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Smart Health Prediction System

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Abstract – *This paper aims at the development of a cloud-based forecasting app and outlines the components that make up a life prediction system. users can use this cloud-based web application anytime they feel uncomfortable in their lives and try to ignore it. They can visit the app and provide details of their problem and other information related to their bodies such as weight and height and based on that our app will provide accurate information related to their health. There is no limit to access resources.*

The age of digital technology requires the world to provide the best possible health care system, to ensure that citizens and communities are alive and well. This study suggests the use of a mining health data mining algorithm that could ultimately establish an appropriate patient health prediction system. Although, health care is available to everyone in the world, there is still no system of health care that is completely reliable and accurate to diagnose a patient carefully in his or her current health issues. Although some hospitals are well-equipped to provide the best possible healthcare for their citizens, some hospitals are still lacking in quality. Therefore, patients are sceptical and uncertain when it comes to choosing which hospital is best for them. Ultimately, these problems undermine the ability of hospitals to manage their management and operations more effectively in order to maintain the health of all citizens and communities. Patients need accurate and accurate treatment and diagnosis in order to recover and for their proper health and medical staff need to be well equipped with their clinical knowledge and communication skills to carefully evaluate their patients to ensure good health. Therefore, the use of data mining in health forecasts is considered in this paper as the best way to help a better health care system.

There is a very nice and attractive web-based cloud-based web application that is easy to understand and use. The web service is secure and personal. the web app is designed to be easy to use with no hidden feature and the user can easily access this web application. there is a fast and efficient communication between users and the application server.

Key Words: AWS, Cloud Based, CSS, Database, Html, Smart Health Prediction, Smart Health, JavaScript, MySQL, php.

1. INTRODUCTION

The healthcare industry has grown significantly over the past few years.

People's health is one of the most important factors contributing to economic development in any economy. The most important and immediate consequences of a global decline take the form of damage to human health.

This process has gained tremendous importance in the medical field. It is estimated that a care hospital can produce five terabytes of data per year.

Therefore, in order to overcome the problems that people have with their health problems, we have developed an easy-to-use app that helps users get tested at their place of residence at any time.

The application also offers the option to book an appointment with a doctor to discuss health-related issues and get a thorough diagnosis.

2. RELATED WORK

[1] This paper introduces an update to the use of the Apriori Algorithm in data sets using a machine learning tool. Ruijuan Hu presents the concept details of two common data steps using Apriori algorithms and Organization Rules. This speaks to a new development called the Improved Apriori Algorithm to eliminate the evils of the Apriori algorithm. Gitanjali J, et.al proposes the study of large data sets from various angles and the acquisition of a wealth of useful information. These methods are helpful in diagnosing and administering effective treatment. Krishnaiahet.al. aims to address a variety of data mining methods in decision-making processes and provide a detailed treatment discussion. Data mining techniques can improve clinical guessing angles. Dan A. Simovici suggested that organizational rules represent information in data sets as a result and is directly related to the calculation of common sets of objects. Md. Abdul Khalel argues that data mining as a concept that reads large amounts of data and extracts patterns can be translated into useful information.

[2] The tendency to use a data mine in health care is very good, because the healthcare sector is rich in information, and data mining becomes a necessity. The use of information technology allows automated data extraction processes that facilitate the acquisition of interesting and common information, which means the completion of manual task and the easy retrieval of data directly from electronic records, transferred to a secure electronic system of life-saving medical records and reducing the cost of health care service,

as well as the early detection of communicable disease through improved data collections. Data mining can enable health care organizations to predict patient styles and behaviors, which are achieved by analyzing data from different perspectives and gaining connections and relationships from seemingly logical information. Raw data from health care organization is plentiful and varied. They need to be collected and stored in an organized manner, and their integration enables them to focus on the hospital information system. Smart Healthcare data mining offers many opportunities for hidden pattern investigations from these data sets. These patterns can be used by physicians to determine the diagnosis and treatment of patients in health care organizations.

[3] The paper states that health facilities are able to process data mining applications in a variety of areas, such as nurses using patterns by measuring clinical indicators, quality indicators, customer satisfaction and economic indicators, practicing physicians in many developmental perspectives. resource utilization, cost effectiveness and evidence-based decision-making, identifying high-risk patients and early intervention, improving health care, etc.

Data mining provide a link between continuous data information, such as biomedical signals collected from patients in emergency care centers, and creates a smart monitoring system that sends pre-selected reminders, warnings, and alarms to emergencies. Applying organizational rules involves finding all the rules, or at least part of the basic principles that mark certain information as a result or as a precursor. This type of problem is of particular interest to health professionals who are looking for a relationship between disease and lifestyle or population or between survival and treatment rates.

