

CS5710: Machine Learning

Project Proposal

Prediction Of Hepatitis disease using Machine Learning Techniques

CRN: 22921

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INTRODUCTION

A correct identification is necessary for medical diagnosis, which is both a crucial and challenging endeavor. Early disease detection and treatment are crucial for successful outcomes. The human body's liver is its most important organ. Hepatitis, a severe illness that causes inflammation of the liver, is one of the conditions that seriously impair the liver's ability to operate. The virus in the liver is the major cause of the hepatitis disease. The fatality rate of hepatitis is high around the world. If precise actions are not made in the right moment, it may have an impact on the body's important functioning, lead to cirrhosis, severe scarring, and raise the risk of liver cancer. The condition can be cured with early discovery by accurate diagnosis and treatment. The two key components for diagnosing any condition are (i) choosing the appropriate diagnostic criteria and (ii) properly analyzing the data using expert knowledge. A system can learn on its own using machine learning (ML), which uses various algorithms to identify patterns and relationships in the inputted data. This would enable the automatic diagnosis of any disorders, where the two crucial factors to be carefully examined are the instrument used to analyze the parameters and their selection. This study examines distinct methods for predicting the presence of hepatitis, including KNN and SVM.

MOTIVATION

Many Hepatitis B (human) carriers are utterly ignorant about their diseases and treatment options. A chronic stage of hepatitis, which is nearly untreatable and so expensive that a poor person could not afford such expenses, is brought on by a lack of adequate medical facilities, poor economic standing, incompetent medical staff, and ignorance about the disease and its prevention. Although there are immunizations, there is still no proven treatment for hepatitis. Hepatitis also places a significant financial strain on the healthcare system due to the expense of treating liver failure. Many afflicted persons can be saved by early disease prediction and proper diagnosis.

The main goal of the research is to analyze data from a hepatitis dataset using various classification approaches in order to precisely predict the outcome in each example of data. The following are the paper's main contributions:

- Measuring useful classification accuracy for predicting hepatitis illnesses.
- Evaluation of different machine learning techniques using the hepatitis dataset

- Find the algorithm that performs the best for predicting hepatitis illnesses.

EXISTING SYSTEM

Several studies have been conducted utilizing machine learning approaches to diagnose and forecast diseases. Artificial neural networks for the prediction of cirrhosis in patients using common clinical host and viral parameters, by using different types of decision tree algorithms, the prediction of advanced fibrosis that adds serum biomarkers, an automated diagnosis method that predicts the degree of inflammation and fibrosis in chronic hepatitis utilizing patient serum index data, by using Logistic Regression, Decision Trees, Linear Support Vector Machine, Naive Bayes Classifier, using the SVM as well as Wrapper method, by using the CART algorithm and extreme learning technology.

Limitations of existing system

Less efficiency

OBJECTIVE

In the field of medicine, it is difficult to identify hepatitis disease in a patient's body at an early stage. Currently, if we look at the medical sector, we can see that the volume of health-related data is growing daily. The findings of patients' diagnostic tests and various clinical reports are key sources of information for the healthcare industry. By observing the hidden pattern and the linked features that are present in the dataset, it is used to determine the class name from the dataset. The patient's hepatitis status can be determined using both the concealed pattern and the linked features. Its method of operation is comparable to an expert system.

Nonetheless, a lot of machine learning methods are employed in prediction. But finding the ideal method is a difficult task. The goal of this research is to apply several machine learning approaches to detect hepatitis. In order to determine the best tool for diagnosing hepatitis disease, multiple ML algorithms were used to compare the accuracy for a specific data set. Support Vector Machine (SVM) and K Nearest Neighbor (KNN) techniques are used in this study to accurately forecast the disease.

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