



Personal Health Assistant
Arush Sharma, Dhruv Garg
| Prof. Malathi G | VIT Chennai

Motivation / Introduction

In India, rural areas often suffer from shortage of physicians and other medical facilities. It means that the residents of the rural areas often have less access to adequate healthcare. India’s low life expectancy is largely due to deaths from preventable diseases. The most significant gains in health would come from population-wide preventive measures. While the government has scaled up public health services, priority should be given to high impact primary health care services.

The objective of our project is to not only develop a Disease Identification and Prediction (DIP) algorithm but also to develop connected modules for fixing appointment with doctors and buying medicines from the store. Fixing appointments with doctors is a sub-module which also checks for the specific specialists required to treat the most-probable-predicted-disease.

- The main objective of this study is to create a fast, easy and an efficient algorithm for disease prediction
- The diseases predicted by website should have less error rate.
- The website should be scalable and function efficiently for disease and symptom datasets of large size.
- The database of the website should be extensive but at the same time it should also be optimized for querying.

Scope of the Project

- I. Providing assistance to patients in the comfort of their home
- II. Provide head start to doctors in treating patients which can save crucial time
- III. Reducing the trouble of finding appropriate in nearby locations.

Development Methodology

- Login
 - a. User Login
 - b. Doctor Login
 - c. Chemist Login
- Symptoms Selection
- Result of Top 3 probable Diseases
- Identifying required specialist
- Booking appointment with doctors
- Buying medicines from pharmacy
- Doctor can refer patients to other doctors

Results

TOP THREE PREDICTED DISEASES

1. PARANOIA
2. BIPOLAR DISORDER
3. DEPRESSION MENTAL

Enter the 4 areas that are most convenient to you for visiting a doctor :

*We will give you suggestions on the pharmacies/chemist stores in these areas as well

Adyar

▼

Velachery

▼

Anna Nagar


▼

Tambaram


▼

PROCEED TO FIND DOCTORS


MODULES




Disease Prediction



Report Generation



Suggesting Doctors



Online medicine store

Conclusion/Summary

Predictive analytics is the most discussed topic when it comes to health care analytics. Machine learning is a discipline that has been studied well and has a long history of success in various fields. Health care can make use of the previous success and learn lessons to start using predictive analytics for improving various issues related to health care. These issues include improving patient care, chronic disease management, hospital administration and supply chain efficiencies. The health care systems need to understand what predictive analytics means to them and how it can be used most effectively to improve their system.

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References

1. Programming webpagesw3schools.com
2. Machine learning tutorial – cleaning dataset www.scikit-learn.org
3. Getting specialist doctors in Chennai - www.practo.com

PERSONAL HEALTH ASSISTANT

by

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A project report submitted to

Prof. Malathi G

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

in partial fulfilment of the requirements for the course of

CSE3002 –INTERNET AND WEB PROGRAMMING

in

B.Tech. (Computer Science Engineering)



VIT UNIVERSITY, CHENNAI

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Chennai – 600127

NOVEMBER 2017

CERTIFICATE

Certified that this project report titled “**PERSONAL HEALTH ASSISTANT**” is a bonafide work of **ARUSH SHARMA (16BCE1190) AND DHRUV GARG (16BCE1190)** who carried out the “J”-Project work under my supervision and guidance for CSE3002-Internet and Web Programming

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ABSTRACT

In India, rural areas often suffer from shortage of physicians and other medical facilities. It means that the residents of the rural areas often have less access to adequate healthcare. India's low life expectancy is largely due to deaths from preventable diseases. The most significant gains in health would come from population-wide preventive measures. While the government has scaled up public health services, priority should be given to high impact primary health care services.

Rapid improvement in primary health care can be made by having greater approachability of doctors for patients. We propose to do this by allowing the user to detect the probable disease using the symptom-to-disease prediction algorithm. For the highest probable disease, the algorithm will show the specialists required to treat the disease and their location. The patient can go ahead and book an appointment with a doctor in his nearby areas. The appointment will be booked for the doctors available in the specialist database. This disease prediction will give a head start to the doctor, which will save crucial time. Further, chemist stores and pharmacies nearby will be shown, and the patient will be able to buy medicines from the same.

ACKNOWLEDGEMENT

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We also take this opportunity to thank all the faculty of the School for their support and their wisdom imparted to us throughout the course.

We thank our parents, family, and friends for bearing with us throughout the course of our project and for the opportunity they provided us in undergoing this course in such a prestigious institution.