[4] This paper provides an analysis of various data mining procedures that can help medical analysts or physicians diagnose accurate heart disease. The main method used in our work was published in research, journals and reviews in the fields of computer science and engineering, data mining and heart disease in recent times.

This paper aims to analyze the various data mining methods introduced in recent years to predict heart disease. The notes show that Neural networks with 15 attributes work much better than all other data mining techniques, another conclusion from the analyses is that the decision tree also showed good accuracy with the help of a genetic algorithm and a small set selection. The tendency to include data mining in smart health care is very good, because the healthcare sector is rich in information, and data mining becomes a necessity. Health care organizations produce and collect large quantities of information daily. The use of information technology allows automated data extraction processes that help to obtain enjoyable information and regular times, which means the completion of manual tasks and the easy removal of data directly from electronic records, transferred to a secure electronic system for future medical record. health and reduce the cost of health care services, as well as the early detection of communicable diseases through improved data collection. Data mining can enable health care organizations to predict patient tendencies and behaviors, which are achieved by analyzing data from different perspectives and gaining connections and relationships from seemingly designed info1mation. Raw data from smart health care organizations is plentiful and varied. They need to be collected and stored in an organized data, and their integration enables them to focus on the hospital information system. Smart Healthcare data mining offers many opportunities for hidden pattern investigations from these data sets.

[5] Nowadays Heart disease is the leading cause of death today. The treatment of patients with heart disease has been improved, for example with mechanical mobility (M2M) technology so that we can monitor the patient remotely. In order to use M2M to care for a distant heart patient, his or her medical condition must be adjusted from time to time at home. Therefore, it's difficult to perform complex tests that require doctors to help. In the meantime, heart disease can be predicted by analyzing some of the patient's health principles. With the help of data mining procedure, the prognosis for heart disease can be improved. There are some algorithms which is used for this purpose such as Naive Bayes, Decision Tree, and k-Nearest Neighbor. This study aims to use data mining techniques for predicting heart disease, with simplification parameter to be used, for use in M2M for the purpose of monitoring remote patient. KNN is used as a parameter measure to improve accuracy. Only 8 parameters (13 recommended parameters) are used as they are the simplest and fastest parameters that can be measured at home. The result shows that the accuracy of these eight parameters using the KNN algorithm is good enough, compared to the 13 parameters per KNN, or even other algorithms such as Naive bayes.

[6] As one of the key strategies in Prognostics and Health Management (PHM), the predictably accurate Survival Living Life (RUL) can effectively reduce the amount of leisure time and significantly improve economic benefits. In this paper, the standard RUL method of forecasting is proposed for complex systems with multiple Condition Monitoring (CM) indicators. The stock corruption model is proposed to reflects system-damaging behavior, based on where consecutive reliability factors such as RUL and Confidence Interval are clearly identify it. Considering the destructive model, the two most desirable areas of Health Indicator (HI) have been prioritized and their value assessment methods are being developed. With the required structures, an indirect data aggregation method based on Genetic Programming (GP) is proposed to create a more cohesive HI combination. In this way, more common-mode signals are integrated to provide better guessing power. Finally, the proposed integrated

approach is validated in Commercial Modular Aero-Propulsion System Simulation data set for aircraft turbine engines.

[7] Timely strategies: public health monitoring, risk group identification, risk assessment, and implementation / evaluation program. The ability to predict which individuals are at high risk of injury (or produce injury) and the limited effectiveness and cost of other prevention strategies is the basis for decisions that affect the environment and focus on public health prevention strategies. In order to build a knowledge base on which to base decisions on violence prevention strategies, the following activities should be prioritized: (a) developing surveillance programs related to individual violence; (b) specifically identify groups at risk of non-lethal violence; (c) use case management techniques to assess potential risk factors for injury and violent behavior; and (d) a careful review of existing programs aimed at preventing public violence or altering the threat of the violence.

[8] As an emerging technology and business paradigm, Cloud Computing has taken commercial computing by storm. Cloud computing provides easy access to the company's most efficient storage infrastructure for web services. With cloud computing, the goal is to hide the complexity of IT infrastructure management for its users. At the same time, cloud computing platforms offer high output, 99.999% reliability, high performance, and accurate configuration. These skills are offered at a low cost compared to dedicated infrastructure. This article provides a quick introduction to cloud storage. It integrates key technologies in Cloud Computing and Cloud Storage, a few different types of cloud services, and explains the advantages and disadvantages of Cloud Storage following the launch of the Cloud Storage Reference model.

