

Chapter 22

Strategic Analysis in Prediction of Liver Disease Using Different Classification Algorithms

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ABSTRACT

Liver diseases avert the normal activity of the liver. Discovering the presence of liver disorder at an early stage is a complex task for the doctors. Predictive analysis of liver disease using classification algorithms is an efficacious task that can help the doctors to diagnose the disease within a short duration of time. The main motive of this study is to analyze the parameters of various classification algorithms and compare their predictive accuracies so as to find the best classifier for determining the liver disease. This chapter focuses on the related works of various authors on liver disease such that algorithms were implemented using Weka tool that is a machine learning software written in Java. Also, orange tool is utilized to compare several classification algorithms in terms of accuracy. In this chapter, random forest, logistic regression, and support vector machine were estimated with an aim to identify the best classifier. Based on this study, random forest with the highest accuracy outperformed the other algorithms.

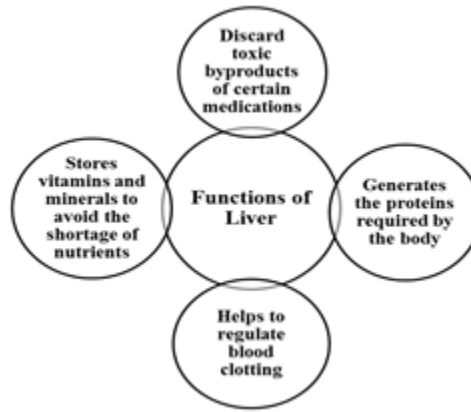
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INTRODUCTION

Healthcare is regarded as a significant component in enhancing the health-related services for every individual. It makes a provision to improve the health by taking the certain essential measures into consideration and mainly deals with the enhancement of health through the diagnosis of diseases at the right time (Saritha et al., 2017). Thus, “The main aim behind the Healthcare System is to deliver the best quality of services and to predict the diseases at an early stage.”

Liver is an imperative organ of our body. There is a great need for an early detection of liver disease so as to prevent complete liver failure, which can result in patient’s death. For the proper diagnosis, it is necessary to evaluate some of the main attributes of liver patient’s dataset (Vijayarani et al., 2015). Some of the main attributes of liver disease include, “Total_bilirubin, direct_bilirubin, alkaline_phosphatas, total_protein, albumin and globulin_ratio.” Below, Figure 1 shows the various functions that are performed by the liver that makes it the second largest organ in our body.

Figure 1. Functions performed by the liver



It is a rigorous task for doctors to detect the liver disease accurately. Various classifiers have been utilized to classify the data and to predict the disease through the liver patient’s dataset (Ghosh et al., 2017). “Having access to classification algorithms with huge volume of data will help clinicians to come up with optimal decisions and ultimately improve the overall experience of the patient.” This paper exhibits a survey about the techniques that can be utilized to reveal the disease and gives a roadmap for future work, such as which classification technique to be utilized further for diagnosis of the liver disease.

A. Tool Used

Weka Tool

Weka is an efficient machine learning software that is widely used to classify various parameters when different algorithmic approaches are applied based on the datasets. It is an accumulation of tools utilized for the purpose of visualization and algorithms for analyzing the data and predictive modelling.

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