STATISCAL MACHINE LEARNING APPROACHES TO LIVER DISEASE PREDICTION

ABSTRACT:

Medical diagnoses have important implications for improving patient care, research, and policy. For a medical diagnosis, health professionals use different kinds of pathological methods to make decisions on medical reports in terms of the patients' medical conditions. Recently, clinicians have been actively engaged in improving medical diagnoses. The use of machine learning with clinical findings has further improved disease detection. In the human body, liver is considered as the main organ, which plays a central role in several bodily functions .This project, which identifies whether the patient is suffering from liver disease or not. Our aim should be to train various machine learning algorithms on this dataset so that we have a well performing model which is able to classify any new data point as a positive or negative with a reasonable degree of accuracy and perform better than the benchmarks.

LITERATURE SURVEY

1.Machine Learning Approaches for Liver Disease Diagnosing

The exploratory outcomes show a better consequence of applying CHIRP assessing on MAE and RAE while utilizing the Accuracy of the exhibition of RF and MLP is seldom productive than CHIRP. The outcomes acquired utilizing the proposed model are; MAE 0.2870, RAE 58.8765%, and Accuracy is 71.30%, which demonstrates that this method performs well as opposed to other people.

2. Machine Learning Approaches for Binary Classification to Discover Liver Diseases using Clinical Data

For a medical diagnosis, health professionals use different kinds of pathological ways to decide for medical reports in terms of patients' medical condition. In the modern era, because of the advantage of computers and technologies, one can collect data and

visualize many hidden outcomes from them. Statistical machine learning algorithms based on specific problems can assist one to make decisions. Machine learning data driven algorithms can be used to validate existing methods and help researchers to suggest potential new decisions. In this paper, Multiple Imputation by Chained Equations was applied to deal with missing data, and Principal Component Analysis to reduce the dimensionality. To reveal significant findings, data visualizations were implemented. We presented and compared many binary classifiers machine learning algorithms (Artificial Neural Network, Random Forest, Support Vector Machine) which were used to classify blood donors and non-blood donors with hepatitis, fibrosis and cirrhosis diseases. From the data published in UCI-MLR, all mentioned techniques were applied to find one better method to classify blood donors and non-blood donors (hepatitis, fibrosis, and cirrhosis) that can help health professionals in a laboratory to make better decisions. Our proposed ML-method showed a better accuracy score (e.g., 98.23% for SVM). Thus, it improved the quality of classification

3. Machine Learning in liver disease diagnosis: Current progress and future opportunities

There has been a rapid growth in the use of automatic decision-making systems and tools in the medical domain. By using the concepts of big data, deep learning, and machine learning, these systems extract useful information from large medical datasets and help physicians in making accurate and timely decisions regarding predictions and diagnosis of diseases. In this regard, this study provides an extensive review of the progress of applying Artificial Intelligence in forecasting and detecting liver diseases and then summarizes related limitations of the studies followed by future research.

4. Statistical Machine Learning Approaches to Liver Disease Prediction

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problems can assist one to make decisions. Machine learning data driven algorithms can be used to validate existing methods and help researchers to suggest potential new decisions. In this paper, Multiple Imputation by Chained Equations was applied to deal with missing data, and Principal Component Analysis to reduce the dimensionality.

5. Detection of Chronic Liver Disease Using Machine Learning Algorithm with Least Number of Predictors.

Decision-tree learning is a promising prediction and classification technique used in statistics, data mining, and machine learning. One class of decision-tree learning, called alternating decision tree (AD Tree), combines boosting and decision-tree algorithms to generate easier-to-interpret classification rules. AD Tree techniques can address limitations of conventional boosting decision tree algorithms, such as classification and regression tree and reduced error pruning classifier (REP-tree).

TABLE OF ARTICLES

S. No	ARTICLE NAME	AUTHOR NAME	PUBLISHED YEAR	DRAWBACKS
1	Machine Learning Approaches for Liver Disease Diagnosing	Bilal Khan, Rashid Naseem, Mumtaz Ali, Muhammad Arshad.	2021	The data are in pictures not in pixel formats so it is difficult to analyse the data for accurate results, this may lead to wrong accuracy and false results.
2	Machine Learning Approaches for Binary Classification to Discover Liver Diseases using Clinical Data	Easin Hasan,Fahad B Mostafa	2021	There is only the patient records that may have only current data and they may only result in less accuracy and they would not take the past records for analysis.
3	Machine Learning in liver disease diagnosis: Current progress and future opportunities	Neha Tanwar and Khandakar Faridar Rahman	2021	Numerical score Low sensitivity may be better fibrosis is not included ,no significant correlation with liver-related morality ,recommended use for assessing the therapeutic effect during clinical studies.
4	Statistical Machine Learning Approaches to Liver Disease Prediction	Easin Hasan	2021	There has been no study on the association of liver diseases with carcinogenesis ,but Kawamura reported that the annual liver carcinogenic rate is less accurate was useful in predicting the analysis.
5	Detection of Chronic Liver Disease Using Machine Learning Algorithm with Least Number of Predictors.	Banu Priya, P. Laura Juliet	2020	There is only less records form about the patient, no digital record formats are available for this analysis ,so it is difficult for the analysis and this leads to the less accuracy.

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