Prediction of Chronic Kidney Disease - A Machine Learning Perspective

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Paper link: https://ieeexplore.ieee.org/abstract/document/9333572

Summary

Motivation: Chronic Kidney Disease prediction has been discussed in this research. CKD does not give any symptoms till kidney is damaged badly. Two main diseases of CKD Diabetes and High blood pressure. The prevention of CKD is controlling of these two diseases.

Contribution : This paper objects to predict Chronic Kidney Disease based on full features and important features of CKD dataset. Seven classifier algorithms have been applied and also three different techniques have been applied for feature selection.

Methodology : The author developed a model to predict CKD disease in patients. The performance of the model was tested on all attributes. Classifier algorithms performance was tested on the selected features.

Conclusion: In this paper seven classifiers algorithm used artificial neural network, C5.0,logistic regression, CHAID, linear support vector machine,K-Nearest neighbours and random tree. The result is that smote is a best technique for balancing a dataset. LSVM achieved the highest accuracy in all experiments as compared to other classifiers algorithms.

Limitations

First limitation: Logistic and KNN algorithms have not enough capacity to distinguish between positive class and negative class. These two classifiers give many False positive results due to unbalanced dataset.

Second limitation: The dataset result affected by unnecessary attributes. Main mistake in feature selection period. Due to this, many extra experiments had to be done.

Synthesis: The ideas presented in the paper identify the symptoms of CKD. The whole research period it was observed that LSVM achieved the highest accuracy of 98.86% in SMOTE with full features. Smote gave better results with selected feature by lasso regression.