

Database Evaluation Considering the Decisive Factors for Obtaining an Optimistic Value to Predict the Diagnose

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Abstract: The main objective of this project is to work on a medical diagnose system that has 13 different symptoms which are used to obtain an optimistic value and further to predict the diagnose. The optimistic value can be predicted through decisive factors namely meticulousness, exactitude, compassion and rigour. The interface developed has a form which consists of 13 different symptoms. When the user submits the form, the data is accessed from the database and the exact matched disease with its prevention and cure methodology is shown. If the symptoms are not matched, then the relevant symptoms are considered for predicting the disease and checks the optimistic values of decisive factors and therefore predicts the nearest matched disease to the user along with the prevention and cure methodologies. The optimistic values obtained are usually calculated by individual formulae of each decisive factor. The diagnose obtained is normally predicted but not 100 percent optimistic.

Index Terms: Compassion, cure methodologies, Decisive Factors, Diagnose, Exactitude, Meticulousness, Prediction, Prevention, Rigour.

I. INTRODUCTION.

1.1 Introduction to Domain: Knowledge discovery in databases is well-defined process consisting of several distinct steps. Data mining is the core step, which results in the discovery of hidden but useful knowledge from massive databases. A formal definition of Knowledge discovery in databases is given as follows: "Data mining is the non trivial extraction of implicit previously unknown and potentially useful information about data". Data mining technology provides a user-oriented approach to novel and hidden patterns in the data. The discovered knowledge can be used by the healthcare administrators to improve the quality of service.

1.2 Introduction to the System: The Present system is a medical diagnose system in which the user or the patient can predict the disease he is suffering from by the symptoms. For the prediction of the disease the user should enter the symptoms on the user interface and submit the symptoms. the system immediately checks the values and compares the values with the database values. The main concept of the system is the user should be able to know the type of disease that he is suffering from even after the symptoms that he entered does not match the symptoms in

the database. To obtain such an optimistic value we have used the concept of decisive factors in the proposed system. Based on the inputs given by the user, the system calculates the factors and also compares the values with the database values and thereafter calculating the classifier values namely true positive, true negative, false positive and false negative. The system after considering these classifier values, it starts calculating the values for the four decisive factors namely meticulousness, exactitude, rigour and compassion. After when the system calculates the optimistic values for the four decisive factors, the system predicts the nearby disease that the user is suffering from and also suggests the prevention and cure methodologies. The calculation of the classifier values can be shown by the following table

Table 1. Method showing the calculation of the classifier values.

Prediction	Data Base value : A	Data Base Value : ~A
Input value A	True Positive (TP)	True Negative (TN)
Input value ~A	False Negative (FN)	False Positive (FP)

After calculating the classifier values, the values thus obtained are used for obtaining the optimistic value of the decisive factors by using the formulae as given.

$$\text{Meticulousness (mT)} = \frac{(TP+TN)}{(TP+FP+FN+TN)} ;$$

$$\text{Compassion: (cP)} = \frac{(TP)}{(TP+FP)}$$

$$\text{Rigour: (rI)} = \frac{TN}{TN+FP} ;$$

$$\text{Exactitude (eX)} = \frac{TP}{(TP+FN)}$$

The above formulae are calculated by the user given inputs and then the system calculates the optimistic values for the four decisive factors. Based on the optimistic value obtained the system predicts the nearby disease and also displays the prevention and curing methodologies.

II. EXISTING SYSTEM

People need to visit the doctor even for a small illness. It takes a lot of time for consulting the doctor and getting it cured. They don't know how dangerous the disease will effect them and what extent they are suffering with that

particular disease before visiting the doctor. They cannot analyse the symptoms without any expert suggestion. If any near by experts are not available, patient needs to travel a long distance despite being ill. Patient may not predict the kind of disease that he is suffering from unless the symptoms exactly match with the available information in the system. Along with the disease name, the system cannot provide the diagnosis and the prevention methodologies

III. PROPOSED SYSTEM

Health is a resource for everyday life, not the objective of living. The web portals were expected to have a social mission to provide essential health related information in simple language to people. This offline web portal is created with this inspiration. The development of this web portals are aimed at a collaborative venture with eminent doctors with an excellent team of Computer engineers. This offline web portal is expected to have the following features. This web portal provides time to time health advice to the users at their door steps about disease they are suffering with or disease which they are trying to prevent occurring. This web contains 2 major sections named Disease locator system and Diseases system, Disease locator. In the above mentioned fields Disease system contains the static information and Disease Locator is an advisory system which is a part of the web portal will provide information to the users from time to time regarding the health advice. The system provides the information about the expert doctors, mailing facility to the users for contacting them for on line medical expert advice. The system provides information about the various diagnosis, and curing methods.

