A Survey: Data Mining Approaches for Prediction of Heart Disease

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ABSTRACT: *Data mining is the process of finding useful and relevant information from the databases. There are several types of data mining techniques are available. Association Rule, Classification, Neural Networks, Clusteringare some of the most important data mining techniques. Data mining process may take important role in Health care Industries. Most commonly the data mining process is used in health care industries for the process of prediction of diseases. This paper analyses various type of Heart disease prediction processes by using the data mining techniques.*

KEYWORDS: *Heart disease prediction, Association rule, Classification, Neural Networks*

I. INTRODUCTION

Data mining is the process of finding useful and relevant information from the various types of databases. The process of extraction of the hidden predictive information from the databases is also called as Data mining. Nowadays data mining may take important role in several types of fields like Medical, Science, Railway etc. Association rule, Classification, Neural Networks, Clustering are some of the most famous data mining techniques which are used widely.

1.1 Association Rule

Association Rule is the process of discovering interesting relationships between the variables in databases. Association rule is one of the famous type of Data mining technique. There are several methods are available for discover the association rule. Apriori Algorithm is important type of method of Discover the Association Rule. It is commonly used for finding the frequently used data sets in a database.

1.2 Classification

Classification is the process of categorization the data which are in the databases for its most effective and efficient use. There are several types of classification models are available. But the decision trees, neural networks are considered as important type of classification model. Classification may take important role in the data mining techniques.

1.3 Neural Networks

Neural networks are the extremely simplified function of brain. The Neural Networks transforms the given input into outputs to the best of its ability. Commonly Neural Networks are the distributed information processing structure consisting of multiple number of processing elements. These elements are simply called as nodes. Neural Networks are mainly used for the prediction processes. They make ability to learn and generalize.

1.4 Clustering

Clustering is the process of grouping data into different groups. It is one of the useful and important type of technique for the process of discovery of data distribution. There are two major and important types of clustering techniques are available. They are Hierarchical clustering and partitioning clustering. The Partitioning Clustering is the process of partition the database into predefined number of clusters. At the same time Hierarchical clustering do a sequence of partitions, in which partition is nested into next partition in sequence.

1.5 Heart Diseases

Heart disease is one of the type of disease which will affects the operations of the heart. Nowadays Heart disease is the major reason for deaths. There are several kinds of factors which increases the risk of Heart Diseases. The following are considered as important reasons for heart diseases.

- Age
- Blood Pressure
- Smoking habit
- Cholesterol
- Exercise and weight
- Blood Sugar
- Depression

The Heart Diseases are mostly caused by the above factors. The Survey result of World Health Organization says 12 million deaths are occurred worldwide, every year due to Heart diseases. If we want to find the solution for this problem, there are several kinds of prediction processes are needed. This paper will analyse various kinds of Heart Disease Prediction Techniques.

II. RELATED WORKS

Chaitrali S. Dangare et al.,[1] developed Heart Disease Prediction System (HDPS) using Multilayer Perception Neural Network (MLPNN) with Back Propagation (BP) Algorithm. Existing System used 13 types of Medical terms for prediction process. She Included 2 new terms. They are Obesity and Smoking. She used Weka tool.

Ashish Kumar Sen et al.,[2] developed two layered approach for Prediction of Heart disease using Neural Networks and fuzzy rules. Each layer consists of different parameters. Also designed a automated tool which analyse the chances of occurrence of Heart Disease. Matlab tool is used.

JyotiSoni et al., [3] deigned a Graphical User Interface (GUI) tool using the Weighted Association Rule (WAR) classifier. Different weights are assigned to different attributes of the dataset for the purpose of predicting heart disease. Also used the Tanagra tool.

M.Akhiljabbar et al.,[4] developed efficient Associative Classification Algorithm using Genetic approach for prediction process of Heart Disease. First the process of finding GiniIndex of each attribute will be done. Then, the fitness of rule is evaluated by using the Z statistics. After that Classifiers are built by using the generated Rules. Finally the accuracy of dataset is found.

Dhanashree S. Medhekar et al.,[5] designed Classifier Approach with Naive Bayes algorithm based on Bayesian theorem for the process of prediction of Heart Diseases. Finally they categorized Medical data into five different categories. They are No, Low, Average, High and Very High.

Shadab Adam Pattekari et al., [6] developed a prototype Heart Disease Prediction System (HDPS) using Decision Trees, Naive Bayes and Neural Networks. It is implemented in web application. In this system user answers the predefined questions. Then it retrieves hidden data from stored database and it compares the user's values with trained dataset.

Malini.K et al.,[7] introduced a prediction model. It combines both Association rule Mining and Clustering for the purpose of prediction of Heart Disease. First pre-processing techniques are applied to the dataset. Then the Maximal frequent item set is found by using Apriori Algorithm. Finally the K-means clustering is applied for the process of finding the risk level.

Mr.Pankaj S. Kulkarni et al., [8] used the horoscope approach for the purpose of predicting the Heart Disease. There are twelve different types of planets are available in the horoscope approach. Each planet having different types of behaviours. These twelve planets take important role in this horoscope approach.

III. SUMMARY

The above mentioned are different types of approaches for predicting the Heart Diseases. The authors used different type of data mining techniques to predict heart disease.Still there are many approaches and challenges in prediction of Heart Diseases.

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