[9] Peng Z, Examined genetic embryonic stem cell (ESC) genes. signatures value to estimate survival Prostate cancer patients at the time of their diagnosis. Ku research, a total of 641 ESC gene predictors (ESCGPs) identified using microarray data sets. Measurement survival neighbor near k (K-NN) using an algorithm estimating total survival [84].

[10] This paper proposes a common design of the cloud storage system, analyzes component functions, and discusses key technologies, etc. Cloud storage is a novel mode of novel storage service providers that provide storage capacity and online data storage services to customers; At this time, clients do not need to know the details and structures with discounts and methods. The proposed cloud storage structure is horizontal and integrated, and the main technologies discussed involve utilization, virtualization of storage, data editing, migration, security, etc. An operating system that includes natural sequencing, game theory, ant colony development, data life cycle management., conservation and regeneration, integration and evolutionary processes are also analyzed. So, a complete and innovative view of the cloud storage system is presented.

3. ANALYSIS AND INTERPRETATION

Today people are very busy with their health and do not care about their health, they only take action when it is a sensitive issue and it is because they do not have much time or do not want to spend much time in the area. a place where they found nothing.

People think not only of their financial situation but also of how they can grow it day in and day out but by thinking that they also ignore the problem they face in everyday life and simply ignore it for no apparent reason.

From this application the user can easily see the problem they are experiencing and the exciting part is that the user can find it anywhere and anytime, it will not take much time and the user does not have to go online or wait long. to find time and consult a doctor.

This web application saves time and money for users. They do not need to spend thousands of rupees on hospitals if they have a minor problem.

In our paper, here we have made a cloud-based application for a more effective way to tackle the health care system. Cloud gives us a flexible feature, using a computer cloud is essential in helping businesses and individuals realize and fulfill the promise of digital change.

Using HTML, cascade, and java script I created my interactive interaction. and we can use the looping feature in HTML du that we can use a small long slide code or any module we have to repeat. MySQL provides data storage on a website.

The final user flow of my model cover i.e., user / customer. The Customer / User can visit the app and can fill in the required information based on a matter they simply ignore or want to check and user data will be analyzed through our database and based on the game application will provide a report and a doctor. details if there is a major problem with their health.

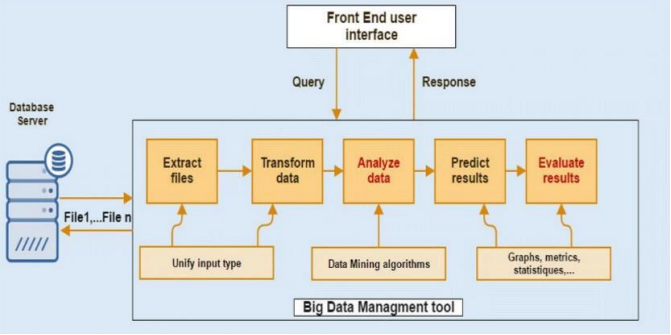

Fig:1- A working model

My model data will flow into the first three-phase phase, which is the login or registration phase where usage can register or login. After that is the forum where users can select the release details. After that it comes out where users can be safe from unauthorized users.

4. IMPLEMENTATION

This section describes data mining processes and algorithms for their effectiveness in health assumptions. It also analyzes prospects related to the use of data mining techniques in health forecasts.

4.1 Data Mining

The forecasting system will depend on its use of data mining, called mining information and information from a large number of data sets. The medical industry is one of the many fields in the community that collect a lot of information that can be used to help with data mining. Data mining can improve the medical industries by eliminating current health disparities by easily providing answer to complex medical condition in order to resolve and eliminate any time wasted in making a clinical decision.

Data mining is defined as the process of searching for specific patterns that come to a website and using that information to create speculative models. Its processes include analyzing and selecting specific data in a large database to reveal new and unknown patterns.

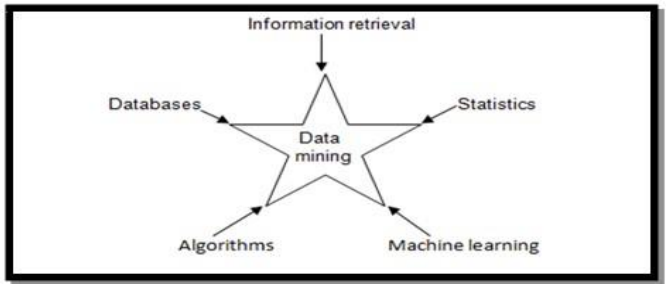

Fig:2- Historical Perspective of Data Mining

Both K. Durairaj and H. Ranjani which is shown in fig 4.1, mentioned that the result of data mining are of influence of statistics, database, information retrieval, machine learning and algorithms.