IV. PROBLEM SPECIFICATION

The Present system is an offline diagnose system which is being operated by a normal human being and a human expert as well where there are lot of troubles. Although this system is being in use for many years, humans who suffer with disease are unaware of the system and its usage and functionalities. This system is a bit slower. So, often people who suffer with different diseases need to visit an medical expert or a doctor with out even prior knowledge of the symptoms of the disease. This may increase the trouble for the patient as he need to go to a long distance in case if any emergency medical suggestions or any primary treatment required. Also there are many chances of an expert to make an error in predicting the disease. Educated people who use this website will know the disease which

they are suffering from by entering symptoms. The present system provides an easy access for a person suffering from a disease to analyse what kind of disease that he is suffering from by simply selecting the symptoms that are being displayed on the home screen and there by getting the required information about the disease that he is being suffering from. The system also provides the curing methodologies and the measures that are to be taken to prevent the disease as well so that he can be able to take care further. . The Doctors also use the web site to access the expert information stored in the web portal for upgrading their skills. The other stake holders in Human Health such as Hospitals may also be the indirect beneficiaries for the system as their Services will be consumed in a larger way, because of their advertisements in the portal. Therefore all the stake holders connected with Health Science will be benefited with this web portal to increase their productivity and profitability. The system is maintained with both String Matching and String comparison in order to provide a closest disease, what happens is, if the user entered the disease symptoms in the input form given by the expert, it displays the actual disease (String Matching) with which the patient is suffering with , or else it shows the content saying that the knowledge is insufficient . For this purpose we implemented a concept called Decisive Factors that calculates an optimistic value by considering the number of more symptoms that are matched with the values and therefore predicts a nearest matched disease so that the person may get an minimum idea of the kind of the disease that he is suffering from.

V. DOMAIN AND DATA ANALYSIS

The present proposed system works on a dataset of 13 symptoms and 8 disease values that have the similar type of symptoms. The values in the datasets are given with only two value 't' (true) and 'f' (false). If the user selects the symptoms as 'yes' then the value for the symptom becomes true saying that the user is suffering from that symptom. Similarly, if the user selects the symptom as 'no' then the value for that symptom becomes false saying that the user is not suffering from that symptom. The 13 different symptoms taken in the present system are s1=fever, s2=cough, s3=Stomach pain, s4=vomiting, s5=body pains, s6=weight loss, s7=bleeding, s8=headache, s9=appetite, s10=loose motions, s11=dyspnea, s12=constipation, s13=weakness, s14=disease

Table 2 consists of the data set sample values used for the prediction of the disease

s.no	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
1.	T	F	T	T	T	T	T	T	T	T	T	T	F	Typhoid
2.	T	F	T	T	T	F	F	T	T	T	F	F	F	Malaria
3.	T	T	F	F	F	T	F	F	T	F	F	F	T	TB
4.	T	T	T	T	T	T	T	T	T	T	T	F	F	Ebola
5.	T	T	F	T	T	F	F	T	T	T	T	F	T	Swineflu
6.	T	F	F	T	T	F	T	T	T	F	T	F	F	Dengue
7.	T	F	F	T	T	F	F	F	T	T	T	F	T	Cholera
8.	T	T	T	T	T	F	T	T	T	T	T	F	T	Anthrax

VI. FUNCTIONAL & NON-FUNCTIONAL REQUIREMENTS

6.1 Functional Requirements

The following are the functional requirements of this system:

- 1. Inputs** The system needs the information of the
 - ✓ Common Disease Symptoms
 - ✓ Common Diseases
 - ✓ Basic tests information

2. Outputs The outputs of the system will be:

- ✓ Information Disease
- ✓ Description about the disease
- ✓ Prevention Measures
- ✓ Curing Methods

6.2 Non-Functional Requirements

Platform is equipped with Java Server Pages and Net Beans. Technology used is JAVA (JSP Front End) & MYSQL (Rear End). This is a web enabled application developed using JSP and Datasets. So as to ensure the quality of the software, all software engineering concepts, including test cases are implemented. This depicts the client server architecture and forms a well set layout

VII. USER INTERFACE DIAGRAM

The below shown user interface diagram in figure 1 depicts the working of the system by the flow of events. The events show that in the system when the symptoms are entered by the user it goes for database matching. If the values are exactly matched with the data base values then the disease and its preventive and cure methods are displayed. If the values are not matched then it goes for calculating the optimistic value through decisive factors and then displays the disease and its preventive and cure methods.