ARUSH SHARMA **16BCE1127**

DHRUV GARG **16BCE1190**

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1. INTRODUCTION

1.1 OBJECTIVES AND GOALS

The objective of our project is to not only develop a Disease Identification and Prediction (DIP) algorithm but also to develop connected modules for fixing appointment with doctors and buying medicines from the store. Fixing appointments with doctors is a sub-module which also checks for the specific specialists required to treat the most-probable- predicted disease. The symptom to disease prediction algorithm is designed such that it fulfils the following goals:

- The main objective of this study is to create a fast, easy and an efficient algorithm for disease prediction
- Algorithm should have less error rate and can apply with even large data sets and show reasonable patterns with dependent variables.
- The algorithm should be scalable and function efficiently for disease and symptom datasets of large size.
- The algorithm has to minimize the computational processing that it has to perform during the prediction.
- The algorithm should not be affected by incorrect symptom input.
- The algorithm must properly be able to predict the most probable disease even if there are multiple diseases with equal number of hits.
- The website must remove the not probable diseases from the list.
- The algorithm must be easy to implement and understand.

1.2 BENEFITS

Both health and cost benefits of applying machine-learning analytics in medicine are vast; a study based on a year's worth of hospital admissions, conducted by the U.S. Agency for Healthcare Research and Quality, estimated that 4.4 million of U.S. hospital admissions—a total of \$30.8 billion in costs—could have been prevented: approximately half of all unnecessary hospitalizations.

The benefits of using symptom to disease prediction algorithm:

1. Higher accuracy.
2. We leverage not only the structured data but also the text data of patients based on the proposed algorithm.
3. We find that by combining these two data, the accuracy rate can reach 94.80%, so as to better evaluate the risk of cerebral infarction disease.
4. To the best of our knowledge, none of the existing work focused on both data types in the area of medical big data analytics.

1.3 FEATURES

Features for users (patients)

1. Friendly and intuitive user interface which is easy to use across age groups.
2. The algorithm can accurately predict disease based on symptoms input.
3. Based on the most probable disease predicted, the dataset will provide specialists required to treat the disease.
4. User can then search for those specialists in his area and book an appointment.
5. After the appointment, the user will also be able to buy medicines from the chemist stores and pharmacies in his area.
6. The medical history is saved for each user for future reference.

Features for doctors

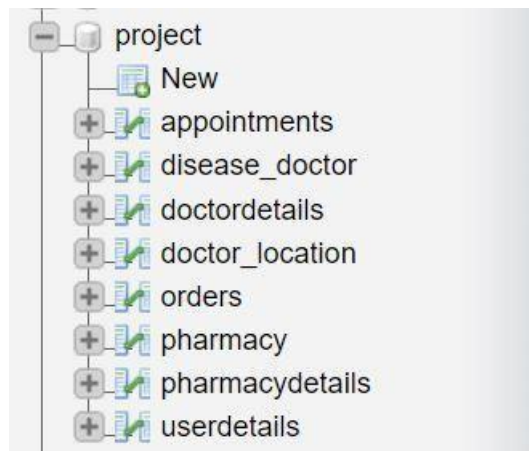
1. Greater visibility and more appointments from patients in their area.
2. Can access the new appointments booked with them in their login.
3. The doctor can refer the patients to other specialist(s). He can do so by searching for doctors in the entire database filtered by specialist.
4. The appointment history is saved for each doctor for future reference.

Features for chemists

1. Greater visibility and more sales in their area.

2. DATABASE DESIGN

2.1 ALL TABLES



2.2 APPONTMENT : TABLE STRUCTURE AND DATA

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	ANo	int(10)		No	None		AUTO_INCREMENT	Change Drop Primary Unique Index More
<input type="checkbox"/>	2	DoctorName	varchar(60)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	3	PatientName	varchar(60)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	4	Disease	varchar(60)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	5	Area	varchar(60)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	6	Date	date		Yes	NULL			Change Drop Primary Unique Index More

	ANo	DoctorName	PatientName	Disease	Area	Date
<input type="checkbox"/> Edit Copy Delete	1	Dr. Vijay Viswanathan	Dhruv	migraine disorders	Adyar	NULL
<input type="checkbox"/> Edit Copy Delete	2	Dr. Krishna Raman	Dhruv	Alzheimer	Adyar	NULL
<input type="checkbox"/> Edit Copy Delete	3	Dr. Krishna Raman	Arush	hepatitis B	Adyar	NULL

