

IBM Team 15

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Domain Name: Applied Data Science

Use case Name: Early Detection of Chronic Kidney Disease using Machine Learning.

Paper 1

Authors: Yedilkhan Amirgaliyev, Shahriar Shamiluulu, Azamat Serek.

Year : 2018

Title: Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods

Methodology: 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.

Advantage: early detection strategy of the disease remains important, particularly in developing countries, where the diseases are generally diagnosed in late stages. Finding a solution for above-mentioned problems and riding out from disadvantages became a strong motive to conduct this study.

Disadvantage: This phenomenon can be observed over a period of months or years due to several living conditions of patients. So, it takes a long time to predict early.

Paper 2

Authors: Tahsin M. Rahman, Saima Siddiqua, Siam -E- Rabby.

Year : 2019

Title: Early Detection of Kidney Disease Using ECG Signals Through Machine Learning Based Modelling.

Methodology: This paper introduces the idea of detecting the presence of kidney disease through machine learning based classification modelling, by processing the patient's ECG signal.

Advantage: Since cardio-vascular diseases and the chronic kidney disease is inter-related, this model can be used for patients undergoing cardio-vascular problems to determine whether their kidneys have been affected or not.

Disadvantage: Recent studies and ongoing researches have showed that patients undergoing kidney problems start developing cardiac problems- scientifically known as the Cardio Renal Syndrome (CRS) which can lead to a sudden cardiac arrest in the last stages of their disease..

Paper 3

Authors: Maithili Desai.

Year : 2020

Title: Early Detection and Prevention of Chronic Kidney Disease

Methodology: A Data Mining algorithm, Boruta analysis is performed to extrapolate the factors which can fortify the chances of a patient having CKD. This analysis covers statistic data along with historic and medical details. The dataset has been obtained from UCI source which contains data of 400 samples from the southern part of India with their ages ranging between 2-90 years.

Advantage: This analysis covers statistic data along with historic and medical details. The dataset has been obtained from UCI source which contains data of 400 samples from the southern part of India with their ages ranging between 2-90 years.

Disadvantage: It is estimated that one in five men, and one in four women, have Chronic Kidney Disorder (CKD). 10% of the population worldwide is affected by (CKD), and millions die each year due to lack of access to affordable treatment.

Paper 4

Authors: Imesh Udara Ekanayake, Damayanthi Herath.

Year : 2020

Title: Chronic Kidney Disease Prediction Using Machine Learning Methods.

Methodology: Chronic Kidney Disease (CKD) or chronic renal disease has become a major issue with a steady growth rate. A person can only survive without kidneys for an average time of 18 days, which makes a huge demand for a kidney transplant and Dialysis.

Advantage.: 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.

Disadvantage: The production of urine involves highly complex steps of excretion and re-absorption.

Paper 5

Authors: : Pronab Ghosh, F. M. Javed Mehedi Shamrat, Shahana Shultana, Saima Afrin, Atqiya Abida Anjum, Aliza Ahmed Khan.

Year : 2020

Title: Optimization of Prediction Method of Chronic Kidney Disease Using Machine Learning Algorithm.

Methodology: This deals with the theoretical ability of the research work. It will give a piece of clear information about the concept of work. For the study, the dataset is collected from an online data repository. This data is cleaned using several preprocessing techniques. The feature selection is done on the dataset obtained from the repository.

Advantage: Patients' lives can be saved with the fast detection of disease in the earliest stage. In addition, the evaluation process of machine learning algorithm can detect the stage of this deadly disease much quicker with a reliable dataset

Disadvantage: Based on this critical issue, a significant number of men and women are now suffering due to the lack of early screening systems and appropriate care each year..

Paper 6

Authors: Bhavya Gudeti, Shashvi Mishra, Terrance Frederick Fernandez, Amit Kumar Tyagi, Shaveta Malik, Shabnam Kumari.

Year : 2020

Title: A Novel Approach to Predict Chronic Kidney Disease using Machine Learning Algorithms.

Methodology: The proposed system deals with the detection of Chronic Kidney disease. The healthcare systems generate colossal data. Thus, it is obligatory to use this data productively to analyze, predict, and to treat an explicit disease. A classification model offers some solution from determined values. In classification type, there is a tendency to expect fewer or lots of input to predict values of their outcomes.

Advantage: Earlier detection of the illness followed by treatment could keep this dreaded disease at the shore.

