

Early Detection of Chronic Kidney Disease Using
Machine Learning
Literature Survey

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Introduction:

Chronic kidney disease (CKD) poses a significant burden to the healthcare system due to its increasing prevalence, undue risk of developing end-stage renal disease, and negative morbidity and mortality prognosis. Unexpectedly, it turned into an international fitness crisis. An unhealthy diet and inadequate water intake are the main causes of this disease. Without a kidney, you can stay most effectively 18 days on average, but this requires a kidney transplant and dialysis. Having a reliable strategy for predicting CKD in its early stages is critical. Loss of kidney function is a hallmark of chronic kidney disease, commonly known as chronic renal failure. Waste products and excess water are removed from the blood by the kidneys and excreted as urine.

As chronic kidney disease progresses, dangerous levels of water, electrolytes, and waste products can build up in the body. When chronic kidney disease first develops, people may not have many signs or symptoms. Kidney disease may go unnoticed until it is advanced. The goal of treating chronic kidney disease is usually to slow the progression of kidney damage by treating the underlying cause. But stopping the cause of kidney disease didn't stop the damage from getting worse. Without artificial filtration, end-stage renal failure from chronic kidney disease is fatal.

References:

[1]

Year of Publication	Paper Name	Authors
2018	Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods	Yedilkhan AmirgaliyevI Shahriar Shamiluulu Azamat Serek

In this research study the effects of employing clinical variables to classify patients with chronic kidney disease using the support vector machines algorithm are examined. The clinical history, physical examinations, and laboratory tests provide the basis of the chronic kidney disease dataset. According to experimental findings, when classifying kidney disease patients using the three performance criteria of accuracy, sensitivity, and specificity.

[2]

Year of Publication	Paper Name	Authors
2022	Chronic Kidney Disease Detection Using Machine Learning Technique	Rama Al-Momani Ghada Al-Mustafa Razan Zeidan Hiam Alquran Wan Azani Mustafa Ahmed Alkhayyat

This research uses the machine learning techniques of artificial neural networks, support vector machines, and k-Nearest Neighbor to identify CDK early. The significance of detecting these frequently fatal illnesses reflects the significance of AI. In this study, 400 samples and 13 attributes make up the data set. Applying the three categorization methods to the data allowed for their evaluation.

[3]

Year of Publication	Paper Name	Authors
2020	Prediction of Chronic Kidney Disease Using Adaptive Hybridized Deep Convolutional Neural Network on the Internet of Medical Things Platform	Guozhen Chen Chenguang Ding Yang Li Xiaojun Hu Xiao Li

In this study, a CNN-based algorithm model has been created to improve classification system accuracy by lowering the feature dimension. These top-level characteristics aid in the development of a supervised tissue classifier that can distinguish between the two varieties of tissue. With the help of predictive analytics, the experimental process on the Internet of Medical Things platform (IoMT) has come to the conclusion that machine learning advancements offer a

promising framework for the recognition of intelligent solutions to demonstrate their predictive capability outside the realm of kidney disease.

[4]

Year of Publication	Paper Name	Authors
2020	A Novel Approach to Predict Chronic Kidney Disease using Machine Learning Algorithms	Bhavya Gudeti Shashvi Mishra Shaveta Malik Terrance Frederick Fernandez Amit Kumar Tyagi Shabnam Kumari

This paper shows the various machine learning algorithms have been implemented for chronic disease prediction. The main goal is to differentiate the performance of different machine learning algorithms based primarily on their accuracy. This research work idolized Rcode to compare performance. The main purpose of this study is to analyze a dataset of chronic kidney disease and perform cases for CKD and non-CKD classification.

[5]

Year of Publication	Paper Name	Authors
2020	Performance Analysis of Machine Learning Classifier for Predicting Chronic Kidney Disease	Rahul Gupta Nidhi Koli Niharika Mahor N Tejashri

In this research study, the early detection of CKD is critical so that we can provide the treatment needed to prevent or cure the disease. The main focus of this paper was that classification methods were analyzed, namely tree-based decision trees, random forests, and logistic regression. Different means were used to compare algorithms on data sets collected from standard UCI repositories.