2.3 DISEASE_DOCTOR : TABLE STRUCTURE AND DATA

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	Rec_no	int(11)			No	None			<div><div>Change</div><div>Drop</div><div>Primary</div><div>Unique</div><div>Index</div><div>Spatial</div><div>Fulltext</div><div>More</div></div>
2	DiseaseName	varchar(45)	utf8_general_ci		Yes	NULL			<div><div>Change</div><div>Drop</div><div>Primary</div><div>Unique</div><div>Index</div><div>Spatial</div><div>Fulltext</div><div>More</div></div>
3	Specialist	varchar(25)	utf8_general_ci		Yes	NULL			<div><div>Change</div><div>Drop</div><div>Primary</div><div>Unique</div><div>Index</div><div>Spatial</div><div>Fulltext</div><div>More</div></div>

				Rec_no	DiseaseName	Specialist
<input type="checkbox"/>				1	hypertensive disease	General physician
<input type="checkbox"/>				2	hypertensive disease	Internist
<input type="checkbox"/>				3	hypertensive disease	Cardiologist
<input type="checkbox"/>				4	hypertensive disease	Nephrologist
<input type="checkbox"/>				5	diabetes	General physician
<input type="checkbox"/>				6	diabetes	Endocrinologist
<input type="checkbox"/>				7	diabetes	Ophthalmologist
<input type="checkbox"/>				8	diabetes	Nephrologist
<input type="checkbox"/>				9	diabetes	General surgeon
<input type="checkbox"/>				10	diabetes	Dietitian

2.3 DOCTOR_LOCATION : TABLE STRUCTURE AND DATA

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Userid	int(11)		No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	2	Name	varchar(100)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	3	Email	varchar(60)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	4	Password	varchar(70)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	5	Speciality	varchar(50)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	6	Area	varchar(60)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More

				Doc_no	Speciality	Name	Area
<input type="checkbox"/>				1	Dentist	Dr. P R Chockalingam	Velachery
<input type="checkbox"/>				2	Dentist	Dr. Kiruthika Asokan	Porur
<input type="checkbox"/>				3	Dentist	Dr. G Thiruppathy	Tambaram
<input type="checkbox"/>				4	Dentist	Dr. B J Barun	Velachery
<input type="checkbox"/>				5	Dentist	Dr. M Srikanth	Chrompet
<input type="checkbox"/>				6	Dentist	Dr. S R Murugesan	Velachery
<input type="checkbox"/>				7	Dentist	Dr. Sadana Shree	Medavakkam
<input type="checkbox"/>				8	Dentist	Dr. Karthick Arumugam	Nanganallur
<input type="checkbox"/>				9	Dentist	Dr. Vesta Enid Lydia	Anna Nagar
<input type="checkbox"/>				10	Dentist	Dr. A Suresh	Guduvanchery

2.4 DOCTOR_DETAILS : TABLE STRUCTURE AND DATA

Table structure									
Relation view									
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	Userid	int(11)		No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	2	Name	varchar(100)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	3	Email	varchar(60)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	4	Password	varchar(70)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	5	Speciality	varchar(50)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	6	Area	varchar(60)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More

Table structure								
Relation view								
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
<input type="checkbox"/>	1	Userid	int(11)		No	None		AUTO_INCREMENT
<input type="checkbox"/>	2	Name	varchar(100)	latin1_swedish_ci	Yes	NULL		
<input type="checkbox"/>	3	Email	varchar(60)	latin1_swedish_ci	Yes	NULL		
<input type="checkbox"/>	4	Password	varchar(70)	latin1_swedish_ci	Yes	NULL		
<input type="checkbox"/>	5	Speciality	varchar(50)	latin1_swedish_ci	Yes	NULL		
<input type="checkbox"/>	6	Area	varchar(60)	latin1_swedish_ci	Yes	NULL		