Data mining is also a well-known process that involves the Acquisition of Information on a Site which is the extraction of large amounts of data from a website. It is used to work and explore hidden pattern and relationship that could be found in large amounts of data for decision-making purposes. Knowledge Discovery in Database is done in 7 sequential steps as shown in Figure [2].

4.1.1 Data Cleaning

Data Cleaning is presented as the first step for KDD to eliminate any random, insignificant or missing value data.

4.1.2 Data Integration

Data aggregation is the second step after Data Cleaning which takes the filtered data from a previous step to be merged into useful and useful data.

4.1.3 Data Selection

Data Selection is defined as the process by which data relevant to analysis is selected and downloaded from data collection.

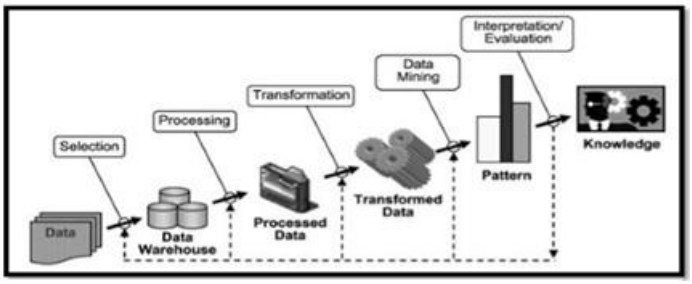

Fig:3

4.1.4 Data Transformation

Data Transformation involves the conversion of data into forms needed to perform various mining operations such as smoothing, orienting or merging.

4.1.5 Data Mining

Data mining involves examining the data of any patterns or rules that are useful for extracting and retrieving.

4.1.6 Pattern Evaluation

Pattern Examination is defined as the identification of patterns that represent information based on a particular scale.

4.1.7 Knowledge representation

Information representation is the last step for KDD where visualization tools and techniques are used to help users understand information from the data mining result.

There are various data mining techniques to choose from to turn raw data into useful. These are seven techniques that are most commonly used involved data mining to choose from fig 3.

4.2 Classification

Separation represents a data mining process that requires the collection of various information and qualitative data for analysis. Once the attributes are identified, the data can be sorted and managed.

4.3 Clustering

Consolidation is a method of data mining that requires the identification of related data according to its similarity and similarity. It relies on a visual approach that reflects the distribution of data towards the people so that they can understand it.

4.4 Regression

It is a method used in data modeling features. The relationship between the two may vary according to their circumstances.

4.5 Outlier detection

External discovery or confusing discovery involves looking at data objects in a data set of any confusion that does not conform to certain behaviors. For any confusion identified, it will be easier to understand the causes of this disorder to prevent it.

4.6 Sequential Pattern

A sequential pattern is a method that focuses on finding similar patterns in data activity over time. This application is useful for revealing periodic data deviations.

4.7 Prediction

Predicting merely means analyzing past events to make predictions. Therefore, the historical data is used for testing to gain insight that may be helpful in predicting future events.

Disease / Algorithm	Heart	Kidney	Liver	Diabetes	Cancer
Decision Tree	√	√	√	√	√
Naive Bayes	√				√
Neural Networks	√	√			
Fuzzy			√		
SVM	√	√	√	√	
Multilayer Perceptron		√			√
Simple Logistic				√	

Fig:4

4.8 Association Rules

Organizational rules are a statistical-related data mining program. Searches and displays specific connection data that can be linked between two pre-set data to detect a hidden pattern.

With the health care forecasting system, there are a number of data mining algorithms to consider. Every data mining algorithm will eventually produce different results between each other and with these results, it is used to determine the efficiency and accuracy of the system. The study proposed by Kirubha and Manju Priya which is shown in figure 4, describes an analysis of the application of data mining in different medical domain and the algorithm that are used to predict different diseases. A table in Figure 4 shows the comparison of algorithm that were used for different disease prediction. With the result shown in Figure 4, it is sufficient to determine that data mining provides results that are better and useful in providing diagnosis for disease when the correct data mining tools and technique were applied.

