LITERATURE REVIEW: Early Detection ofChronic Kidney Disease Using Machine Learning

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ABSTRACT:

A growing number of patients are being identified as having advancedrenal illness each year. The hallmark of chronic kidney disease, sometimes referred to as chronic renal disease, is aberrant kidney function or a progressive breakdown of renal function over the course of months or years. People who are known to be at risk for kidney problems, such as those with high blood pressure or diabetes, as well as those who have a chronic kidney disease-affected blood relative, are frequently screened for chronic kidney disease (CKD). As a result, early prognosis is essential for treating the illness and preventing its progression. Renal failure or major kidney injury can only be avoided by early detection and ongoing care. Machine learning (ML) is a key component of the healthcare system and has the potential to effectively support and help with decision-making in medical institutions. Designing and offering a machine learning approach for CKD prediction are the main objectives of this study. The components are constructed using datasets on chronic kidney disease, and the results of these models are compared to choose the best model for prediction.

LITERATURE SURVEY

Survey

AUTHORS: Himanshu Kriplani, Bhumi Patel and Sudipta Roy

TITLE: Prediction of Chronic Kidney Diseases Using Deep Artificial Neural Network Technique.

METHODS: This study offers a method to identify chronic kidney illness. Diagnosing chronic kidney disease is a difficult challenge that can lower treatment costs. On the UCI machine learning repository titled chronic kidney illnesses, we looked at 224 records of chronic kidney disease dating back to 2015.Our suggested approach is based on a deep neural network, which has a 97% accuracy rate at predicting whether chronic kidney disease would exist or not. When compared to previous techniques, the model we developed performs better and is implemented using the cross-validation methodology to prevent overfitting. The automatic treatment for chronic kidney disease slows the development of kidney damage, but early recognition of the condition is essential.

Survey 2:

AUTHORS: Deepak K N , Adhwaidh P S , Akshay P D , Athira K S , Jisna Jaya

TITLE: CHRONIC KIDNEY DISEASE PREDICTION SYSTEM USING MACHINE LEARNING

METHODS: A major global health problem, chronic kidney disease (CKD) has a high rate of morbidity and mortality as well as the start of other diseases. People commonly overlook CKD in its early stages since there are no obvious symptoms. Patients who are diagnosed with CKD early can receive prompt treatment to halt the disease's progression. Doctors can successfully accomplish this goal with the help of machine learning models because of their quick and accurate recognition skills. In this research, we suggest a machine learning framework for CKD diagnosis. The data set for CKD was obtained from Kaggle and contains a sizable number of missing values. We use DT, SVM, and DNN among other machine learning techniques to examine data from CKD patients with 21 features. Pre-processing involves adding missing data to the dataset and standardising it. The dataset's most pertinent features are chosen in order to improve accuracy and reduce training time. The properties are automatically entered using letter recognition and image processing.

Survey 3:

AUTHORS: Hongquan Peng, Haibin Zhu, Chi Wa Ao Ieong, Tao Tao, Tsung Yang Tsai, Zhi Liu

TITLE: A two-stage neural network prediction of chronic kidney disease

Early diagnosis and treatment of chronic kidney disease (CKD) depend critically on the ability to identify it. Measured glomerular filtration rate (mGFR), which is used to assess kidney function, is regarded as the gold standard indicator. The need for more accurate and reliable methods is urgently needed due to the high resource cost of measuring mGFR, which is typically approximated by the estimated glomerular filtration rate. Prediction performance is proven to have greatly improved with the introduction of fresh machine learning approaches across all available data, although the performance is still constrained due to the lack of models for ultra-high dimensional datasets. The purpose of this study is to present a two-stage neural network method for GFR prediction and to suggest additional potential indicators derived from blood metabolites.