Kidney Disease Detection

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Abstract: This Chronic kidney disease (CKD), also known as chronic renal disease. Chronic kidney disease involves conditions that damage your kidneys and decrease their ability to keep you healthy. You may develop complications like high blood pressure, anemia (low blood count), weak bones, poor nutritional health and nerve damage. . Early detection and treatment can often keep chronic kidney disease from getting worse. Data Mining is the term used for knowledge discovery from large databases. The task of data mining is to make use of historical data, to discover regular patterns and improve future decisions, follows from the convergence of several recent trends: the lessening cost of large data storage devices and the ever-increasing ease of collecting data over networks; the expansion of robust and efficient machine learning algorithms to process this data; and the lessening cost of computational power, enabling use of computationally intensive methods for data analysis. Machine learning, has already created practical applications in such areas as analyzing medical science outcomes, detecting fraud, detecting fake users etc. Various data mining classification approaches and machine learning algorithms are applied for prediction of chronic diseases. The objective of this research work is to introduce a new decision support system to predict chronic kidney disease. The aim of this work is to compare the performance of Support vector machine (SVM) and K-Nearest Neighbour (KNN) classifier on the basis of its accuracy, precision and execution time for CKD prediction.

Keywords: kidney Disease Detection, Machine Learning, KNN , SVM..

I. INTRODUCTION

We all knows, that Kidney is essential organ in human body. Which has main functionalities like excretion and osmoregulation. In simple words we can say that all the toxic and unnecessary material from the body is collected and thrown out by kidney and excretion system. It is a dangerous disease of the kidney which produces gradual loss in kidney functionality. CKD is a slow and periodical loss of kidney function over a period of several years. If CKD is not detected and cured in early stage then patient can show following Symptoms: Blood Pressure, anemia, weekboans, poor nutrition health and nerve damage, Decreased immune response because at advanced stages dangerous levels of fluids, electrolytes, and wastes can build up in your blood and body. Hence it is essential to detect CKD at its early stage but it is unpredictable as its Symptoms develop slowly and aren't specific to the disease. Some people have no symptoms at all so machine learning can be helpful in this problem to predict that the patient has CKD or not. Machine learning does it by using old CKD patient data to train predicting model. and determine the chronic kidney disease..

II. PROPOSED WORK

2.1 Motivation
Motivation for change often depends on the existence of a discrepancy between the patients' current behavior and important values or goals

2.2 SVM
Support Vector Machine or SVM is one of the most popular Supervised Learning algorithms, which is used for Classification as well as Regression problems. However, primarily, it is used for Classification problems in Machine Learning.

III. METHODOLOGY

The scope projects are highly experienced in the management of older multi-morbidity subjects at risk for renal impairment and related clinical complications, including changes in functional status

