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CONNECTING NEAR BY DOCTORS BY IDENTIFYING & DIAGONISING DISEASES

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Abstract: In this we are going to implement a system which is related to smart health prediction inorder to reduce the time of a user.The main objective of developing this project is to provide a proper medical guidance to the patient for their health issues by providing accurate results . Here, the system concentrates on the symptoms of patient's disease and based on the symptoms, the data is classified from the dataset and finally the disease name is predicted . We have 3 modules, they are patient,doctor, and admin modules. The primary step is, the user(patient/doctor) needs to register if he is new to the appliction or else he can directly login with his credentials.The admin authenticates the credentials and allows the user to access. there is a facility that user can upload records and there is a feedback system available to the user which is directly visible by the admin. so, the doctor can study the patient and give a proper treatment.

Index Terms: Disease prediction, Doctor, Patient, Symptoms, Feedback, Appointment, Admin.

1.Introduction

Human beings are getting affected by various diseases now a days and this has become a common criteria. They are getting affected by different diseases and neglecting the cause because of enlarged time taken to know the type of disease in their busy lives and this is becoming a critical situation when it goes to a chronic stage. This system reduces the tedious task of an applicant who apply manually by waiting for hours in the queue. So, in order to overcome the above mentioned problems, we are developing this proposed system to provide an ease of access to the victims of the disease through online by saving their time. The two domains which we are using for this system is Data mining and machine learning. Data Mining refers to the extraction of raw data from data warehouses into a useful one .Machine Learning is the ability of making the machine to learn.

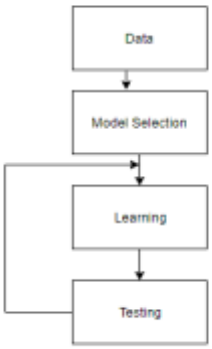


Fig 1.1.Model of a system

Machine Learning consists of two types of Learning. They are:

- Supervised Learning
- Unsupervised learning

Supervised Learning

Learning something with the help of some guide comes under Supervised Learning.This learning process is completely dependent.Here,the input vector is presented to the network which will produce an output vector.The main aim is , the output vector and the target vector i.e, the desired output must be equal or else the adjustment of weights will continue till the outputs match with each other.

Unsupervised Learning

Learning is performed without the help of a guide. Here, the network receives n number of input patterns and organise it into a form of clusters. The network itself has the ability to learn by itself, discover the patterns & features from input data. This type of learning is also called as Self-Organised Learning.

2.Literature Survey

In this system we are using naïve bayes theorem for classification of data and disease prediction. Naive Bayes classifiers are defined as a collection of classification algorithms based on **Bayes' Theorem**. The main principle is each instance is independent of each other. Naïve Bayes Algorithm is an example of supervised Learning i.e. it is completely trained by examples in the dataset. The most probable classification of new instance is obtained by combining the predictions of hypothesis. There are two events A and B where P (B) is true . P (A) is the **priori** of A (the prior probability, i.e. Probability of event before evidence is seen). The probability of event after evidence is seen as,

$$P(A/B)=[(P(B/A) *P(A))/P(B)] \quad (1)$$

1)***Naïve Bayes Algorithm***

Naïve Bayes Algorithm is a classification algorithm based on Bayes theorem's use in predictive modelling and this algorithm uses Bayesian techniques. This Algorithm is less computationally intense then other algorithms.

Requirements for naïve bayes models:

Single key column: Each model must contain unique column which uniquely identifies each record.

Input columns: In Naive Bayes model, it is important to ensure that the input attributes are independent of each other.

At least one predictable column: The values of the predictable column can be treated as inputs.

2)***Decision Tree Algorithm***

It comes under one of the type of supervised learning algorithm which is especially used in classification problems. It works on both continuous as well as categorical input and output variables. This comprises of a single root node with similar set of different nodes.

Decision tree is classified into 2 types. They are:

1)***Categorical Variable Decision Tree***: If a tree consists of a categorical target value then it is termed as Categorical variable decision tree.

2)***Continuous Variable Decision Tree***: If a tree consists of a continuous target variable then it is termed as Continuous Variable Decision tree.