	Userid	Name	Email	Password	Speciality	Area
<input type="checkbox"/>	1	Dr. V Padma	padma@gmail.com	padma	General physician	Tambaram
<input type="checkbox"/>	2	Dr. Vijay Viswanathan	vijay@gmail.com	vijay	Internist	Adyar
<input type="checkbox"/>	3	Dr. R Selvan	selvan@gmail.com	selvan	General surgeon	Tambaram
<input type="checkbox"/>	4	Dr. B Madan Mohan	madan@gmail.com	madan	Cardiologist	Adyar
<input type="checkbox"/>	5	Dr. Rajesh N A	rajesh@gmail.com	rajesh	Gastroenterologist	Tambaram
<input type="checkbox"/>	6	Dr. Subhashini Venkatesh	subhashini@gmail.com	subhashini	Pediatrician	Anna Nagar
<input type="checkbox"/>	7	Dr. S G D Gangadharan	ganga@gmail.com	ganga	Oncologist	Anna Nagar
<input type="checkbox"/>	8	Dr. Kannan G K	kannan@gmail.com	kannan	Psychiatrist	Velachery
<input type="checkbox"/>	9	Dr. S Rajendran	rajendran@gmail.com	rajendran	Neurologist	Anna Nagar
<input type="checkbox"/>	10	Dr. G S Kailash	kailash@gmail.com	kailash	Pulmonologist	Velachery

2.5 ORDERS: TABLE STRUCTURE AND DATA

Table structure									
Relation view									
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	ONo	int(3)		No	None		AUTO_INCREMENT	Change Drop Primary Unique Index More
<input type="checkbox"/>	2	PharmacyName	varchar(70)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	3	PatientName	varchar(70)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	4	Area	varchar(60)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index More
<input type="checkbox"/>	5	Date	date		Yes	NULL			Change Drop Primary Unique Index More

Table structure					
Relation view					
#	Name	Type	Collation	Attributes	Null
<input type="checkbox"/>	1	ONo	int(3)		No
<input type="checkbox"/>	2	PharmacyName	varchar(70)	latin1_swedish_ci	No
<input type="checkbox"/>	3	PatientName	varchar(70)	latin1_swedish_ci	No
<input type="checkbox"/>	4	Area	varchar(60)	latin1_swedish_ci	No
<input type="checkbox"/>	5	Date	date		Yes

	ONo	PharmacyName	PatientName	Area	Date
<input type="checkbox"/>	1	Hari Krishna Pharmacy	Dhruv	Chetpet	NULL
<input type="checkbox"/>	2	Ksheera Pharmacy	Dhruv	Velachery	NULL

2.6 PHARMACY: TABLE STRUCTURE AND DATA

Table structure									
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	PId	int(10)			No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
2	Name	varchar(80)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
3	Email	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
4	Password	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
5	Location	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
6	OrderNo	int(10)			Yes	NULL			Change Drop Primary Unique Index Spatial More
7	CustName	varchar(50)	latin1_swedish_ci		Yes	NULL			Change Drop Primary Unique Index Spatial More

	Shop_no	Area	Chemist
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	Adyar	Om Pharmacy
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	Adyar	Nagappa Pharmacy
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	Adyar	Janki Pharmacy
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	Adyar	Om Medicals
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	Adyar	Apollo Pharmacy Adyar
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	Velachery	K R Pharmacy
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	Velachery	Maruthi Pharmacy
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	8	Velachery	Apollo Pharmacy Velachery

2.7 PHARMACY_DETAILS: TABLE STRUCTURE AND DATA

Table structure									
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	PId	int(10)			No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
2	Name	varchar(80)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
3	Email	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
4	Password	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
5	Location	varchar(60)	latin1_swedish_ci		No	None			Change Drop Primary Unique Index Spatial More
6	OrderNo	int(10)			Yes	NULL			Change Drop Primary Unique Index Spatial More
7	CustName	varchar(50)	latin1_swedish_ci		Yes	NULL			Change Drop Primary Unique Index Spatial More

	PId	Name	Email	Password	Location	OrderNo	CustName
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	Om Pharmacy	om@gmail.com	om	Adyar	NULL	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	K R Pharmacy	kr@gmail.com	kr	Velachery	NULL	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	S S Chemist	ss@gmail.com	ss	Anna Nagar	NULL	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	Tamil Nadu Medicals	tn@gmail.com	tn	Tambaram	NULL	NULL

2.8 USER_DETAILS: TABLE STRUCTURE AND DATA

Table structure

Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1	UserId	int(10)		No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	2	Fname	varchar(30)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	3	Lname	varchar(30)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	4	Email	varchar(40)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	5	Age	int(10)		No	None			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	6	Password	varchar(50)	latin1_swedish_ci	No	None			Change Drop Primary Unique Index Spatial More
<input type="checkbox"/>	7	FileUrl	varchar(100)	latin1_swedish_ci	Yes	NULL			Change Drop Primary Unique Index Spatial More