5. RESULTS AND DISCUSSION

The result of the proposed system will be disease and the level of accuracy with which the patient is currently being treated. As the data are analyzed by following the steps of the Information Access process based on Figure 1.1, the accuracy level of a particular disease will be based on a variety of factors such as the patient's medical history, age, gender and much more. The following data mining result will be used to assist clinical physicians to be able to treat the patient depending on the diseases with high accuracy.

The implementation of a health forecasting system will allow physicians and medical professionals to limit their efforts in their clinical decision-making process by simply inserting user health data and symptoms. This system will be used with data mining algorithms that can intelligently diagnose the disease by linking patient information with health information provided by doctors and medical professionals and stored on a website, the whole process will be successful. reducing the time-consuming and challenging efforts that physicians put into it to make a clinical decision. The program will also encourage patients and clinicians to consult on a patient recommendation for physicians who are qualified to deal with their diagnosis and who are not important in their particular medical field.

This project aims to bring an easy-to-use plan for patients and physicians to apply their needs to diagnose illness and provide appropriate guidance on their current health issue. The software itself will only fit and be installed on PCs or can be deployed over cloud so that it could accessed from anywhere.

The healthcare system has been proven to be prudent and benefits all physicians and medical professionals by eliminating the use of time and problems in their decision-making process while diagnosing a patient. Various data mining models need to be considered and compared in order to create a smart life prediction system.

Based on the findings of the book review, many health forecasting systems contain approximately one data mining algorithms to predict diseases with all indicating the Naïve Bayes algorithm to be the most efficient and accurate data mining algorithm. another data mining algorithm. Typically, a data mining algorithm will be considered and selected depending on the size of the data to be tested for its predictive accuracy.

The proposed system needs to include the functionality:

5.1 Patient Registration

Patients will need to register themselves first with their username and password in order to use the system.

5.2 Patient Login

Patients will need to log in to their system with their username and password.

5.3 Live Chat

Patient can use the live chat functionality for any kind of clarifications or helps which will be required for the application.

5.4 Viewing Diseases/Symptoms Details

All the symptoms and past diseases will be listed if any for the clarification in prediction.

5.5 Selection of Disease Selection

Patient can select the diseases, symptoms and can provide few personal details which is listed on the application.

5.6 Diseases Prediction

Based on the patient diseases, symptoms and personal details like height and weights, decisions will be made.

5.7 Results

Reports will be generated based on all analysis made previously and then BMI and Report will be shown on the final stage of application.

5.8 Logout

Patient can securely logout after completing its task.

6. CONCLUSIONS

In this paper, we present and validate an automated system prototype that ensures continuous monitoring of various health parameters and predicts any kind of illnesses or disorders that prevent the patient from experiencing frequent hospital visit. The proposed system can be set up in hospitals or at home (Anywhere) with large amounts of data can be obtained and stored on an online website. Even the results can be made available on mobile phones using a web application.

Data mining can play an important role in disease forecasting in order to design an intelligent health guessing system. In medical diagnostics, data mining has been widely used to predict diseases by diagnosis. However, there is no single data mining algorithm that is better suited to solve the problems of guessing health care data sets. In conclusion, a combination of a few data mining or a hybrid version of a data mining algorithm may be the best way to design a life forecast system. Future research may be focused on developing a better data-based model that can address health care with real-time health care databases.

This study does not include a complete analysis of all existing data mining algorithms and real-time health care databases. In addition, the proposed health forecast system is not based on comparing all of the data mining algorithms found in the literature. However, future research may be directed at selecting a data mining algorithm that is most relevant to the analysis of all existing algorithms.

The system can be further developed by adding components of the simplified intelligence system to doctors and patients. Data, which includes the medical history of multiple patient parameters and related outcomes, can be evaluated using an algorithm, searching for static patterns and systematic relationships in these diseases. For example, if a patient's health limits change accordingly as a previous patient on a website, the results can also be measured. If the same patterns are found repeatedly, it may be easier for medical researchers to find a solution to this problem.

The best source and fastest methods with a single mouse click. Additional curriculum such as test questions and any important dates will also inform you with the help of the event window. Unlimited resources are available and can get as much as you want and, it can save you time. E-learning is real-time available 24 * 7 days. Students also get better time management as if they are free, it means there is no other work and they will start classes.

At that point the mind is free to understand better. with the effects of the highlighted posters, they will be inspired and will work hard to hang his image on the bulletin board. It also improves visual communication and interaction. Students adapt to the conditions in which they find themselves in any field and can compete with their exams.

Parents also report to their children and monitor classrooms there is no opportunity to cover classes because their parents also have IDs that look at students working.

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