Working of a Decision Tree:

A decision tree is a graphical representation of all possible solutions to a decision based on certain conditions. Each path of the tree is from root to leaf.

Decision tree learning characteristics:

1)Instances are represented by attribute pair values. Attributes takes on a small number of disjoint possible values.

2) The target function has some discrete output values. It even assigns a Boolean classification(Yes or No/0 or 1) to each example.

3)Disjunctive descriptions may be required.

4)Decision tree learning methods are robust to errors.

5)The training data may contain missing attribute values.

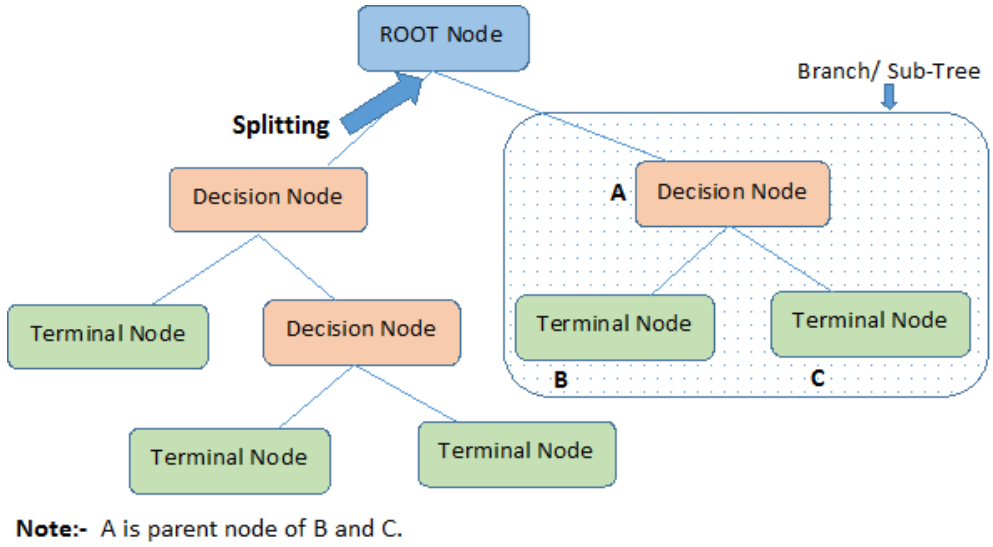


Fig 2.1:Decision Tree sample diagram

3)***Random forest Algorithm***:

Random forest algorithm is the term for an ensemble classifier which consists of many decision trees and therefore outputs the class that is the mode of the classes output by individual trees. Random forests are set of trees, all slightly different. It randomizes the algorithm, not the training data and generally improves the decisions of decision trees. Every decision tree will be constructed by using a Random subset of the training data from the dataset. To improve the predictive accuracy and control over-fitting, random forest acts as an estimator that fits various samples of dataset. Random Forests are especially used for predicting continuous variables. These are also used for estimating the probability that a particular outcome occurs, Outcomes can be either "yes/no" events i.e. True or false. It could have many possible outcomes but typically multi-class problems have 8 or fewer outcomes.

Every tree generates its own specific predictions and acts independent for each record in the data base. For predicting we would average the predictions made by our trees. By yes vs no percentage we can know the prediction.

Drawbacks of other algorithms:

One more algorithm is also there for implementing this framework namely Hill climbing algorithm but it has some drawbacks when compared to Naïve bayes algorithm. The following are the disadvantages of hill climbing algorithm.

- It got failed to find a better solution.
- Either algorithm may terminate not by finding a goal state but by getting to a state from which no better state can be generated.
- Not an efficient method- It gets stuck at all peaks.

3.Methodology:

Features Available in the System are,

- Patient Registration & Login.
- View Details.
- Diseases Prediction.
- Admin Login

- Notification.
- Feedback
- Automatic Location Tracker

In this system there are three modules. They are:

MODULES:

MODULE 1: ADMIN MODULE

- **Admin Login**: Admin can login into the system by using Id and password.
- **Add Disease**: Admin has the ability to add disease details along with symptoms and its type.
- **View Disease**: Admin can view details stored in database of different diseases.
- **View Patient**: Admin can view patients details along with their diseases.
- **View Feedback**: Admin can view the feedback of the user at the end.
- **Add Doctor**: Admin can add the Details of the doctors.
- **View Doctor**: Admin can view doctor details.