←

T

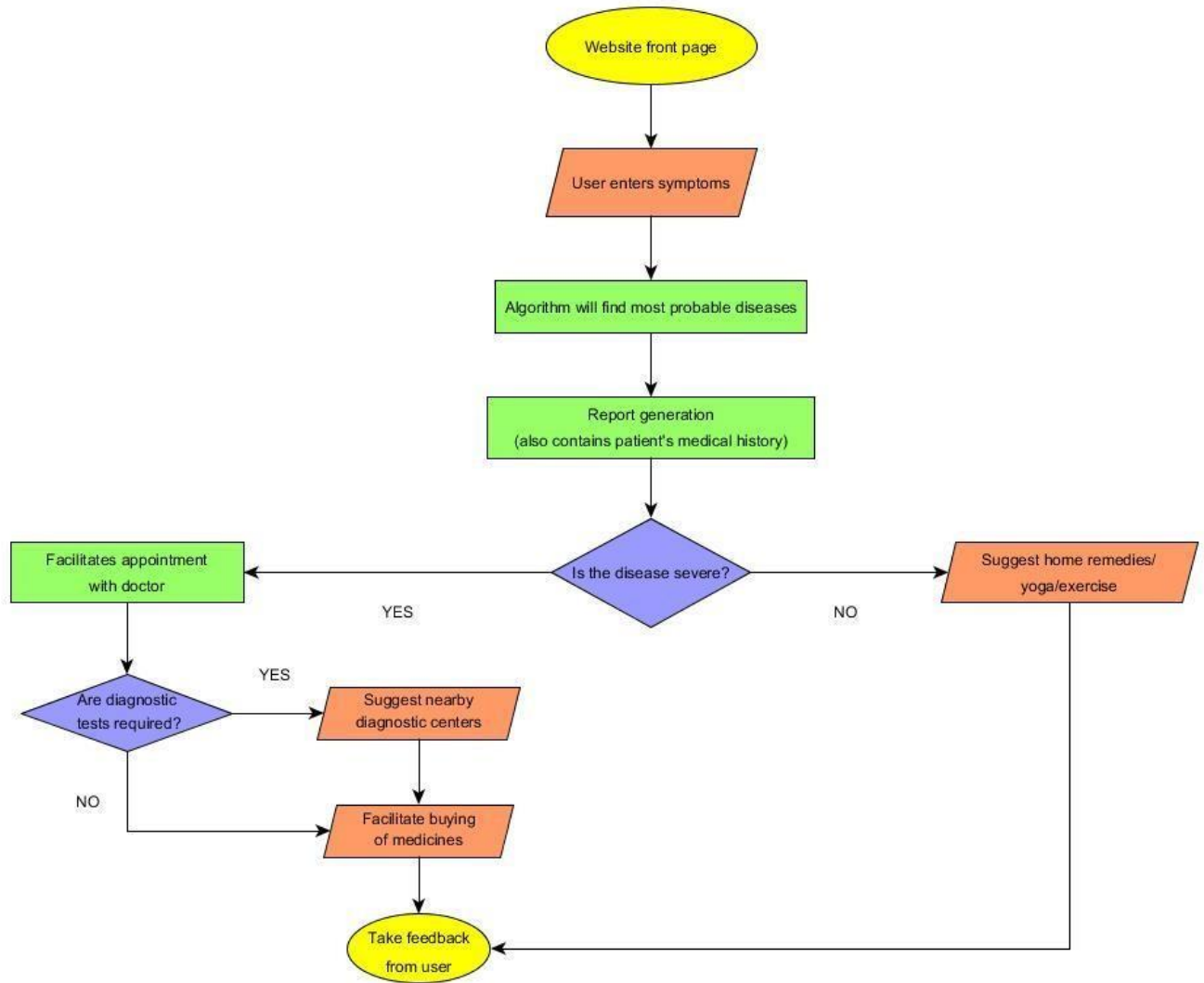
→

▼

	UserId	Fname	Lname	Email	Age	Password	FileUrl
<input type="checkbox"/> Edit Copy Delete	16	Arush	Sharma	arush.neo@gmail.com	20	24f8e4103042a63a7020ef757158e2bf	NULL
<input type="checkbox"/> Edit Copy Delete	17	Dhruv	Garg	dhruv@hotmail.com	20	1eba9614763773df08dd49049663c3e3	NULL
<input type="checkbox"/> Edit Copy Delete	18	Vishnu	Nagpal	vishnu@gmail.com	20	1963fd70e789022f6f5b11498f992404	NULL
<input type="checkbox"/> Edit Copy Delete	19	Aakash	Tiwari	aakash@example.com	20	a870c4012ce2eaa3b60a4c59cb786f76	NULL
<input type="checkbox"/> Edit Copy Delete	20	Rachit	Tiwari	rachit@gmail.com	19	e818202f38c75b1a88c00d4cd13ac636	NULL
<input type="checkbox"/> Edit Copy Delete	21	Aditya	Chitlangia	aditya.a.chitlangia@gmail.com	20	057829fa5a65fc1ace408f490be486ac	NULL
<input type="checkbox"/> Edit Copy Delete	22	Abhinav	Sharma	abhinav@gmail.com	20	ba1d63b653b24a565ed436a0cfc5b3c9	NULL
<input type="checkbox"/> Edit Copy Delete	23	Pramod	Dubey	pramod@jaisriram.com	47	bb16fa6160fa1d8a73eba6217844a08b	NULL
<input type="checkbox"/> Edit Copy Delete	24	Prakhar	Mishra	prakhar@gmail.com	21	a0df7b431b2dba83d26675e676a8cb7c	NULL
<input type="checkbox"/> Edit Copy Delete	25	Shantanu	Gupta	shantanu@gmail.com	19	2e9cc0cc73d64cd2bcd6c602eaa8f0759	NULL
<input type="checkbox"/> Edit Copy Delete	26	Swaraj	Phadtare	swaraj@gmail.com	19	2b8a474c65cba1aee3b7b3e99a7acbf	NULL
<input type="checkbox"/> Edit Copy Delete	27	Aashray	Munjal	aashray.munjal@gmail.com	20	aaa59ca4b4f7cb4c62dd81747bd909bf	NULL

3. PROGRAM FLOW AND USER INTERFACE

3.1 WORK FLOW DIAGRAM



4. MODULES

4.1 Customer Login

A. Diagnosis

The user can input up to 4 symptoms from the list of 400 symptoms. On the receiving the input, the algorithm finds the top 3 probable diseases using classification. For the topmost disease, the specialists required to treat it are taken from the databases.

