

**Early Prediction of Chronic Kidney Disease
Disease Analysis Using Machine Learning**

IBM PROJECT

Team Id:PNT2022TMID39435

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LITERATURE SURVEY

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SURVEY 1:

1.STATISTICAL AND DATA MINING ASPECTS ON KIDNEY STONES: A SYSTEMATIC REVIEW AND META ANALYSIS:

This project is about a systematic review and meta analysis using classification algorithms studies predicted good accuracy with C4.5, classification tree and Random forest(93%) followed by Support Vector Machines(SVM)(91.98%).Logistic and NNge has also shown good accuracy results also shown good accuracy results with zero relative absolute error and 100% correctly classified results.Machine Learning approaches may provide better results in the treatment of kidney stones.Data mining

offers a more quantitative approach to quality control with more uniform, user friendly for clinicians in reading the reports and reduce the errors. A meta analysis combines results of a number of studies that deal with a set of related research hypotheses. A meta analysis may be conducted on a several clinical trials of a medical treatment which refer to statistical methods combining evidence. In the present experimentation, we had analyzed a set of parameters related to kidney stone formation collected from patients in Kaviti, and Andhra Pradesh, India.

SURVEY 2:

PREDICTION OF CHRONIC KIDNEY DISEASE USING RANDOM FOREST MACHINE LEARNING

ALGORITHM:

In this paper they have used random forest machine learning algorithm to predict the chronic kidney disease they have compared the performance of six classifiers in the prediction of chronic kidney disease analysis. The experimental results of the proposed method have demonstrated the RF has produced superior prediction performance in terms of classification accuracy. AUC and MCC respectively for our considered dataset. It was also observed that few classifiers have yielded poor classification accuracy as compared to RF like SMO and RBF. Random forests are a combination of tree predictors so that all

tree depends on the values of a random vector sampled autonomously and with similar distribution for all trees in the forest. An estimation of the error rate can be found based on the training data, by the following conditions. At every bootstrap iteration, predict the data not in the bootstrap sample by considering the tree developed with the bootstrap sample. Cumulate the OOB predictions. Calculate the error rate, and call it the OOB estimate of error rate.

SURVEY 3:

A NOVEL DETECTION FOR KIDNEY DISEASE USING IMPROVED SUPPORT VECTOR MACHINE:

This paper is about a novel detection for kidney disease using improved support vector machine. In this work, kidney disease prediction system was developed using classification algorithms (KNN, Naive Bayes, SVM, ISVM) through MATLAB data mining tool to predict effective and better accurate results regarding whether the patient is suffering from kidney disease or not. As the kidney disease patients are increasing world-wide each year and huge amounts of data is available for research, where different data mining techniques are used in the diagnosis of kidney disease. So different techniques used have shown different accuracies depending upon the number of attributes taken tool used for implementation. In the result portion of the

dissertation, it is clearly shown that our proposed system gives accurate results in case of each parameter (accuracy, precision, and recall). Precision value of proposed system is 0.949384% which is very large as compared to previous system. In the case of recall values our proposed system attains higher value i.e. 0.925747% and same is true in the case of accuracy.

SURVEY 4:

OF KNN TECHNIQUE: AN APPROACH FOR CHRONIC KIDNEY DISEASE PREDICTION:

In this paper OF-KNN Technique: An approach for Chronic kidney Disease prediction in this article is Optimal Fuzzy-K nearest neighbour technique. The optimum performance of fuzzy is obtained by tuning the membership function utilizing the Bat optimization algorithm. Then the OF is utilized to measure the similarity in the KNN of the classification of disease. The performance of the proposed technique is analysed by the comparison with conventional methods. The accuracy is considered as the primary metric to evaluate the performance, and it is proved the proposed method provides better classification accuracy rate. In most of the past work, the CKD has analysed and forecasted based on the common factors without much concentration on the environmental factors. Hence this work planned to include the environmental factors with the

patients activities. In medical prediction, the accuracy must be in acceptable range so that the system can replace with the human source. Hence the overall objective of the work is to develop a novel classification technique for the prediction of CKD with correct accuracy.

SURVEY 5:

DATA MINING CLASSIFICATION ALGORITHMS FOR KIDNEY DISEASE PREDICTION:

In this paper data mining classification algorithms for kidney disease prediction naive bayes, svm, ann, anfis they have used kidney function test(KFT) dataset. The algorithm which has the higher accuracy with the minimum execution time has chosen as the best algorithm machine learning tool is resulting in high classification accuracy rate. The gap identified in the classifiers show different accuracy rate. Data mining is an approach which dispense an intermixture of technique to identify a block of data or decision making knowledge in the database and eradicating these data in such a way that they can be put to use in decision support, forecasting and estimation. The data is often voluminous, but it has data that is useful. Two major preferred model that can be created in data mining are predictive and descriptive. Under these two models there are various tasks that are used in data mining process. On the basis of various

historical data a predictive model makes estimation about the values of data using recognized results found from various data. Unlike predictive model, a descriptive model identifies patterns or relationships in data.

SURVEY 6:

PREDICTION OF CHRONIC KIDNEY DISEASE USING C4.5 ALGORITHM:

This paper is to make use of each such attributes. The information says that it helps us to measure the severity of the problem, the predicted survival of the patient after the illness, the pattern of disease and work of curing the disease. Hence, we considered a data set with different attributes that can be found in general medical tests, machine learning is applied by developing a decision tree using C4.5 algorithm and predicted whether the person is normal or suffering from kidney problem. The proposed model will be developed using Java language and is implemented in Net-Beans platform. In its application, the paper machine support vector, decision tree algorithm and bayesian network machine learning. Datasets of the chronic kidney disease UCI machine learning knowledge base were used to predict chronic renal failure in patients with or without chronic kidney disease. C4.5 classification with the shortest running time and higher accuracy results. The proposed decision

tree, bayesian classification, based classification algorithm back propogation, k nearest neighbour basic knowledge, classifiers more accurately multilayer perceptions, random forests, naive bayesian, support vector machines, k nearest neighbors and radial basis functions.

REFERENCES

- Kunwar V,Chandel K, Sai Sabitha, Bansal A(2016) Chronic Kidney Disease Analysis using Data Mining Classification Techniques. 2016 6th International Conference Cloud System and Big Data Engineering.
- Amirgaliyev Y, Shamiluulu S,Serek A(2018) Analysis of Chronic Kidney Disease Dataset by Applying Machine Learning Methods. 2018 IEEE 12th International Conference on Application of Information and Communication Technologies(AICT).
- Devika R, Sai Vaishnavi A, Subramaniya Swamy V(2019) Comparative Study of Classifier for Chronic Kidney Disease Prediction using Naive Bayes, KNN and Random Forest,2019 3rd International Conference on Computing Methodologies and Communication(ICCMC).

- Avci E, karakus S, Ozmen O, Avci(2018)Performance Comparison of Some Classifiers on Chronic Kidney Disease Data. 2018 6th International Symposium on Digital Forensic and Security (ISDFS).
- Alijaaf AJ, Al-jumeily D, Haglan HM, Alloghani M, Basker T, et al. (2018) Early Prediction of chronic kidney using machine learning supported by predictive analytics. 2018 IEEE Congress on Evolutionary Computation (CEC).