

LITERATURE SURVEY

ABSTRACT

As per the World Health Organization's latest survey report, death due to liver disease is 2.95% of total death and India ranks 63rd position in the world. The main important role of the liver is to remove the toxic and harmful substances from the blood before distribution to different parts of our body. Liver disease is considered as one of the most dangerous and deadliest diseases faced in the globe. It is very difficult to identify liver disease at early stage when liver tissues have damaged moderately. This leads to failure in treatment and medication. If liver is 100% fail there is no option to recover but only one solution is available which is liver transplantation. Early detection of liver disease can help in treatment. There are different symptoms of chronic liver disease which include digestion problem including abdominal pain, dry mouth, constipation and internal bleeding, Dermatological issues like yellowish skin color, spider like veins, redness on feet and Brain and Nervous system abnormalities like memory problem, numbness and fainting. Early prediction is crucial to give proper treatment and save life of patient.

INTRODUCTION

The liver is the largest organ of the body and it is essential for digesting food and releasing the toxic element of the body. The viruses and alcohol use lead the liver towards liver damage and lead a human to a life-threatening condition. The reason behind the causes of liver disease are as follows, liver fibrosis, fatty liver, liver cirrhosis, hepatitis infection, excessive alcohol drink, drug and genetic abnormalities. There are many types of liver diseases whereas hepatitis, cirrhosis, liver tumors, liver cancer, and many more. Among them liver diseases and cirrhosis as the main cause of death. Therefore, liver disease is one of the major health problems in the world. Every year, around 2 million people died worldwide because of liver disease. According to the Global Burden of Disease (GBD) project, published in BMC Medicine, one million peoples are died in 2010 because of cirrhosis and million are suffering from liver cancer. Machine learning offers a guarantee for improving the detection and prediction of disease that has been made an interest in the biomedical field and they also increase the objectivity of the decision-making process. By using machine learning techniques medical problems can be easily solved and the cost of diagnosis will be reduced.

MACHINE LEARNING

Machine learning is a branch of Artificial Intelligence, which help the computer to think like human and can take their own decision without human intervention. Due to rapidly development in Artificial Intelligent, Machine learning has lots of advancement in diagnosis of difference types of disease. Moreover, Machine learning algorithm gives us more accurate prediction and performance. Machine learning has been broadly divided into different types are

a) SUPERVISED LEARNING

In easy word, supervised learning is types of learning method with the help of supervisor, teacher or instructor. It consists of training set of pattern associated with label data and makes it easy for algorithm from input to output and also easy to learn and predict. Some of supervised learning are classification such as KNN, SVM, Naïve Bayes, Neural network regression as linear and polynomial, Decision tree and Random forest. Developed prediction based on both input and output data

a) UNSUPERVISED LEARNING

Unsupervised learning is also known as clustering. In unsupervised learning there is no training data set, no label and unknown output data. This type of learning method is like self-guide learning method. Some of the supervised learning methods are clustering such as K-Means clustering, SVD and PCA.

b) SEMI SUPERVISED LEARNING

Semi supervised learning is types of learning method in Machine learning, these learning is in between training data with label (SL) and training data with no label (USL). These algorithms are performing better large amount of unlabeled data and less amount of label data

c) REINFORCEMENT LEARNING

This is a type of machine learning based on agent, action, state, reward and environment. The software agent and machine to automatically define behavior with specific context based on their reward feedback.

LITERATURE REVIEW

- Bendi et al authors used two different input dataset and evaluate that the AP datasets has better than UCLA dataset for all the different selected algorithms. Based on performance on their classification KNN, Backward propagation and SVM are giving better results. The AP data set is better than UCLA for the entire selected algorithm. And found out Naïve Bayes, C4.5, KNN, Backward propagation and SVM has 95.07, 96.27, 96.93, 97.47, & 97.07% accuracy respectively.
- Bendi et al proposed a paper based on Modified Rotation Forest, used two datasets as an input UCI liver dataset and Indian liver dataset. And results show that MLP algorithm with random subset gives better accuracy of 94.78% for UCI dataset than CFS achieved accuracy of 73.07% for Indian liver dataset.
- Yugal Kuma & G. Sahoo proposed a paper based on different classification technique and used north east area of Andhra Pradesh (India) liver dataset. And the results show that Decision tree (DT) algorithm has better than other algorithm and provide accuracy of 98.46%.
- S. Dhamodharan proposed a paper based on two classification technique naïve Bayes and FT tree and used WEKA (Waikato Environment for Knowledge and Analysis) dataset. Naïve Bayes is 75.54% accuracy and FT Tree is 72.6624% accuracy and concluded Naïve Bayes gas better algorithm compare to other algorithms.
- Heba Ayeldeeen et al propose a paper for prediction of liver fibrosis stages using decision tree technique and used Cario university data set and result shows that decision tree classifier accuracy is 93.7%.
- D. Sindhuja & R. Jemina Priyadarsini survey a paper for classification of liver disease. In this survey different classification techniques of data mining are study and used dataset of dataset of AP liver has better than Dataset of UCLA, and concluded C4.5 achieved better results than other algorithms.

- Joel Jacob et al proposed a paper to diagnosis of liver disease by using three different algorithms, Logistic regression, K-NN, SVM, and ANN and used Indian Liver Patient Dataset comprised of 10 different attributes of 583 patients. And concluded Logistic regression, KNN, SVM, & ANN has 73.23, 72.05, 75.04 & 92.8% accuracy respectively.
- Sivakumar D et al proposed a paper for prediction of chronic liver disease by using two different techniques K-means and C4.5. UCI repository.
- Mehtaj Banu H in this paper authors study different machine learning technique, Supervised, unsupervised & reinforcement and also analysis UCI dataset database and concluded that KNN and SVM improved better performance and exactness of liver disease prediction.
- Vasan Durai et al proposed a paper based on liver disease prediction by using three different techniques, SVM, NB & J48 using UCI repository dataset and concluded that J48 algorithm has better performance in terms of Feature selection and has accuracy of 95.04%.

CONCLUSION

This paper gives us the basic idea of past published paper of detection and diagnosis of liver disease based on different machine learning algorithm. With this survey and study, it has clearly find and observed that some machine learning algorithm such as Decision tree, J48 and ANN provide better accuracy on detection and prediction of liver disease. And different algorithm has different performance based on different scenario but most importantly the dataset and feature selection is also very important to get better prediction results. And also, the paper presents a survey on different types of machine learning techniques used by different authors and every machine learning technique has some good and bad outcomes depend on the datasets and features selection etc. With this survey we found out that the accuracy and performance can be improve by using different combination or hybrid machine learning algorithm and in future we can also work on more parameter which help to get better performance than the existing technique