USER INTERFACE TO INPUT SYMPTOMS

SELECT THE SYMPTOMS FROM THE FOLLOWING SELECT BOXES



The user interface consists of five vertically stacked select boxes and a central button. Each select box has a light gray background and a blue dropdown arrow on the right. The selected symptoms are: 'irritable mood', 'unhappy', 'agitation', 'blackout', and 'exhaustion'. Below the select boxes is a blue button with the text 'DIAGNOSE!' in white capital letters.

irritable mood
unhappy
agitation
blackout
exhaustion

DIAGNOSE!

B. Report Generation

Every time a user uses the software to diagnosis; the topmost probable disease is saved in his medical history for future reference.

DISEASE PREDICTED FROM ALGORITHM

TOP THREE PREDICTED DISEASES

- 1. PARANOIA
- 2. BIPOLAR DISORDER
- 3. DEPRESSION MENTAL

Enter the 4 areas that are most convenient to you for visiting a doctor :

*We will give you suggestions on the pharmacies/chemist stores in these areas as well

Adyar

Velachery

Anna Nagar

Tambaram

PROCEED TO FIND DOCTORS

C. Finding Doctors

From the extensive database of 700+ doctors across Chennai, specialists are filtered based on the those required to treat the disease and the area input by the user. He can choose the doctor of his or her choice for an appointment.

MOST PROBABLE DISEASE : PARANOIA

SPECIALIST(S) REQUIRED TO TREAT THE DISEASE THE DISEASE :

- 1. Psychiatrist
- 2. Psychologist
- 3. General physician

SUBMIT

SPECIALITY	DOCTOR NAME	AREA	CONFIRM(Y/N)
Psychiatrist	Dr. Esther Suresh	Anna Nagar	<input type="text"/>
Psychiatrist	Dr. Alexander Gnanadurai	Anna Nagar	<input type="text"/>
Psychiatrist	Dr. Janaki Rajagopalan	Adyar	<input type="text"/>
Psychiatrist	Dr. Radha Shankar	Adyar	<input type="text" value="Y"/>
Psychiatrist	Dr. G Gurunamasivayam	Velachery	<input type="text"/>

APPOINTMENT STATUS

Booked appointment with Dr. Radha Shankar!

