EARLY DETECTION OF CHRONIC KIDNEY DISEASE

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INTRODUCTION:-

There are a large number of people in the world who gets affected to kidney related diseases. Our country India ranks first in terms of people getting affected by kidney related disease. Though population plays a major factor in it, the fact that China which has higher population than us is actually ranking in a much lower place than us in the term of people getting affected by kidney related disease. Literally, chronic means long-lasting, and CKD has been defined based on the presence of kidney damage and its structure or decreased kidney function or kidney damage and diminished function that lasts longer than 3 months. CKD is a serious public health issue with a universal prevalence of 13.4% and a mortality rate of 1.2 million (approx.) per year.

Generally, the kidney diseases are caused by the abnormal physiological functionalities of human kidney. The characteristic symptoms are generated based on the differentiation between normal physiological functionalities and abnormal physiological functionalities of the kidney. The difference in the functionality of kidney is mainly due to the lifestyle and the food preference people have in their life. So, the reason for doing this project is to find the symptoms of kidney related diseases for the users and alert them before the disease becomes fatal for the patient. The main motive of this project is to find the symptom and its cure as soon as possible.

LITERATURE REVIEW:-

[1]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2018	Early prediction of chronic kidney disease using machine learning supported by predictive analytics.	A. J. Aljaaf et al

A. J. Aljaaf et al examined in their study the ability of four machine learning (ML) models for early prediction of CKD, which were: support vector machine (SVM), classification and regression tree (CART), logistic regression (LR), and multilayer perceptron neural network (MLP). By using the CKD dataset from UCI and seven features out of 24, they compared the performance of these ML models. The results showed that the MLP model had the highest AUC and sensitivity. It was also noticeable that logistic regression almost had the same performance as MLP but with the advantage of the simplicity of the LR algorithm. Therefore, in our study, we can use the LR algorithm as a start or a benchmark and then use more complex algorithms.

[2]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2018	Performance comparison of some classifiers on chronic kidney disease data.	Avci E, Karakus S, Ozmen O, Avci D

In this study, dataset named "Chronic Kidney Disease" obtained from UCI database is used. The dataset consists of 400 individual's information and contains 25 features dataset was classified according to whether it is chronic kidney disease using Naive Bayes (NB), K-Star, Support Vector Machines (SVM) and J48 classifiers used in data mining.

[3]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2017	Extraction of Action Rules for Chronic Kidney Disease using Naive Bayes Classifier.	Dulhare UN, Ayesha M

Chronic kidney disease (CKD), also known as chronic renal disease, which is a progressive loss in kidney function over a period of months or years. It is defined by the presence of kidney damage or decreased glomerular filtration rate (GFR). The estimated prevalence of CKD is about 9-13 % in the general adult population. Chronic Kidney Disease is a silent condition. Signs and symptoms of CKD, if present, are generally not specific in nature and unlike several other chronic diseases (such as congestive heart failure and chronic obstructive lung disease), they do not reveal a clue for diagnosis or severity of the condition. Early detection and treatment can often keep chronic kidney disease from getting worse.

[4]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2016	Chronic Kidney Disease Analysis Using Data Mining Classification Techniques	Kunwar V, Chandel K, Sai Sabitha A, Bansal A

Data mining is the process of extracting hidden information from massive dataset, categorizing valid and unique patterns in data. There are many data mining techniques like clustering, classification, association analysis, regression etc. The objective of the paper is to predict Chronic Kidney Disease (CKD) using classification techniques like Naive Bayes and Artificial Neural Network (ANN). The experimental results implemented in Rapid Miner tool show that Naive Bayes produce more accurate results than Artificial Neural Network.

[5]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2020	Chronic kidney disease: prevalence and risk factors.	A.M. Aringazina, O.Zh.Narmanova, G.O. Nuskabaeva, Zh.A. Tagaevaq

This system explains about the disease risks and affects that has on us and our surrounding. It also explains about the ill factor it might have and chances of spreading to anyone in our surrounding.

[6]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2011	The Burden of Chronic Kidney Disease on Developing Nations: A 21st Century Challenge in Global Health	Nugent R.A, Fathima S.F., Feigl A.B, Chyung D

The proposed system explains about the ill effects these kidney diseases have on developing countries. In developing nations, the growing prevalence of chronic diseases such as chronic kidney disease has severe implications on health and economic output. The rapid rise of common risk factors such as diabetes, hypertension, and obesity,

especially among the poor, will result in even greater and more profound burdens that developing nations are not equipped to handle.

[7]

YEAR OF PUBLICAT ION	PAPER NAME	AUTHOR NAME
2020	A Comparative Analysis of Machine Learning Techniques.	Alvaro Sobrinho, Andessa C.M. Da Silveira, Leandro Dias da Silva, Evandro de B. Costa

This system explains about the use of diagnosing with the help of computer. Software systems have been developed to assist physicians during CKD monitoring and diagnosis. For example, CKD-Go1is a web application (app) to help users verify their kidney function by inputting their ACR and GFR.

[8]

YEAR OF PUBLICATI ON	PAPER NAME	AUTHOR NAME
2018	Diagnosis of Kidney Conditions Using Low-Cost Paper Diagnostics.	Md. Nazibul Islam

This proposed system uses low cost paper diagnosis method. The method paper diagnostic devices (PADs) can play a vital role in low-cost and rapid diagnosis of kidney condition, resulting in early detection of kidney complications. Paper diagnostics are paper and cellulose based analytical devices capable of qualitative or quantitative detection of biomarkers.

[9]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2019	Machine Learning Applied to Kidney Disease Prediction: Comparison Study	Akm Shahariar Azad Rabby, Rezwana Mamata, Monira Akter Laboni, Ohidujjaman

The main aim is to find an optimized and efficient machine learning (ML) technique that can effectively recognize and predict the condition of chronic kidney disease. the data has been divided into two sections. In one section train dataset got trained and another section got evaluated by test dataset. The analysis results show thatthe Decision Tree Classifier and Gaussian Naive Bayes achieved the highest performance than the other classifiers, obtaining the accuracy score of 100% and 1 recall (Sensitivity) score.

[10]

YEAR OF PUBLICATION	PAPER NAME	AUTHOR NAME
2022	Development of a Graphical User Interface Software for The Prediction of Chronic Kidney Disease	S.C. Nwaneri and H.C. Ugo

The proposed system explains about the training and development of model for kidney diagnosing. This process involves building the neural network architecture and determining the activation functions to be used at the output of each layer of the network. The ANN model is built using the Keas libraries in python. Dense is used to assign the number of layers for the network. The ANN model consists of 25 neurons in the input layer and one neuron at the output layer.

References:

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