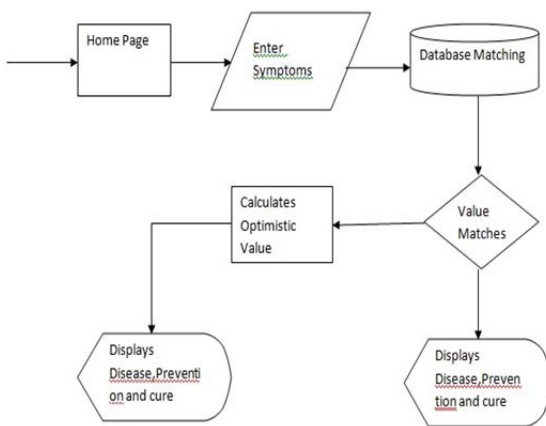


Figure 1: USER INTERFACE DIAGRAM

VIII. COMPUTATION AND RESULT ANALYSIS

In the present system the computational results can be considered in two ways. 1 when the user input values are matched exactly with the values in the database. 2. When the user input values does not match the values in the data set.

3.1 Result analysis when the user input values match with the dataset values.

- Result set 1: IF**
 s1=T s2=T s3=F s4=T s5=T s6=F s7=F
 s8=T s9=T s10=T s11=T s12=F s13=T
 Disease Predicted is **SWINE FLU**
- Result set 2: IF**
 s1=T s2=T s3=T s4=T s5=T s6=T s7=T
 s8=T s9=T s10=T s11=T s12=F s13=F
 Disease Predicted is **EBOLA**
- Result set 3: IF**
 s1=T s2=F s3=T s4=T s5=T s6=T s7=T
 s8=T s9=T s10=T s11=T s12=T s13=F
 Disease Predicted is **TYPHOID**
- Result set 4: IF**
 s1=T s2=F s3=F s4=T s5=T s6=F s7=T
 s8=T s9=T s10=F s11=T s12=F s13=F
 Disease Predicted is **DENGUE**
- Result set 5: IF**
 s1=T s2=F s3=T s4=T s5=T s6=F s7=F
 s8=T s9=T s10=T s11= F s12=F s13=F
 Disease Predicted is **MALARIA**
- Result set 6: IF**
 s1=T s2=F s3=F s4=T s5=T s6=F s7=F
 s8=F s9=T s10=T s11=T s12=F s13=T
 Disease Predicted is **CHOLERA**
- Result set 7: IF**
 s1=T s2=T s3=F s4=F s5=F s6=T s7=F
 s8=F s9=T s10=F s11=F s12=F s13=T
 Disease Predicted is **TB**
- Result set 8: IF**
 s1=T s2=T s3=T s4=T s5=T s6=F s7=T
 s8=T s9=T s10=T s11=T s12=F s13=T
 Disease Predicted is **ANTHRAX**

Sample Screen 1:

The following sample screen (figure 2) shows the user interface of the system with the symptoms and the user giving the input values to the system.

vomiting:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
body pains:	<input type="radio"/> Yes	<input checked="" type="radio"/> No
weight loss:	<input type="radio"/> Yes	<input checked="" type="radio"/> No
bleeding:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
head ache:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
poor appetite:	<input type="radio"/> Yes	<input checked="" type="radio"/> No
loose motions:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
dyspna:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
constipation:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Weakness:	<input type="radio"/> Yes	<input checked="" type="radio"/> No

Fig 2, The interface of the system with the symptoms. Sample screen 2:

The following sample screen 2 (fig 3.) shows the output value when the user given input values matches exactly with the database values and then shows its prevention and curing methods also.