You can also check pharmacies in your nearby areas

[CLICK HERE](#)

D. Finding Pharmacy

As prescribed by the doctor, the user can buy the medicine from nearby pharmacy. The pharmacies are shown based on the areas selected by the user previously.

SELECT PHARMACY

[SUBMIT](#)

Pharmacy Name	Area	Confirm(Y/N)
Om Pharmacy	Adyar	<input type="text"/>
Nagappa Pharmacy	Adyar	<input type="text"/>
Janki Pharmacy	Adyar	<input type="text"/>
Om Medicals	Adyar	<input type="text"/>
Apollo Pharmacy Adyar	Adyar	<input type="text"/>
K R Pharmacy	Velachery	<input type="text" value="Y"/>
Maruthi Pharmacy	Velachery	<input type="text"/>
Apollo Pharmacy Velachery	Velachery	<input type="text"/>
Ksheera Pharmacy	Velachery	<input type="text"/>
Medplus Pharmacy	Velachery	<input type="text"/>
S S Chemist	Anna Nagar	<input type="text"/>
Sri Krishna Pharmacy	Anna Nagar	<input type="text"/>
Narayanappah Pharmacy	Anna Nagar	<input type="text"/>

4.2 Doctor Login

Each doctor can view the appointments made to him along with his medical report which is generated at the time of diagnosis. The disease shown will give a head start for the doctor and save crucial time.

APPOINTMENTS RECEIVED:

BACK

Appointment Num	Patient Name	Disease
5	Dhruv	failure heart congestive

The doctor can also refer the patient to other specialist filtered by the specialization of the doctors.

SELECT THE TYPE OF SPECIALIST YOU WISH TO SEARCH

General physician



SEARCH DOCTORS

DOCTORS FOUND

BACK

Speciality	Name	Area
General physician	Dr. G Shanmugasundar	Ashok Nagar
General physician	Dr. Krishna Raman	Adyar
General physician	Dr. Subhashini Venkatesh	Anna Nagar
General physician	Dr. J. Mariano Anto Bruno Mascarenhas	Arumbakkam
General physician	Dr. N Chitra Raghul	Chrompet
General physician	Dr. Prasanna Kumar Thomas	KK Nagar
General physician	Dr. Sankara Narayanan	Tambaram
General physician	Dr. Karthikeyan Vishwanathan	Thiruvanmiyur

4.3 Pharmacy Login

Each pharmacy can view the orders of the medicines received from the users. The pharmacy can also other in case a medicine is not available in their pharmacy.

ORDERS RECEIVED:

BACK

Orderno	Patient Name	Area
5	Dhruv	Adyar

5. TECHNOLOGIES USED AND HOW THEY WERE MADE TO WORK

The dataset available was cleaned using Python code and pandas library. Then symptoms were assigned weights according to the severity of symptoms.

When the users select the symptoms, they are classified and using brute force algorithm, top 3 disease are predicted. The dataset was also used as training dataset to improve the prediction algorithm.

6. CONCLUSION AND FUTURE WORK

Predictive analytics is the most discussed topic when it comes to health care analytics. Machine learning is a discipline that has been studied well and has a long history of success in various fields. Health care can make use of the previous success and learn lessons to start using predictive analytics for improving various issues related to health care. These issues include improving patient care, chronic disease management, hospital administration and supply chain efficiencies. The health care systems need to understand what predictive analytics means to them and how it can be used most effectively to improve their system.

While making this project we engaged in extensive research on this topic and learnt a lot of new techniques. We would like to enhance this project by using machine learning for the symptom to disease prediction algorithm.

7. REFERENCES

1. Dataset (symptom-disease)
<http://people.dbmi.columbia.edu/~friedma/Projects/DiseaseSymptomKB/index.html>
2. Programming webpages and linking them
w3schools.com
3. Machine learning tutorial – cleaning dataset
www.scikit-learn.org
4. Getting specialist doctors in Chennai www.practo.com