Disadvantage: Current available ancient tools don't seem to be enough to analyze huge volumes of data.

S.No	Author	Title of the Paper	Methodology	Pros (Advantage)	Cons (Disadvantage)
1.	Yedilkhan Amirgaliyev, Shahriar Shamiluulu, Azamat Serek (2018) (IEEE paper 1)	Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods	This paper examines some of the latest AI patterns and activities. System-Chatbots are made. In the banking industry, the introduction of Artificial Intelligence has driven chatbots and changed the	early detection strategy of the disease remains important, particularly in developing countries, where the diseases are generally	This phenomenon can be observed over a period of months or years due to several living conditions of patients. So, it takes a long time to predict

			face of the interaction between bank and customers. .	diagnosed in late stages. Finding a solution for above-mentioned problems and riding out .	early.
2.	Tahsin M. Rahman, Saima Siddiqua, Siam - E- Rabby.(2019) (IEEE paper 3)	Early Detection of Kidney Disease Using ECG Signals Through Machine Learning Based Modelling.	This paper introduces the idea of detecting the presence of kidney disease through machine learning based classification modelling, by processing the patient's ECG signal. Recent studies and ongoing researches have showed that patients undergoing kidney problems start developing cardiac problems.	Since cardiovascular diseases and the chronic kidney disease is inter-related, this model can be used for patients undergoing cardiovascular problems to determine whether their kidneys have been affected or not. .	Recent studies and ongoing researches have showed that patients undergoing kidney problems start developing cardiac problems- scientifically known as the Cardio Renal Syndrome (CRS) which can lead to a sudden cardiac arrest in the last stages of their disease.
3.	Maithili Desai. (2020) (IEEE paper 2)	Early Detection and Prevention of Chronic Kidney Disease	A Data Mining algorithm, Boruta analysis is performed to extrapolate the factors which can fortify the chances of a patient having CKD. This analysis covers statistic data	This analysis covers statistic data along with historic and medical details. The dataset has been obtained from UCI source which contains data of 400 samples from the southern	It is estimated that one in five men, and one in four women, have Chronic Kidney Disorder (CKD). 10% of the population worldwide is affected by (CKD), and millions die each year due to lack of access to affordable

			along with historic and medical details. The dataset has been obtained from UCI source which contains data of 400 samples from the southern part of India	part of India with their ages ranging between 2-90 years.	treatment.
4.	Imesh Udara Ekanayake, Damayanthi Herath. (2020) (IEEE paper 4)	Chronic Kidney Disease Prediction Using Machine Learning Methods.	Chronic Kidney Disease (CKD) or chronic renal disease has become a major issue with a steady growth rate. A person can only survive without kidneys for an average time of 18 days, which makes a huge demand for a kidney transplant and Dialysis.	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..	The production of urine involves highly complex steps of excretion and re-absorption.
5.	Pronab Ghosh, F. M. Javed Mehedi Shamrat, Shahana Shultana, Saima Afrin, Atqiya Abida Anjum, Aliza Ahmed Khan. (2020)	Banking 4.0: -The Influence of Artificial Intelligence on the Banking Industry & How AI is Changing the Face of	Artificial intelligence (AI), is simulation of human intelligence in machines. Artificial intelligence consists of generally two fundamental	patients' lives can be saved with the fast detection of disease in the earliest stage. In addition, the	Based on this critical issue, a significant number of men and women are now suffering due to the lack of early screening systems and appropriate

	(IEEE paper 5)	Modern Day Banks	ideas. First it involves studying human brains like how their thought process works and secondly it helps representing those processes through machine learning.	evaluation process of machine learning algorithm can detect the stage of this deadly disease much quicker with a reliable dataset	care each year...
6.	Bhavya Gudeti, Shashvi Mishra, Terrance Frederick Fernandez, Amit Kumar Tyagi, Shaveta Malik, Shabnam Kumari (2020) (IEEE paper 6)	A Novel Approach to Predict Chronic Kidney Disease using Machine Learning Algorithms.	The proposed system deals with the detection of Chronic Kidney disease. The healthcare systems generate colossal data. Thus, it is obligatory to use this data productively to analyze, predict.	Earlier detection of the illness followed by treatment could keep this dreaded disease at the shore..	Current available ancient tools don't seem to be enough to analyze huge volumes of data.