

Future Prediction For Heart Attack Problem Based on Most Appropriate Attribute value

Amit Kisan Pagare¹, Vijay Kumar Verma²

¹ Lord Krishna College of Technology Indore M.P. India, M.Tech IV Sem

² Assistant Professor CSE, Loed Krishna College of Technology Indore M.P India,

Abstract: -Superior data mining techniques are developed and used to discover hidden pattern form historical data. New Models are developed from these techniques will be useful for medical practitioners to take successful decision. Diagnosis of heart attack is a significant task in medical science. The term Heart attack includes the various diseases that involve the heart attack problem. The exposure of heart attack problem from different symptoms is an important issue for predicting heart attack problem. In this paper have taken 10 attribute which are responsible for the heart attack problem. We convert the given test data set into binary format with a possible conditions for heart attack. In seconds step we divide the data set and apply most appropriate condition on each attribute Find pair for each attribute which satisfy the condition. We repeat the process for grouping the attribute until no more grouping is possible. At last we find the most common attribute and calculate how much percentage data is accurately classified

Keyword: fitness value, heart disease, attribute, data mining, classifier.

1. Introduction

In our everyday life there are several example exit where we have to analyze the historical data for example a bank loans officer needs analysis of her data in order to learn which loan applicants are “safe” and which are “risky” for the bank [1,2]. Similarly for a medical researcher it is necessary to analyze breast cancer data in order to predict specific treatments for a patient. These are some examples where the data analysis task required before taking any decision. Classification is a data analysis process, where a classifier is constructed to predict class, for bank loan example prediction class is “yes” or “no” Similarly for a medical researcher prediction class is “treatment A,” “treatment B,” or “treatment C” for the medical data [3,4].

Classification process can be divided into two parts (1) Learning: Training data are analyzed by a classification algorithm. Here, the class label attribute is loan decision, and the learned model or classifier is represented in the form of classification rules. (2) Classification: Test data are used to estimate the accuracy of the classification rules. If the accuracy is considered acceptable, the rules can be applied to the classification of new data tuples

2. Lecturer Review

In 2010 Sunita Soni and O.P. Vyas proposed “Associative Classifiers for Predictive Analysis in Health Care Data Mining”. They used a combined approach that integrates association rule mining and classification rule mining. The integration is done by focusing on mining a special subset of association rules and then classification is being performed using these rules. Given the readability of the associative classifiers, they are especially fit to applications where the model may assist domain experts in their decisions. They also introduce that combining the advanced association rule mining with classifiers gives a new type of associative classifiers with small refinement in the definition of support

and confidence that satisfies the validation of downward closure property [4,5].

In 2011 Mrs. G. Subbalakshmi and Mr. K. Ramesh Proposed “Decision Support in Heart Disease Prediction System using Naive Bayes”. They proposed a Decision Support in Heart Disease Prediction System (DSHDPS) using data mining modeling technique, namely, Naive Bayes. Using medical profiles such as age, sex, blood pressure and blood sugar it can predict the likelihood of patients getting a heart disease. They implement the system by using web based questionnaire application. This system helps to train nurses and medical students to diagnose patients with heart disease. Decision Support in Heart Disease Prediction System is developed using Naive Bayesian Classification technique. The system extracts hidden knowledge from a historical heart disease database. This is the most effective model to predict patients with heart disease. This model could answer complex queries, each with its own strength with respect to ease of model interpretation, access to detailed information and accuracy. DSHDPS can be further enhanced and expanded [6,7,15].

In 2011 Mai Shouman, Tim Turner, Rob Stocker proposed “Using Decision Tree for Diagnosing Heart Disease Patients”. Heart disease is the leading cause of death in the world over the past 10 years. Researchers have been using several data mining techniques to help health care professionals in the diagnosis of heart disease. Decision Tree is one of the successful data mining techniques used. However, most research has applied J4.8 Decision Tree, based on Gain Ratio and binary discretization. Gini Index and Information Gain are two other successful types of Decision Trees that are less used in the diagnosis of heart disease. Also other discretization techniques, voting method, and reduced error pruning are known to produce more accurate Decision Trees. This research investigates applying a range of techniques to different types of Decision Trees seeking better performance in heart disease diagnosis. [7,12]