MODULE 2: PATIENT MODULE

- **Patient login**: Patient can use his ID and password to login to the system.
- **Patient registration**: If patient is a new user then he has to enter his personal details or else he can directly give his credentials to login.
- **My details**: Personal data can be viewed by the patient.
- **Edit patient record**: Personal details of the patient can be edited.
- **Disease prediction**: System generates certain random questions regarding his illness and it predicts the disease based on the symptoms using naive bayes specified by the patient.The system will also suggest the specialized doctors based on the disease.
- **Search Doctor with known disease**: Patient can search for a particular doctor by specifying Disease name/ type.
- **My Stuff**: Patient has the facility to manage by uploading their reports.
- **Appointment**: Patient can proceed for appointment after selecting their doctor from list.
- **Feedback**: Patient will post the feedback and this will be reported to the admin.

MODULE 3: DOCTOR MODULE

- **Doctor login:** By using id and password doctor can login to the system.
- **Doctor registration**: If Doctor is a new user he will enter his personal details and he will have user id and password through which he can login to the system.
- **Appointment dates/slots**: Doctor have to provide his available dates and slots for treatment.
- **Connected patient details**: Doctor can view his connected patient details after completion of appointment.

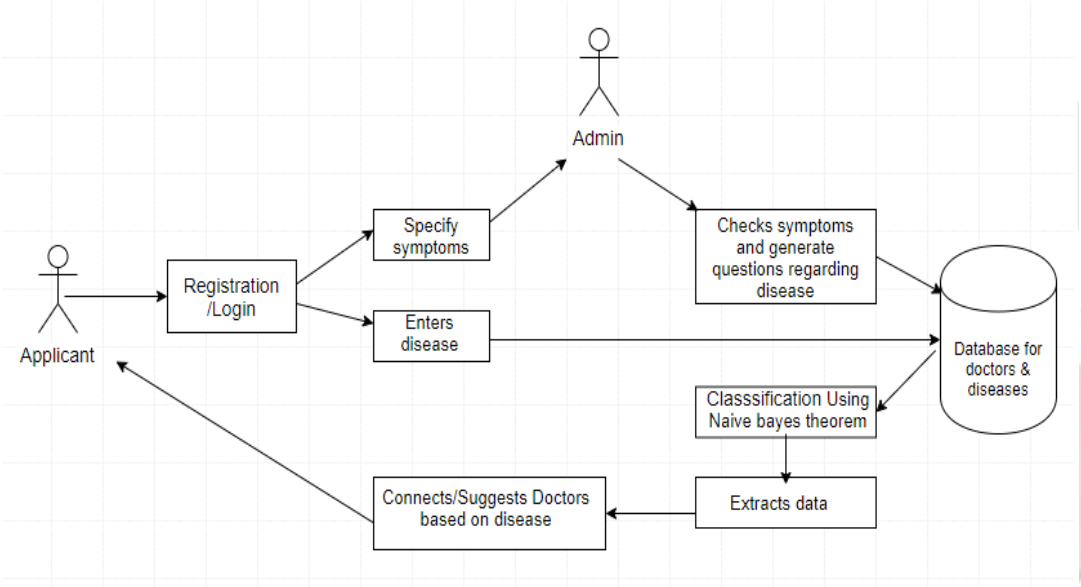
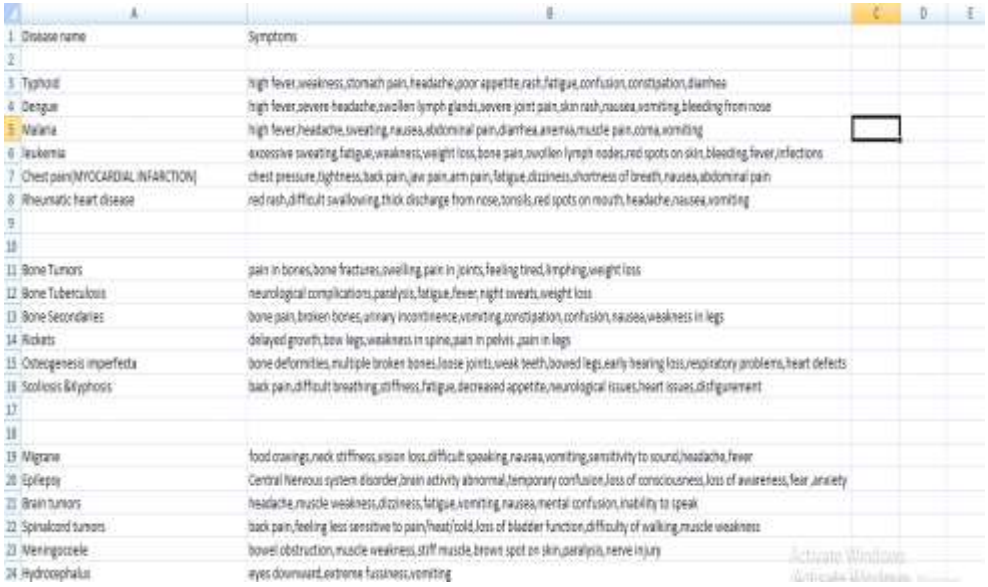


