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DATA MINING ANALYSIS ON HEALTH MONITORING SYSTEMS

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ABSTRACT
In medical and health care areas, due to regulations and due to the availability of computers, a large amount of data is becoming available. Such a large amount of data cannot be processed by humans in a short time to make diagnosis, and treatment schedules. A major objective is to evaluate data mining techniques in clinical and health care applications to develop accurate decisions. It also gives a detailed discussion of medical data mining techniques which can improve various aspects of Clinical Predictions. It is a new powerful technology which is of high interest in computer world. A major objective of this paper is to evaluate data mining techniques in clinical and health care applications to develop an accurate decisions. It is a famous and powerful technology which is of high interest in computer world. It is a sub field of computer science that uses already existing data in different databases to transform it into new researches and results. It makes use of Artificial Intelligence, machine learning and database management techniques to extract new patterns from large data sets and the knowledge associated with these patterns. By using this technique data can be extracted automatically or semi automatically.

1. INTRODUCTION
In recent years, with the development of computer technologies, the puzzles with respect to Bayesian statistics and posterior distribution have been better solved. Meanwhile, Bayesian statistics successfully apply to economic, sociology and some other fields. In medical fields, the foreign scholars have solved some medical problems that are hard to be settled in classic statistics by using Bayesian classification. Naive Bayes is one of the most popular classification technique introduced by Reverend Thomas Bayes. Without any additional data, classification rules are generated by the training samples themselves.

"Smart Health Prediction System" is the computerization of medical information to support and optimize
(1) administration of health services
(2) clinical care
(3) medical research
(4) training
It is the application of computing and communication technologies to optimize health information processing by collection, storage, effective retrieval (in due time and place).The proposed system is mainly used by the all the people where confidentiality and integrity of the data has utmost importance. Computer assisted information retrieval may help support quality decision making and to avoid human error. Imagine a doctor who has to examine 5 patient records; he or she will go through them with ease. If the number of records grows with a time constraint, it is almost certain that the accuracy with which the doctor delivers the results will not be as high as the ones obtained when he had only five records to be analyzed.
Data mining is a process of knowledge discovery from unknown or useless datasets. There are various techniques of data mining that are used to process the data and convert them as useful information. The data mining can be used in the various fields such as business analysis, healthcare, stock management etc. Medical field has wide amount of data that can be processed by the help of data mining techniques.
It might have happened before that yourself or someone near you want immediate help of doctor but could not find anyone. By creating a model that can predict the diseases based on user symptoms is quite helpful in getting fast and appropriate medical facilities for patients. The timely analysis of data and gaining accurate prediction of diseases from symptoms can save many lives. Early detection of diseases helps doctor to give accurate medication.

2. LITERATURE REVIEW
Divya Jain et.al presents a review of the implementation of Apriori Algorithm on datasets using machine learning tool Weka. Ruijuan Hu states the details of the idea on two-step frequent data items using Apriori algorithms and Association Rules. This mentions a new improvised method called Improved Apriori Algorithm to eliminate cons of Apriori algorithm. Gitanjali J, et.al proposed study of huge

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datasets from various angles and obtaining gist of useful information. These methods are useful in detecting diseases and providing proper remedy for the same. Krishnaiahet.al. aims to calculate various methods of data mining in applications to develop decisions and also to provide a detailed discussion about medical. Data mining techniques can improve various angles of clinical predictions. Dan A. Simovici proposed that association rules represent knowledge in data sets as results and are directly related to calculation of frequent item sets. Mohammed Abdul Khaleel states data mining as a concept that studies large amount of data and extracts patterns that can be converted to useful knowledge.

In the paper "Smart E-Health Prediction System Using Data Mining" [3] most of the topics covered are on the system architecture. In this paper the design aspects of the system are primarily focused. In this paper the author has given a detailed framework to beat the downside of existing system. The smart health framework is used to implement the design aspects of the project. This framework asks for uses input and gather the symptoms to predict the disease based on data mining techniques. There are various modules such as login- used for authentication of patient and doctor, Diseases prediction, Doctor Searching, Feedback and Chatting with doctor for clearing patient doubts. There are some advantages such as finding the nearest doctor option to find doctor near to our location. These features can be used for better implementation of the system to help patients.

The paper "Analysis of Heart Disease Prediction Using Data mining Techniques" [4] various data mining techniques of heart disease prediction are discussed. The proposed of this paper gives more accuracy than the present machine learning algorithms. Generally, Naive Bayes classifier is used for the prediction of heart diseases. The main advantage of Bayes classifier is the short training models is used to predict large datasets.

n the paper "Heart Diseases Detection Using Naive Bayes Algorithm" [5] some of the machine learning algorithms such as Naive Bayes classifier. This paper is used for analyzing the various data mining techniques that can be used for healthcare services. The author has discussed about the different types of datasets that can be used in various fields of medical and healthcare services. The methodologies for preprocessing of data and probabilities used in the algorithm are explained clearly. The parameters of heart disease are specified and visualization of datasets are shown. The disadvantage is that maximum accuracy is not achieved in prediction.

