LITERATURE SURVEY

Machine learning algorithm for early detection of end-stage renal disease by Zvi Segal , Dan Kalifa , Kira Radinsky, Bar Ehrenberg , Guy Elad , Gal Maor , Maor Lewis , Muhammad Tibi , Liat Korn and Gideon Koren

End stage renal disease (ESRD) describes the most severe last stage (Stage 5) of chronic kidney disease (CKD), when the kidneys are functioning at 10–15% or less of their normal function [1]. In Stage 1, representing normal renal function, the glomerular filtration rate (GFR) is over 90 ml/kg/min, and the condition is almost always asymptomatic. Stage 2 is defined by GFR between 60 and 89 ml/kg/mi, and although defined by laboratory tests, most individuals are asymptomatic. Stage 3 denotes GFR between 30 and 59 ml/kg/min, and is in most cases associated with fatigue, fluid retention, and changes in urination. Stage 4 is defined by GFR between 15 and 29 ml/kg/min, and is characterized by swelling of the extremities, nausea and vomiting, along with nerve and cognitive malfunction. At Stage 5, the kidneys cannot perform the fluid, electrolyte, and waste exchange needed for homeostasis of the body, and without kidney dialysis or renal transplant, this condition is incompatible with life [2]. Because of the fact that even at Stage 4 persons may be asymptomatic, there is often a delay in recognizing, diagnosing, and treating the various etiologists of CKD. As treatment alternatives exist to slow the progression of renal disease, a precise prediction model is needed for the identification of patients at increased risk for kidney function deterioration [2]. The objective of the present study was to employ machine learning algorithms in an attempt to develop a prediction model for progression to ESRD in patients with CKD, based on a large-scale multidimensional database.

Reference authors:

1. M. P. N. M. Wickramasinghe.et al   presents a methodology to control the disease using a suitable diet plan. In this research classifiers are constructed using different algorithms like Multiclass Decision Jungle, Decision Forest, Multiclass Neural Network and Multiclass Logistic Regression. An allowable potassium zone is predicted depending on the blood potassium levels of the patient. The classification algorithms recommend a diet place based on the predicted potassium zone.

2.In 2013, T. Di Noia et al., presented a software tool that used the artificial neural network ANN to classify patient status, which is likely to lead to end-stage renal disease (ESRD). The classifiers were trained using the data collected at the University of Bari over a 38-year period, and the evaluation was done based on precision, recall, and F-measure. The presented software tool has been made available as both an Android mobile application and online web application.

3.H. A. Wibawa.et al   proposed and evaluated Kernel-based Extreme Learning Machine (ELM) to predict chronic kidney disease. Performance of four kernels-based ELM, namely RBF-ELM, Linear-ELM, Polynomial-ELM, Wavelet-ELM are compared with the performance of standard ELM. The above methodologies were compared on metrics of sensitivity and specificity. Radial Basis Function – Extreme Learning Machine (RBF-ELM) showed higher prediction rates. CKD increases the risk factors of cardiovascular disease (CVD) like hypertension, diabetes mellitus, dyslipidaemia, and metabolic syndrome. CKD also leads to End Stage Renal Disease (ESRD) which has no cure. U. N. Dulhare.et all extracted action rules based on stages but also predicted CKD by using naïve bayes with One R attribute selector which helps to prevent the advancing of chronic renal disease to further stages. It is said that the median survival time of past due-stage patients is simplest approximately three years. Evaluating exactly the condition of sufferers is of incredible importance as it might substantially assist to decide appropriate care, medications or medical interventions wished, which amongst them have a complicated interrelationship and have an impact on the final results of the Chronic Kidney Disease Prediction using Machine Learning Models 6365 Published By: Blue Eyes Intelligence Engineering & Sciences Publication   Retrieval   Number: A2213109119/2019©BEIESP   DOI:

person   patient.   H.   Zhang.et al investigated the performance of Artificial Neural Network (ANN) models while applying to the survivability prediction on chronic kidney disease (CKD) patients.