Fig 3.1:Architecture Of System

3.1.1.DATASET DETAILS

In this module the dataset is gathered which is a collection of diseases and their corresponding symptoms. We have created these datasets which consists of diseases dataset and random questions dataset.



	A	B
1	Disease name	Symptoms
2		
3	Typhoid	high fever,weakness,stomach pain,headache,poor appetite,rash,fatigue,confusion,constipation,diarrhea
4	Dengue	high fever,severe headache,swollen lymph glands,severe joint pain,skin rash,nausea,vomiting,bleeding from nose
5	Malaria	high fever,headache,sweating,nausea,abdominal pain,diarrhea,anemia,muscle pain,coma,vomiting
6	leukemia	excessive sweating,fatigue,weakness,weight loss,bone pain,swollen lymph nodes,red spots on skin,bleeding,fever,infections
7	Chest pain(MYOCARDIAL INFARCTION)	chest pressure,tightness,back pain,jaw pain,arm pain,fatigue,dizziness,shortness of breath,nausea,abdominal pain
8	Rheumatic heart disease	red rash,difficult swallowing,thick discharge from nose,tonsils,red spots on mouth,headache,nausea,vomiting
9		
10		
11	Bone Tumors	pain in bones,bone fractures,swelling,pain in joints,feeling tired,limphing,weight loss
12	Bone Tuberculosis	neurological complications,paralysis,fatigue,fever,night sweats,weight loss
13	Bone Secondaries	bone pain,broken bones,urinary incontinence,vomiting,constipation,confusion,nausea,weakness in legs
14	Rickets	delayed growth,bow legs,weakness in spine,pain in pelvis ,pain in legs
15	Osteogenesis imperfecta	bone deformities,multiple broken bones,loose joints,weak teeth,bowed legs,early hearing loss,respiratory problems,heart defects
16	Scoliosis &Kyphosis	back pain,difficult breathing,stiffness,fatigue,decreased appetite,neurological issues,heart issues,disfigurement
17		
18		
19	Migraine	food cravings,neck stiffness,vision loss,difficult speaking,nausea,vomiting,sensitivity to sound,headache,fever
20	Epilepsy	Central Nervous system disorder,brain activity abnormal,temporary confusion,loss of consciousness,loss of awareness,fear ,anxiety
21	Brain tumors	headache,muscle weakness,dizziness,fatigue,vomiting,nausea,mental confusion,inability to speak
22	Spinalcord tumors	back pain,feeling less sensitive to pain/heat/cold,loss of bladder function,difficulty of walking,muscle weakness
23	Meningocoele	bowel obstruction,muscle weakness,stiff muscle,brown spot on skin,paralysis,nerve injury
24	Hydrocephalus	eyes downward,extreme fussiness,vomiting

Fig 3.1.1:Sample Dataset

3.1.2.PERFORMANCE MEASURES

The performance for Diagnosing a disease and connecting nearby doctor is measured by time and accuracy.

Performance measure with respect to Time: The performance with respect to time is measured by plotting the graph by considering total time and people.

X-axis represents number of people and Y-axis represents Time in minutes.