In 2012 M. Akhiljabbar, Dr.Priti Chandra, Dr. B. L. Deekshatuluc Heart Disease Prediction System using Associative Classification and Genetic Algorithm Associative classification is a recent and rewarding technique which integrates association rule mining and classification to a model for prediction and achieves maximum accuracy. Associative classifiers are especially fit to applications where maximum accuracy is desired to a model for prediction. There are many domains such as medical where the maximum accuracy of the model is desired. Heart disease is a single largest cause of death in. They proposed an efficient associative classification algorithm using genetic approach for heart disease prediction. The main motivation for using genetic algorithm in the discovery of high level prediction rules is that the discovered rules are highly comprehensible, having high predictive accuracy and of high interestingness values. In this paper, we proposed a system for heart disease prediction using data mining techniques. In our future work we plan to reduce no. of attributes and to determine the attribute which contribute towards the diagnosis of disease using genetic algorithm [8,13]

In 2013 V.Krishnaiah, Dr. G. Narsimha, Dr.N.Subhash Chandra Diagnosis of Lung Cancer Prediction System Using Data Mining Classification Techniques Cancer is the most important cause of death for both men and women. The early detection of cancer can be helpful in curing the disease completely. So the requirement of techniques to detect the occurrence of cancer nodule in early stage is increasing. A disease that is commonly misdiagnosed is lung cancer. Earlier diagnosis of Lung Cancer saves enormous lives, failing which may lead to other severe problems causing sudden fatal end. Its cure rate and prediction depends mainly on the early detection and diagnosis of the disease. One of the most common forms of medical malpractices globally is an error in diagnosis. Knowledge discovery and data mining have found numerous applications in business and scientific domain. Valuable knowledge can be discovered from application of data mining techniques in healthcare system. In this study, we briefly examine the potential use of classification based data mining techniques such as Rule based, Decision tree, Naïve Bayes and Artificial Neural Network to massive volume of healthcare data. The healthcare industry collects huge amounts of healthcare data which, unfortunately, are not "mined" to discover hidden information. For data preprocessing and effective decision making One Dependency Augmented Naïve Bayes classifier (ODANB) and naive credal classifier 2 (NCC2) are used [9,14].

3. Problem Statement

The heart is very important part of human body. Which pumps blood into the entire body? If circulation of blood in body is inefficient the organs like brain suffer and if heart stops working altogether, death occurs within minutes. Life is completely dependent on efficient working of the heart. The term Heart disease refers to disease of heart & blood vessel system within it. Some of the risk factors for heart disease are Smoking, Cholesterol, and Blood pressure. Diabetes, Sedentary life style, Eating Habits, Stresstc [10,11].

4. Proposed Method

In the proposed method we use the concepts of fitness number. In the proposed approach we convert the given data set into binary format as per the given condition for heart attack. We divide the large data set into number of parts. We perform simple intersection calculation for every part of data set and finally we consider only those item set which satisfy the given minimum support fitness value. Consider a simple example

Table 1 Simple patient's database

S.NO	1	2	3	4	5	6	7	8	9	10
1	63	1	145	233	1	2	150	2	3	6
2	67	1	160	286	0	2	108	1	2	3
3	67	1	129	229	0	2	129	2	2	7
4	37	1	130	250	0	0	187	3	3	3
5	40	0	130	204	0	2	172	1	1	3
6	56	1	126	236	0	0	178	0	1	3
7	62	0	140	268	0	2	160	3	3	3
8	57	0	120	354	0	0	163	0	1	3
9	63	1	130	254	0	2	147	1	2	7
10	53	1	140	203	1	2	155	3	3	7

We have taken 10 attribute which are responsible for the heart attack problem. We convert the given test data set into binary format with a possible conditions for heart attack.

Table 2: Description of attribute for patient's database

S.NO	Attribute
1	Age
2	Sex
3	Blood pressure
4	Cholesterol
5	Fasting bloodsugar
6	Resting ECG
7	Thalach value
8	Old peak
9	Slope
10	Thal

Possible conditions for heart attack

Age > 45, BP > 120, Cholesterol range > 240, FBS > 120, Resting ECG > 1, Thalach value > 100 Beats/Minute, Old peak > 0, Slope >= 2, Thal Value > 3, As per the given conditions we convert the test data set into binary format. 1 represent for condition true and 0 for condition false.

