A Review of Liver Patient Analysis Methods Using Machine Learning

Define Problem/ problem understanding:

Liver diseases averts the normal function of the liver. This disease is caused by an assortment of elements that harm the liver. Diagnosis of liver infection at the preliminary stage is important for better treatment. In today's scenario devices like sensors are used for detection of infections. Accurate classification techniques are required for automatic identification of disease samples.

This disease diagnosis is very costly and complicated. Therefore, the goal of this work is to evaluate the performance of different Machine Learning algorithms in order to reduce the high cost of liver disease diagnosis. Early prediction 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.

Specify the Business problem :

In this project we will analyse the parameters of various classification algorithms and compare their predictive accuracies so as to find out the best classifier for determining the liver disease. This project compares various classification algorithms such as Random Forest, Logistic Regression, KNN and ANN Algorithm with an aim to identify the best technique. Based on this study, Random Forest with the highest accuracy outperformed the other algorithms and can be further utilised in the prediction of liver disease and can be recommended to the user.

Business Requirements:

Patients with Liver disease have been continuously increasing because of excessive consumption of alcohol, inhale of harmful gases, intake of contaminated food, pickles and drugs and other factors. This dataset was used to

evaluate prediction algorithms in an effort to reduce burden on doctors. Use these patient records to build a prediction model that will predict which patients have liver disease and which ones do not.

Literature Survey:

With a growing trend of sedentary and lack of physical activities, diseases related to liver have become a common encounter nowadays. In rural areas the intensity is still manageable, but in urban areas, and especially metropolitan areas the liver disease is a very common sighting nowadays. Problems with liver patients are not easily discovered in an early stage as it will be functioning normally even when it is partially damaged.

An early diagnosis of liver problems will increase patients survival rate. There are various algorithms that have been used with varying levels of success. Logistic regression, decision tree, random forest, and neural networks have all been used and have been able to accurately predict liver disease.

Health care and medicine handles huge data on daily basis. This data comprises of information about the patients, diagnosis reports and medical images. It is important to utilize this information to decipher a decision support system. To achieve this it is important to discover and extract the knowledge domain from the raw data. It is accomplished by knowledge discovery and data mining .

The implementation of data mining techniques is widespread in biological domain. In recent years, liver disorders have excessively increased and liver diseases are becoming one of the most fatal diseases in several countries. In this study, liver patient datasets are investigate for building classification models in order to predict liver disease.

Several feature model construction and comparative analysis are implemented for improving prediction accuracy of Indian liver patients. Different studies have been conducted for classification of liver disorders, they are discussed briefly.

Classification algorithm is one of the greatest significant and applicable data mining techniques used to apply in disease prediction. Classification algorithm is the most common in several automatic medical health diagnoses. Many of them show good classification accuracy.

In another study the UCI liver dataset was used for selection of sub features based on random forest classifier with multi-layer perceptron induced. Different approaches for artificial intelligence for the liver patient dataset, precise predictions of liver failure were applied. Identification of liver infection at preliminary stage is important to combat the frequency and severity deaths of patients in India.

The patients must be screened based on initial symptoms for development of personalized therapy. In this study, an attempt is made for prediction of liver disease in patients using data mining techniques. Based on the review of literature, it was depicted that the past research studies have implemented different data mining techniques for classification of liver dataset. A hybrid model can be adapted to further increase the prediction accuracy of liver disease. It is followed by development of a graphical user interface would further aid the scientific community in early diagnosis of liver infection. It will provide a framework for end user application for generating promising treatment protocols.

Social Or Business Impact

Social Impact:- Today almost everybody above the age of 12 years has smartphones with them, and so we can incorporate these solutions into an android app or ios app. Also it can be incorporated into a website and these app and website will be highly beneficial for a large section of society.

Business Model/Impact:- Its now more feasible Blood test centers to give the result. As for this model user don't need to have any deep knowledge of medical science and liver diseases. User need to do pass the details being asked, which are already present in the blood test report(some like age, gender are already known) and then user will get the results of prediction.