Support Vector Machine (SVM). The data used is collected from the UCI Repository with 400 data sets with 25 attributes. This data has been fed into Classification algorithms. The experimental results show that K-NN, LR, SVM hands out an accuracy of 94%, 98% and 93.75% respectively. The RF classifier gives out a maximum accuracy of 100%.