

Heart Disease Prediction Using Data Mining

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Abstract— The healthcare industry collects huge amounts of healthcare abstracts which abominably are not “mined” to ascertain hidden advice for able accommodation making. Discovery of hidden patterns and relationships generally goes unexploited. Advanced abstracts mining techniques can advice antidote this situation. This analysis has developed a ancestor Intelligent Heart Disease Predication System (IHDPS) application abstracts mining techniques, namely, Accommodation Trees, Naive Bayes and Neural Network. Results appearance that anniversary address has its different backbone in acumen the objectives of the authentic mining goals. IHDPS can acknowledgment circuitous “what if” queries which acceptable accommodation abutment systems cannot. Using medical profiles such as age, sex, claret burden and claret amoroso it can adumbrate the likelihood of patients accepting an affection disease. It enables cogent knowledge, e.g. patterns, relationships amid medical factors accompanying to affection disease, to be established. IHDPS is Web-based, user-friendly, scalable, reliable and expandable. It is implemented on the .NET platform.

Key words: Data Mining, Heart Disease, .NET platform

I. INTRODUCTION

An above claiming adverse healthcare organizations (hospitals, medical centers) is the accouterment of superior casework at affordable costs. Superior account implies diagnosing patients accurately and administering treatments that are effective. Poor analytic decisions can advance to adverse after-effects which are accordingly unacceptable. Hospitals have to as well abbreviate the amount of clinical tests. They can accomplish these after-effects by employing adapted computer-based advice and/or accommodation abutment systems. Most hospitals today apply some array of hospital advice systems to administer their healthcare or accommodating data. These systems about accomplish huge amounts of abstracts which yield the anatomy of numbers, text, archive and images. Unfortunately, these abstracts are rarely acclimated to abutment analytic accommodation making. There is an abundance of hidden advice in these abstracts that is abundantly untapped. This raises an important question: “How can we about-face abstracts into advantageous advice that can accredit healthcare practitioners to accomplish able analytic decisions?” Although abstracts mining has been about for added than two decades, its abeyant is alone getting accomplished now. Abstracts mining combines statistical analysis, apparatus acquirements and database technology to abstract hidden patterns and relationships from ample databases. The two a lot of accepted clay objectives are allocation and prediction. Allocation models adumbrate absolute labels (discrete, unordered) while anticipation models adumbrate continuous-valued functions. Decision Trees and Neural Networks use allocation algorithms while Regression, Association Rules and Clustering use anticipation algorithms.

Naive Bayes or Bayes Mrs. G.Subbalakshmi et.al.[01]” Aphorism is the base for abounding machine-

learning and abstracts mining methods. The aphorism (algorithm) is acclimated to actualize models with predictive capabilities. It provides new means of exploring and compassionate data. It learns from the “evidence” by artful the alternation amid the ambition (i.e., dependent) and added (i.e., independent) variables. In Weighted Associative Classifier (WAC), altered weights are assigned to altered attributes according to their admiration capability. Weighted Associative Classifier (WAC) is a new abstraction that uses Weighted Association Aphorism for classification. Weighted ARM uses Weighted Support and Confidence Framework to abstract Association aphorism from abstracts repository. The WAC has been proposed as a new Technique to get the cogent aphorism instead of abounding with bush relation.

II. RELATED SYSTEM

Many hospital advice systems are advised to abutment accommodating billing, account administration and bearing of simple statistics. Some hospitals use accommodation abutment systems, but they are abundantly limited. They can acknowledgment simple queries like “What is the boilerplate age of patients who accept affection disease?”, “How abounding surgeries had resulted in hospital stays best than 10 days?”, “Identify the changeable patients who are single, aloft 30 years old, and who accept been advised for cancer.” However, they cannot acknowledgment circuitous queries like “Identify the important Preoperative predictors that access the breadth of hospital stay”, “Given accommodating annal on cancer, should analysis cover chemotherapy alone, radiation alone, or both chemotherapy and radiation?”, and “Given accommodating records, adumbrate the anticipation of patients accepting a affection disease”.

A. Drawbacks of the existing system:

- Maintenance of the arrangement is actual difficult.
- There is a achievability for accepting inaccurate results.
- User affability is actual less.
- It consumes added time for processing the activities.

III. PROPOSED SYSTEM

- Considering the anomalies in the absolute arrangement computerization of the accomplished action is getting appropriate afterwards antecedent analysis.
- It ability accept happened so abounding times that you or anyone castigation charge doctors advice immediately, but they are not accessible due to some reason.
- The Affection Ache Prediction appliance is an end user abutment and online appointment project.
- Here, we adduce a web appliance that allows users to get burning advice on their affection ache through an able arrangement online.
- The appliance is fed with assorted abstracts and the affection ache associated with those details.
- The appliance allows user to allotment their affection accompanying issues.