Table 3: binary conversion as per the given condition

S.NO	1	2	3	4	5	6	7	8	9	10
1	1	1	1	0	0	1	1	1	1	1
2	1	1	1	1	0	1	1	1	1	1
3	1	1	1	0	0	1	1	1	1	1
4	0	1	1	1	0	0	1	1	1	1
5	0	0	1	0	0	1	1	1	0	1
6	1	1	1	0	0	0	1	1	0	1
7	1	0	1	1	0	1	1	1	1	1
8	1	0	0	1	0	0	1	0	0	1
9	1	1	1	1	0	1	1	1	1	1
10	1	1	1	0	0	1	1	1	1	1

5. Proposed Algorithm

Input:

A transaction database D

Appropriate Condition (AC)

Output:

Pair of Attribute satisfy the given conations for heart attack

Method:

- 1) Scan the database **D** and partition the transactiontable into equal size.
- 2) Find Appropriate Condition (AC) for each attribute .
- 3) Consider only those attribute which satisfy the given minimum Appropriate Condition remainingattribute.
- 4) Convert the dataset into binary format 1 forAppropriate Condition and 0 for others.
- 5) To discover the pair of two attribute use Join and perform logical AND .
- 6) To determine attribute set,join them and perform logical AND operation .
- 7) The algorithm iterates to find upto pair of n- attribute item sets
- 8) From each pair find out pair of n-attribute itemsets. These pair of attribute are said to local attribute which Appropriate Condition .

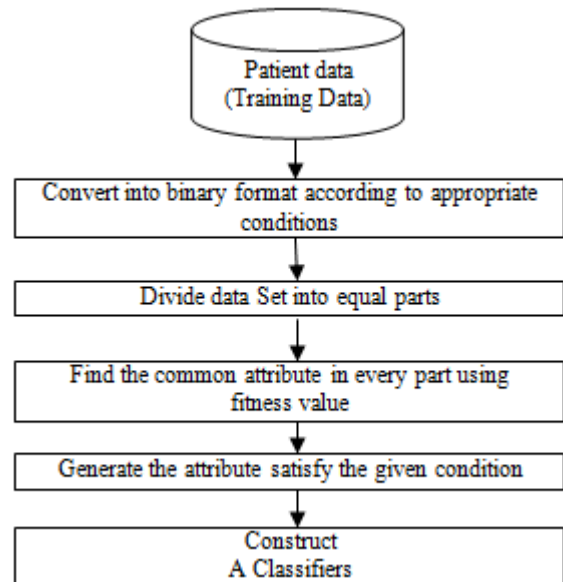


Figure 1: Architecture of proposed system

6. Architecture the Proposed Method

First we convert data set into binary format according toAppropriate Condition conditions. In seconds step we divide the data set into number of parts .Find pair for each attribute which satisfy the condition . We repeat the process for grouping the attribute until no more grouping is possible. At last we find the most common attribute in all parts andcalculate how much percentage data is accurately classified. The working process of proposed model is show the figure 1

7. Experimental Evaluation

We use VB dot net 2010 as front end and SQL server as back end for data base. .All the experiments were performed on a i3 4M Cache, 2.50 GHz Intel PC machine with 2 gigabyte main memory, running Microsoft Windows 7.To evaluate the performance Real life dataset is used. We have implemented three algorithms first one Bayesian classification algorithm, second is weight associated classifiers and third is our proposed method. We have taken 10 attribute which are mainly responsible for heart attack problem. We have taken the data from a pathology laboratory. We perform experiments using 1000, 2,000 and 5000 records.

8. Comparison and Graphs

We have taken number of record and percentage of record classify accurately. In figure 2 show comparison graph. it is clearly show that the percentage of classify correct records by proposed method is more as compared to the previous methods.

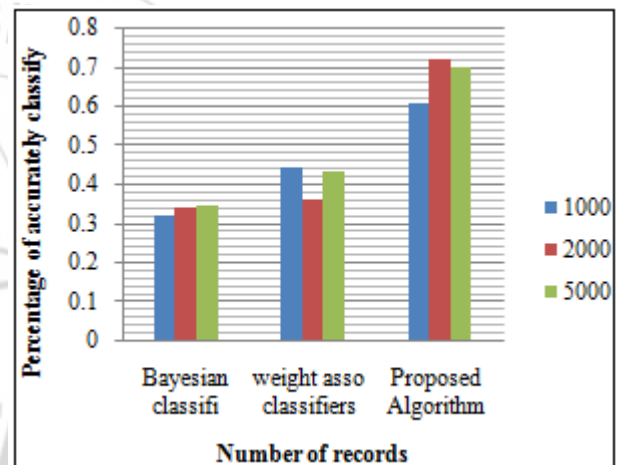


Figure 2: Percentage of records classify correctly

9. Conclusion and Future Work

From the experiment it clear that proposed method is more accurately classify the recodes as compared to pervious method. Proposed method considers all attribute given to heart attack condition.Proposed method is also simple to under stands and calculation is also easy. We have taken only ten attribute which are mainly responsible for heart attack , in future we have consider more then ten attribute which are also responsible for heart attack.

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