8. SAMPLE CODE

DISEASE PREDICTION ALGORITHM SOURCE CODE

```
<?php

session_start();

$disease_symptom = array(array(5, 20, 36, 38, 54, 71, 78, 81, 88, 112, 148, 157, 179,
203,
247, 248, 264), array(32, 38, 44, 46, 77, 78, 120, 147, 156,
177, 180, 188, 223, 239),
array(10, 13, 32, 52, 60, 74, 89, 92, 100, 117, 143, 164, 167, 169, 171, 203, 210, 233,
245,
249), array(13, 16, 49, 84, 103, 167, 210,
213, 233, 235), array(31, 38, 50, 159, 180,
188, 210, 234, 265),
array(5, 21, 22, 29, 47, 51, 63, 68, 69, 75, 77, 93, 94, 95, 107, 111, 113, 124, 125, 133,
146,
149, 213, 229, 247, 258, 262, 267), array(37, 44, 46, 83, 86, 97, 106, 129, 134, 138,
140, 152, 159, 167, 175, 220, 242, 249, 253),
array(9, 13, 29, 31, 32, 46, 78, 89, 112, 126, 136, 139, 152, 162, 163, 180, 196, 210, 233,
254,
261, 268), array(11, 23, 49, 72, 89, 103, 129, 168,
191, 220, 222, 249), array(7, 31, 58, 116, 163, 170,
187, 210, 231, 232),
array(5, 22, 47, 63, 75, 77, 93, 94, 107, 124, 125, 145, 146, 157, 213, 229, 247, 250, 258,
262,
```

267), array(13, 127, 139, 152, 163, 170, 181, 183, 196, 210, 231, 232,

254, 259, 261) ***“similarly for other diseases symptoms no. are***

assigned”

```
$disease_name = array("Alzheimer's disease", "HIV", "anemia", "arthritis", "asthma",  
"bipolar disorder", "carcinoma", "chronic kidney failure", "cirrhosis", "coronary heart  
disease", "depression mental", "diabetes", "failure heart congestive", "glaucoma",  
"gout", "hepatitis", "hepatitis B", "hepatitis C", "hyperglycemia", "hyperlipidemia",  
"hernia", "hypertensive disease", "hypoglycemia", "hypothyroidism", "infection",  
"infection urinary tract", "influenza", "ischemia", "ketoacidosis diabetic", "kidney  
disease", "malignant neoplasm of breast", "malignant neoplasm of lung", "malignant  
neoplasm of prostate",  
"malignant neoplasms", "malignant tumor of colon", "melanoma", "migraine  
disorders",  
"myocardial infarction", "neuropathy", "neutropenia", "obesity", "osteoporosis",  
"pancreatitis", "paranoia", "parkinson disease", "personality disorder", "pneumonia",  
"sickle cell anemia", "upper respiratory infection");
```

“similarly names of other disease names symptoms are assigned in the array”

```
$per_disease=array();
```

```
$temp = array($_POST['symptom1'], $_POST['symptom2'], $_POST['symptom3'],  
$_POST['symptom4'], $_POST['symptom5']);
```

```
$num = 0; for($i=0;
```

```
$i<sizeof($disease_symptom); $i++)
```

```
{
```

```
    $count = 0;
```

```

for($j=0; $j < sizeof($temp); $j++)

{

    $num = $temp[$j];

    if(in_array($num, $disease_symptom[$i]))

    {

        $count = $count + 1;

    }

}

$per_disease[$i]=(($count/sizeof($disease_symptom[$i]))*100);

}

$names = array();

for($i = 0; $i < 3; $i++)

{

    $max=max($per_disease);

    $flag = 0;

    for($l=0;$l<sizeof($disease_symptom);$l++)

    {

        if(($max==$per_disease[$l])&&($flag==0))

        {

            $temp = $l;

            array_push($names,$disease_name[$l]);

            $flag = 1;          } }

```

```
$per_disease[$temp] = 0;}
```

PLACING ORDER WITH PHARMACY

```
<?php

require_once('conn.php');

session_start();

$items = $_SESSION['list'];

foreach($items as $value)

{ $valuepreg=preg_replace('/\s+/', '_', $value);

$valuepreg=str_replace('.', '_', $valuepreg);

-$confirmation=$_POST[$valuepreg]; //echo

$confirmation; if ($confirmation=='Y')

{ $sql="Select Area from pharmacy where Chemist='$value'";

$result = mysqli_query($con,$sql);

$row = mysqli_fetch_array($result,MYSQLI_ASSOC);

$area=$row["Area"];

$patientname=$_SESSION['fname'];

echo $patientname;

$disease=$_SESSION['disease'];

$sql = "Insert into orders (PharmacyName, PatientName, Area)

values('$value','$patientname','$area')"; $ result = mysqli_query($con,$sql);}}
```