

LITERATURE SURVEY

EARLY DETECTION OF CHRONIC KIDNEY DISEASE USING MACHINE LEARNING

1. LINTA ANTONY, et al. "A Comprehensive Unsupervised Framework for Chronic Kidney Disease Prediction" *IEEE Access* 8 (2021):

In this paper, Chronic Kidney Disease (CKD) indicates a condition where human kidneys that are damaged [1] and unable to filter the blood stream and get rid of the metabolic waste the way are supposed to. This research aims to build an intelligent machine learning model that can be used reliably to establish CKD diagnosis. It has implemented five unsupervised algorithms, K-Means Clustering, DB-Scan, I-Forest, and Autoencoder. And integrating them with various feature selection methods. Integrating feature reduction methods with K-Means Clustering algorithm has achieved an overall accuracy of 99% in classifying the clinical data of CKD and Non-CKD

2. Ahmed J. Aljaaf, et al. "Early Prediction of Chronic Kidney Disease Using Machine Learning Supported by Predictive Analytics." *Computers in biology and medicine* 109 (2018):

In this paper, study starts with 24 parameters in addition to the class attribute, and ends up by 30% of them as ideal sub set to predict Chronic Kidney Disease. A total of 4 machine learning based classifiers have been evaluated within a supervised learning setting, achieving highest performance outcomes of AUC 0.995, sensitivity 0.9897, and specificity 1.

3. Rahul Gupta ., et al. "Performance Analysis of Machine Learning Classifier for Predicting Chronic Kidney Disease." *INCET* (2020):

In this paper, Chronic Kidney Disease (CKD) is a type of chronic disease which means it happens slowly over a period of time and persists for a long time thereafter. Chronic Kidney Disease (CKD) is a type of chronic disease which means it happens slowly over a period of time and persists for a long time thereafter. The main focus in this paper is on the classification techniques, that is, tree-based decision tree, random forest, and logistic regression has been analyzed. Different measure has been used for comparison between algorithms for the dataset collected from standard UCI repository.

4. Imesh Udara Ekanayake , et al. "Chronic Kidney Disease Prediction Using Machine Learning Methods." Moratuwa Engineering Research Conference (MERCon) 2020:

In this paper, —Chronic Kidney Disease (CKD) or chronic renal disease has become a major issue with a steady growth rate. It is important to have effective methods for early prediction of CKD. Out of the 11 machine learning methods considered, the extra tree classifier and random forest classifier are shown to result in the highest accuracy and minimal bias to the attributes. The research also considers the practical aspects of data collection and highlights the importance of incorporating domain knowledge when using machine learning for CKD status prediction.

5. Yedilkhan Amirgaliyev ., et al. "Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods." (2018).

In this paper ,the effects of using clinical features to classify patients with chronic kidney disease by using support vector machines algorithm is investigated. The chronic kidney disease dataset is based on clinical history, physical examinations, and laboratory tests. Experimental results showed over 93% of success rate in classifying the patients with kidney diseases based on three performance metrics i.e., accuracy, sensitivity and specificity.

6. Dulhare, Uma N., and Mohammad Ayesha. "Extraction of action rules for chronic kidney disease using Naïve bayes classifier." *2016 IEEE International Conference on Computational Intelligence and Computing Research (ICIC)*. IEEE, 2016.

In this paper, the UCI dataset for CKD with 25 attributes. The missing values in the dataset were replaced using the mode value of the attributes taken across the dataset. A naive Bayes Classifier was built to predict CKD. The 'One Rule' algorithm is used for dimensional reduction which reduced almost 80% of the attributes in the dataset. Normal Naive Bayes Classifier is compared with a Naive Bayes Classifier with OneR where the latter improved the accuracy by 12.5%.

7. Bidri Deepika, Vasudeva Rao KR, Dharmaj N Rampure ., "Early Prediction of Chronic Kidney Disease by using Machine Learning Techniques" *American Journal of Computer Science and Engineering Survey* (2020): 49-55.

In this paper, Chronic Kidney Disease (CKD) is one of the types of kidney disease, which results in a gradual loss of kidney function. This phenomenon can be observed over a period of months or years due to several living conditions of patients. The goal is to build a real time application by using the machine learning techniques (Naive Bayes and KNN algorithms), to detect the CKD at an early stage.

8. Pramila Arulanthu. " Predicting the Chronic Kidney Disease using Various Classifiers." *International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICECCOT)* (2019):

In this paper, we have tried the feature selection method which is used to reduce the attributes and select the more essential attributes only. We can classify the data, using four classifiers namely JRip, SMO, Naive Bayes and IBK. Finally we can compare the results of reduced attribute dataset and original dataset result using these four classifiers. Thus we can find the correct classifier and the best classifier. The classification is the most important part of the processes and it is done using data mining technique based on the machine learning. The classification can be used to predict group membership for data instances.

9. Veenita Kunwar. " Chronic Kidney Disease analysis using data mining classification techniques." *IEEE access* (2016): 1-5.

In this paper, an adopted K-means Clustering algorithm with a single mean vector of centroids, to classify and make clusters of varying probability of likeliness of suspect being prone to CKD. They observed and stated that the suspects falling in clusters K1 or K3 are surely suffering from CKD. The probability of a suspect lying in K2 cluster to fall in the class of CKD is 0.50545, which implies that the suspect cannot be classified by their L-factor classifier. However, suspects from clusters K1 & K3 were found to be falling in CKD class with full probability.

10. Akash Maurya , Rahul Wable et al. " Chronic Kidney Disease Prediction and Recommendation of Suitable Diet Plan by using Machine Learning" *Journal of medical systems* 39.10 (2019): 1-9.

In this paper, the dataset consists 24 attributes, forming five main categories. Chronic kidney disease (CKD) is a type of kidney disease in which there is gradual loss of kidney function over a period of months or years. Prediction of this disease is one of the most important problems in medical fields. So automated tool which will use machine learning techniques to determine the patient's kidney condition that will be helpful to the doctors in prediction of chronic kidney disease and hence better treatment. The proposed system extracts the features which are responsible for CKD, then machine learning process can automate the classification of the chronic kidney disease in different stages according to its severity. The objective is to use machine learning algorithm and suggest suitable diet plan for CKD patient using classification algorithm on medical test records. Diet recommendation for patient will be given according to potassium zone which is calculated using blood potassium level to slow down the progression of CKD.