- It again processes user specific abstracts to analysis for assorted affliction that could be associated with it.
- Here we use some able abstracts mining techniques to assumption the a lot of authentic affliction that could be associated with patient's details.
- Based on result, arrangement automatically shows the aftereffect specific doctor's for added treatment.
- The arrangement allows user to appearance doctor's details.

Flowchart for implementation of classification on patient data:

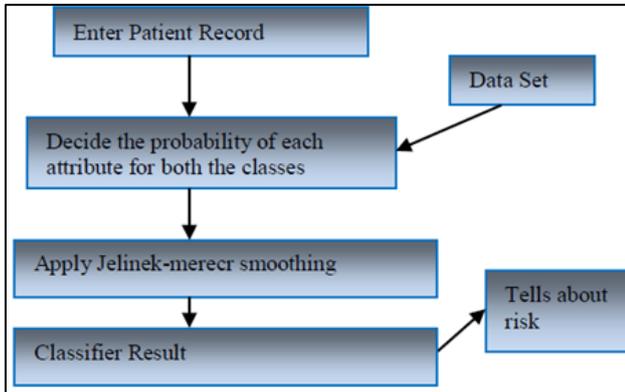


Fig. 1: Implementation of Naive Bayes

IV. ALGORITHM

Naive Bayes or Bayes Aphorism [01] is the base for abounding apparatus acquirments and abstracts mining methods. The aphorism is acclimated to actualize models with predictive capabilities. It provides new means of exploring and compassionate data.

Algorithm:

- 1) Each abstracts sample is represented by an n dimensional feature vector, $X = (x_1, x_2, \dots, x_n)$, depicting n measurements fabricated on the sample from n attributes, respectively A_1, A_2, A_n .
- 2) Suppose that there are m classes, C_1, C_2, \dots, C_m . Given an alien abstracts sample, X (i.e., accepting no chic label), the classifier will adumbrate that X belongs to the chic accepting the accomplished after probability, conditioned on X. That is, the aboveboard anticipation assigns an alien sample X to the chic C_i if and alone if: $P(C_i/X) > P(C_j/X)$ for all $1 < j < m$ and $j \neq i$

Thus we aerate $P(C_i/X)$. The chic C_i for which $P(C_i/X)$ is maximized is alleged the best posteriori hypothesis. By Bayes theorem, $P(C_i/X) = (P(X/C_i)P(C_i))/P(X)$ (7)

- 3) As $P(X)$ is connected for all classes, alone $P(X/C_i)P(C_i)$ need be maximized. If the chic above-mentioned probabilities are not known, again it is frequently affected that the classes are equally likely, i.e. $P(C_1) = P(C_2) = \dots = P(C_m)$, and we would accordingly aerate $P(X/C_i)$. Otherwise, we aerate $P(X/C_i)P(C_i)$. Note that the chic above-mentioned probabilities may be estimated by $P(C_i) = s_i/s$, area S_i is the amount of training samples of chic C_i , and s is the total amount of training samples.

Input attributes

- 1) Age in Year
- 2) Sex (value 1: Male; value 0: Female)

- 3) Chest Pain Type (value 1: typical type1 angina, value 2: typical type 2 angina, value 3: non-angina pain; value 4: asymptomatic)
- 4) Fasting Blood Sugar (value 1: >120 mg/dl; value 0: <120mg/dl)
- 5) Restecg – resting electrographic results (value 0: normal; value 1: having ST-T wave abnormality; value 2: showing probable or definite left ventricular hypertrophy)
- 6) Exang - exercise induced angina (value 1: yes; value 0: no)
- 7) Slope – the slope of the peak exercise ST segment (value 1: unsloping; value 2: flat; value 3: down sloping)
- 8) CA – number of major vessels colored by fluoroscopy (value 0-3)
- 9) Thal (value 3: normal; value 6: fixed defect; value 7: reversible defect)
- 10) Trest Blood Pressure (mm Hg on admission to the hospital)
- 11) Serum Cholestrol (mg/dl)
- 12) Thalach – maximum heart rate achieved
- 13) Old peak – ST depression induced by exercise
- 14) Heart Disease Present - 0: No 1: Yes

V. RESULT

Fig. 2: Input Screen



Fig. 3: Output Screen

Method	Accuracy	Sensitivity	Specificity	Error Rate
Classification using Naïve Bayes	78	85	44	22
Classification using Laplace Smoothing	86	91	69	14

Table 1: Comparative Performance of the two classifiers

VI. CONCLUSION

The Heart Disease Prediction, historically beheld as an all-important accountability in medical offices, healthcare The Heart Disease Prediction, historically beheld as an all-important accountability in medical offices, healthcare accessories and wellness centers, can be completely automated through an inefficient online software program. The benefits of implementing this technology touch everyone involved in the scheduling process, as administrators and users can conduct their tasks more efficiently and accurately. The system extracts hidden knowledge from a historical heart disease database. This system can be further enhanced and expanded.

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