Table 3.1.2(a):The Time taken by 5 people in real world approach is as follows:

People	Time taken by. Appointment	Time taken to Connect doctor	Time taken to know Disease	Total Time
1	120mins	300mins	200mins	620mins
2	240mins	350mins	300mins	890mins
3	300mins	420mins	320mins	1040mins
4	240mins	300mins	350mins	890mins
5	360mins	450mins	400mins	1210mins

Table 3.1.2(b):The Time taken by the DDCND to compute is as follows:

Users	Time taken to predict Disease	Time taken to get a list Of doctors	Time taken to fix an appointment	Total Time
1	3mins	50sec	10sec	4mins
2	2mins	50sec	10sec	3mins
3	3mins	50sec	10sec	4mins
4	4mins	50sec	10sec	5mins
5	2mins	50sec	10sec	3mins

3.1.3.Performance measure with respect to accuracy:

The performance with respect to accuracy is measured by plotting the graph disease given by doctors to corresponding patients.

Table 3.1.3:The diseases given by different doctors for the same patient are as follows:

Patient	Disease given by doctor1	Disease given by doctor2	Disease given by doctor3	Disease given by doctor4	Disease given by doctor5
1	Viral fever	Dengue	Malaria	Dengue	Viral fever

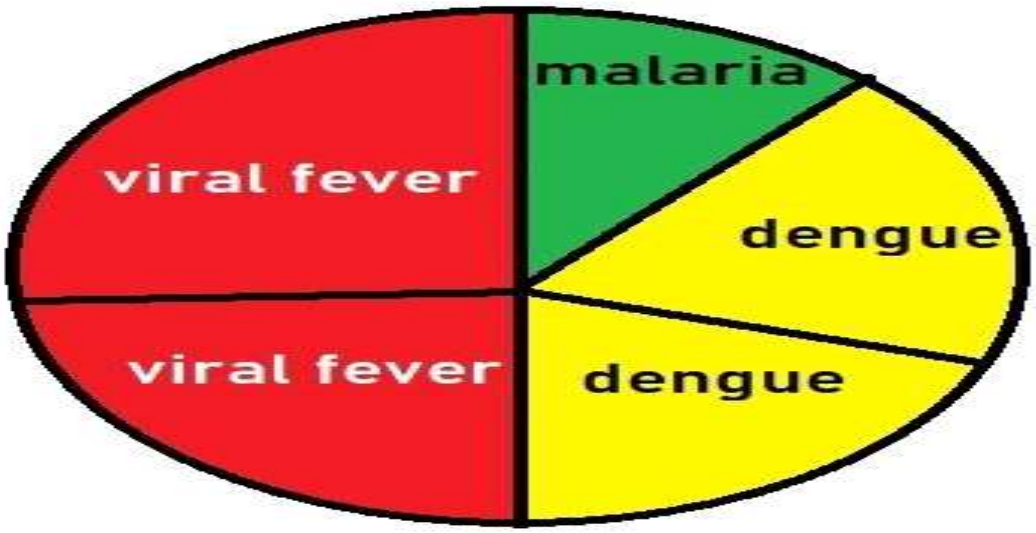


Fig 3.1.3:Pie diagram related to the above table

4.Conclusion

In this proposed system, we develop a system to mine or extract the data which is very important because we are getting valuable information which is not available easily and all this information are real time information. Finally, we want to tell you that this is a fully developed unique system which will be helpful for us. Hope this system will be very demandable in future. This system involves fundamental parts, for example, basic login, enter symptoms in the system and recommend medications, proposes an adjacent specialist. It takes the contribution of different manifestations from the patient, does the examination of the entered symptoms and gives fitting sickness expectation.

References

[1] Palaniappan S et al. Dept. of IT, Heart disease prediction using techniques of data mining, IEEE April 4.

[2] “Survey on Data Mining Algorithms in Disease Prediction”, Kirubha Vetal. IJCTT, 2016

[3]Holzinger,Ziefle,Martina,”Smart health”,2015

[4]Dean,Jared,”Data mining and Machine Learning”,2014.

[5]Lakshmi SVSS Dept. Of CSE, "Machine Learning For Credit Card Fraud Detection System", IJAER, 2018.