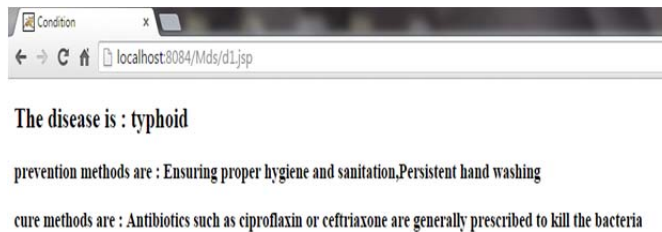


Fig 3. Screen showing the result value when result set exactly matches with the data base values.

3.2 Result analysis when the user input values does not match with the dataset values.

Result case 1: IF
 s1=F s2=F s3=T s4=F s5=T s6= T s7=F
 s8= T s9=F s10=F s11=F s12=F s13=F
 Disease Name : **Typhoid**
 TP = 5 FP = 2 FN= 6 TN =0
 mT=5.0 eX=0.0 cP=0.0 rI=0.0

Result Case 2: IF
 s1= T s2=F s3=T s4=F s5=T s6=F s7=T
 s8= T s9=F s10=T s11=T s12=F s13=F
 Disease Name: **Anthrax**
 TP= 7 FP=2 FN=4 TN=0
 mT=7.0 eX=0.0 cP=0.0 rI=0.0

Result case 3: IF
 s1=T s2=T s3=T s4=F s5= T s6= T s7= T
 s8=T s9=T s10=T s11=T s12=T s13= F
 Disease Name : **TB**
 TP=4 FP=5 FN=1 TN=3
 mT= 7.0 eX=2.0 cP=0.6 rI=1.0

Result set 4: IF
 s1=F s2=F s3=F s4=T s5= T s6= F s7= F
 s8=T s9=F s10=F s11=T s12=T s13= F
 Disease Name : **CHOLERA**
 TP=3 FP=4 FN=4 TN=2
 mT=3.0 eX=0.1 cP=0.6 rI=1.0

Sample Screen 3:

The following sample screen (fig 4) shows the output values when the user input values does not match with the data base values. It then starts calculating an optimistic value, and then displays the NTP,NFP,NTN,NFN values and values of decisive factors and then the disease name along with its preventive and curing methodologies.

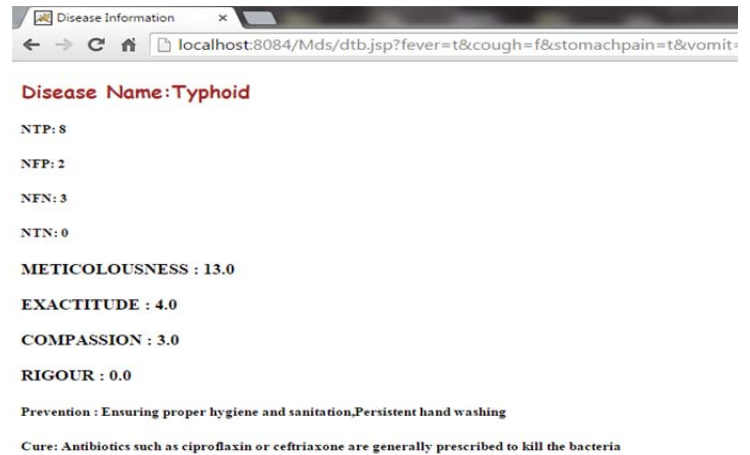


Fig 4. Screen showing the optimistic value of the disease when the data set values are not matched .

IX. CONCLUSION

This project "Database evaluation considering Decisive factors for obtaining the optimistic value to predict the diagnose" is a offline web browsing enabled application developed using JAVA and MYSQL database is used as backend. Its main objective is to have a well designed interface for giving health related knowledge and suggestions in the area of any disease field by providing the symptoms as an input to the system and interact with the database system and the user without the need of an expert at all times. We can also design and develop the Medical Diagnose systems for drug therapy for finding the right drug to cure the disease. By the thorough interaction with the users and beneficiaries the functionality of the system can be extended further to many more areas in and around the world.

X. FUTURE ENHANCEMENT

The Present system works in finding an optimistic value of the disease using the decisive factors. The system still need to work in more approximate manner so that the user of the system may get an accurate value and its prevention and curing methods. The system also needs to be improvised for a large data base that is the system should show accuracy in handling large number of data and predict the disease in a more precise manner for large number of symptoms.

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