The paper "Data Mining Technique and Applications"[6] discusses about the various data mining techniques that can be utilized and applied in various field of medical and technical sciences. The logical process are used to search large amount of data in order to extract structured data. The steps involved are exploration, pattern identification and deployment. In the exploration part the data is analyzed and transformed to various forms until we get the prescribed pattern. Later this patterns are deployed by applying data mining techniques. There are various algorithms and techniques such as Classification, Clustering, Regression, Artificial intelligence, neural networks, Association rules and Decision trees. The advantage is various data mining techniques are clearly explained. The real time examples are not mentioned in detail.

3. PROPOSED SYSTEM

Sometimes the situation occurs when you need the doctor's help immediately, but they are not available due to some reason. This system allows the users to get analysis on the symptoms they give for predicting the disease they are suffering from. User will be asked to enter the symptoms, then system will processes those symptoms for various illness or disease that user could be aliked with. In this system we use some techniques of data mining to guess the most accurate diseases or illness that could be related with patient's symptoms.

Chart -1: Gantt chart

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If the system is unable to provide solutions, it informs the user about probable disease they have. If the user symptoms does not exactly match with any disease in our database, shows the diseases user could probably have judging the input symptoms. This system tends to replace the existing system for going to the doctor for getting diagnosis on illness you are suffering from to a smart solution where you get instant diagnosis on entering symptoms in the system.

Fig -2: Screenshot

The main features of this system will be giving instant diagnosis on the user entered symptoms and getting tips for remaining fit. In the proposed system, we will use the data mining method in which the symptoms entered by users are cross checked in the database and from that the frequent item sets are mined out of that the existing datasets. The proposed system is very efficient algorithm implemented.

4. ANALYSIS OF DATA MINING ALGORITHMS

Data mining is a process of discovering analyzing different data patterns from large raw datasets. The main aim of data mining is to extract the relevant information from comprehensive dataset. The data mining comes with a bundle of packages such as machine learning, statistics and database system. All this factors determine the efficiency in Knowledge Discovery in database process. KDD consist of various process such as data cleaning, data selection, data integration, data transformation, data pattern searching and finally knowledge representation. The data mining techniques that mainly used are Association rule, Clustering, Classification, regression etc.

- The association rule can be used to establish relationship between two variables.
- The clustering is a process of grouping the structures based on similarity between them.
- The classification is assigning items in collection to target datasets.
- The regression tries to estimate the various mode to find the relation between data with least error.

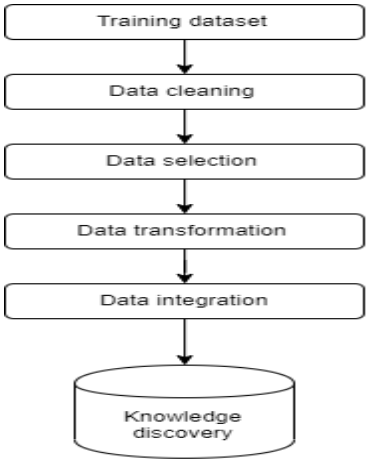

Fig.3 Prediction Process

There are two methodologies of machine learning is used in the data mining process. They are (i) Supervised learning and (ii) Unsupervised learning.

A. **Supervised learning:**

In supervised learning the system trains itself by the given input and learn to generate the result.

B. **Unsupervised learning:**

In unsupervised learning the hidden structure and relation among the dataset is found out.

In healthcare industry, data mining along with machine learning is used for disease prediction. There are various classification models such as Decision trees, Artificial neural networks, Support vector machines and k-nearest neighbors are used.

CONCLUSION

Data mining can be beneficial in the field of medical domain .However privacy, security and unable to log into the account are the big problems if they are not addressed and resolved properly. It describes about the proposal of hybrid data mining model to extract classification knowledge for aid of various diseases in clinical decision system and presents a framework of the tool various tools used for analysis. Sometimes the situation occurs when you need the doctor's help immediately, but they are not available due to some reason. In our project, we have designed a new health prediction system, which is an online system, and various patients from any locations can view it. Our system comprises of main components such as patient login, enter symptoms in the System, and prescribe medicines, suggested nearby doctor. The application takes the input of various symptoms from the patient, does the analysis of the entered symptoms, and gives appropriate disease prediction. Our system allows the users to get analysis on the symptoms they give for predicting the disease they are suffering from. Sometimes the situation occurs when you need the doctor's help immediately, but they are not available due to some reason.

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