IV. SYSTEM ARCHITECTURE
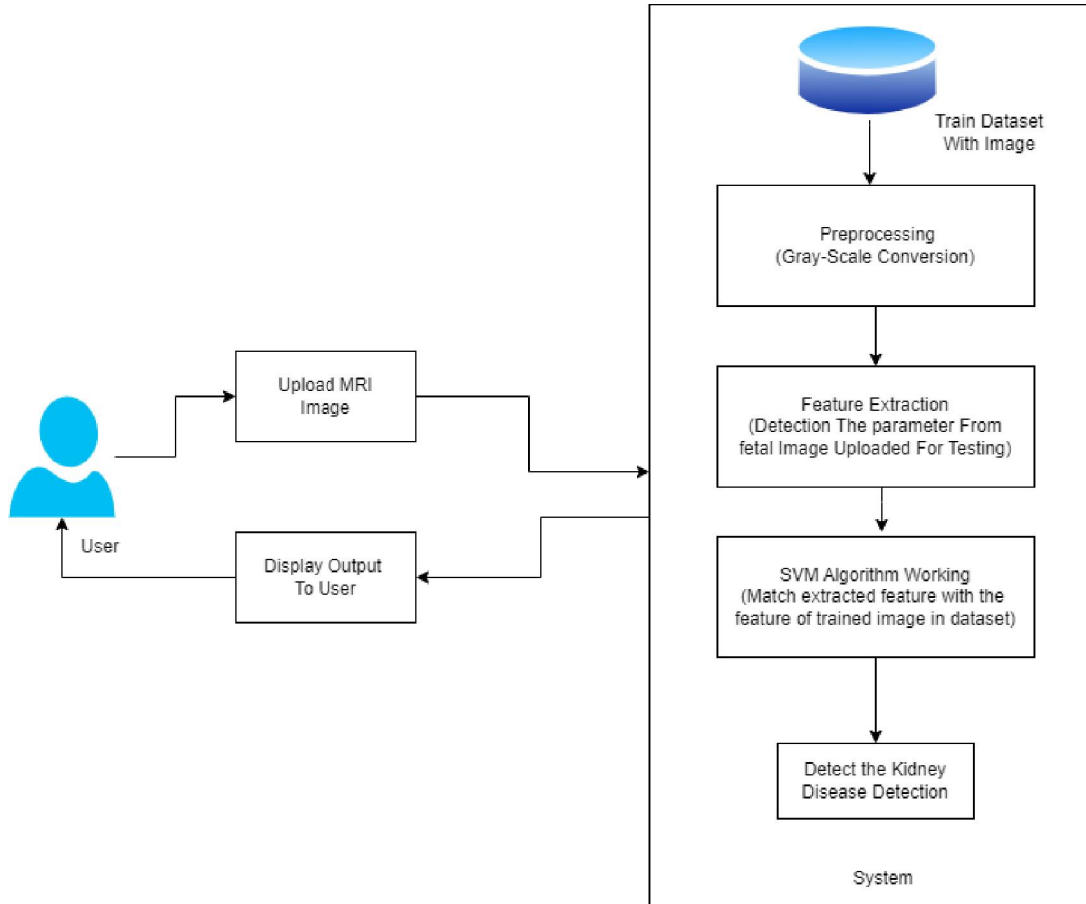
V. HARDWARE AND SOFTWARE REQUIREMENTS

Software Requirements
- IDE: Spyder
- Coding Language: PythonVersion3.8
- Operating System: Windows10(64Bit)

Hardware Requirements
- RAM: 8GB
- Hard Disk: 500GB
- Processor: Intel i5Processor
- Speed: 2.5GHz

VI. LITERATURE SURVEY

1. Paper Name : Prediction of Chronic Kidney Disease using Adaptive Hybridized Deep Convolutional Neural Network on the Internet of Medical Things Platform.
Author :Wujun Xue

Abstract : Chronic Kidney disease is a severe lifelong condition caused either by renal disease or by impaired functions of the kidneys.. In the present area of research, Kidney cancer is one of the deadliest and crucial importance for the survival of the patients ' diagnosis and classification.

2. Paper Name: Diagnostic Decision Support System of Chronic Kidney Disease Using Support Vector Machine.
Author :Mubarik Ahmad, VitriTundjungsari
Abstract : Kidney disease or commonly known as kidney failure is a condition when the renal function is declining that could result in the inability of the kidneys to perform their duties. Kidney disease patients have the potential to get into the chronic phase.

3. Paper Name:Early Prediction of Chronic Kidney Disease Using Machine Learning Supported by Predictive Analytics.
Author name: Ahmed J. Aljaaf, Dhiya Al-Jumeily.
Abstract : Chronic Kidney Disease is a serious lifelong condition that induced by either kidney pathology or reduced kidney functions. Early prediction and proper treatments can possibly stop, or slow the progression of this chronic disease to end stage, where dialysis or kidney transplantation is the only way to save patient's life.

4. Paper Name : Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods.
Author :YedilkhanAmirgaliyev, Shahriar Shamiluulu.
abstract : Currently, there are many people in the world suffering from chronic kidney diseases worldwide. Due to the several risk factors like food, environment and living standards many people get diseases suddenly without understanding of their condition. Diagnosing of chronic kidney diseases is generally invasive, costly, time consuming and often risky.

5. Paper Name:Extraction of Action Rules for Chronic Kidney Disease using Na¨ıve Bayes Classifier.
Author : Dr. Uma N Dulhare, Mohammad Ayesha.
Abstract:Chronic kidney disease (CKD), also known as chronic renal disease, which is 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).

VII. CONCLUSION

As we have already seen the applications of data mining and machine learning in medical sector. In this project, a SVM is implemented for prediction of CKD. Although the classifiers worked efficiently in prediction of other diseases also. In this project, Chronic Kidney Disease is predicted using SVM Algorithm and a comparative study of their performance is done. From the analysis we found that, out of one classifiers. SVM classifier performed better than the other. The rate of prediction of CKD is improved.

VIII. FUTURE SCOPE

We implement this system on android. Also we can try to improve accuracy

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