

Coronary artery disease prediction from distributed medical database using machine learning

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Technology degree in

INFORMATION TECHNOLOGY

By

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**DEPARTMENT OF INFORMATION TECHNOLOGY
SCHOOL OF COMPUTING**

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

MAY - 2023



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of **RAVISANKAR D** (Reg no: 39120094) and **SIRANJEEVI R** (Reg no: 39120113) carried out the project entitled "**CORONARY ARTERY DISEASE PREDICTION FROM DISTRIBUTED MEDICAL DATABASE USING MACHINE LEARNING**" under our supervision from January 2023 to May 2023.

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SIGNATURE OF THE CANDIDATE

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ABSTRACT

In today's era deaths due to heart disease has become a major issue approximately one person dies per minute due to heart disease. This is considering both male and female category and this ratio may vary according to the region also this ratio is considered for the people of age group. This does not indicate that the people with other age group will not be affected by heart diseases. This problem may start in early age group also and predict the cause and disease is a major challenge nowadays. Here in this paper, we have discussed various algorithms (logistic regression and Svm) used for prediction of heart diseases.

Keywords: Heart disease classification, Features selection, Disease diagnosis, Intelligent system, Medical data analytics.

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CHAPTER 1

INTRODUCTION

The contents of this paper mainly focus on various data mining practices that are valuable in heart disease forecast with the assistance of dissimilar data mining tools that are accessible. If the heart doesn't function properly, this will distress the other parts of the human body such as brain, kidney etc. Heart disease is a kind of disease which effects the functioning of the heart. In today's era heart disease is the primary reason for deaths.

WHO-World Health Organization has anticipated that 12 million people die every year because of heart diseases. Some heart diseases are cardiovascular, heart attack, coronary and knock. Knock is a sort of heart disease that occurs due to strengthening, blocking or lessening of blood vessels which drive through the brain or it can also be initiated by high blood pressure.

The major challenge that the Healthcare industry faces now-a-days is superiority of facility. Diagnosing the disease correctly & providing effective treatment to patients will define the quality of service. Poor diagnosis causes disastrous consequences that are not accepted. Records or data of medical history is very large, but these are from many dissimilar foundations. The interpretations that are done by physicians are essential components of these data.

The data in real world might be noisy, incomplete and inconsistent, so data preprocessing will be required in directive to fill the omitted values in the database. Even if cardiovascular diseases is found as the important source of death in world in ancient years, these have been announced as the most avoidable and manageable diseases. The whole and accurate management of a disease rest on on the well-timed judgment of that disease. An correct and methodical tool for recognizing high-risk patients and mining data for timely analysis of heart infection looks a serious want. Different person body can show different symptoms of heart disease which may vary accordingly.

Though, they frequently include back pain, jaw pain, neck pain, stomach disorders, and tininess of breath, chest pain, arms and shoulders pains. There are a variety of different heart

diseases which includes heart failure and stroke and coronary artery disease. Heart expert's create a good and huge record of patient's database and store them. It also delivers a great prospect for mining a valued knowledge from such sort of data sets.

There is huge research going on to determine heart disease risk factors in different patients, different researchers are using various statistical approaches and numerous programs of data mining approaches. Statistical analysis have acknowledged the count of risk factors for heart diseases counting smoking, age, blood pressure, diabetes, total cholesterol, and hypertension, heart disease training in family, obesity and lack of exercise. For prevention and healthcare of patients who are about to have addicted of heart disease it is very important to have awareness of heart diseases.

CHAPTER 2

LITERATURE SURVEY

Literature survey is the most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, then the next step is to determine which operating system and language can be used for developing the tool. Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration are taken into account for developing the proposed system. The major part of the project development sector considers and fully survey all the required needs for developing the project. For every project Literature survey is the most important sector in software development process. Before developing the tools and the associated designing it is necessary to determine and survey the time factor, resource requirement, man power, economy, and company strength. Once these things are satisfied and fully surveyed, then the next step is to determine about the software specifications in the respective system such as what type of operating system the project would require, and what are all the necessary software are needed to proceed with the next step such as developing the tools, and the associated operations.

[2.1] Machine learning-based method for personalized and cost-effective detection of Alzheimer's disease

Diagnosis of Alzheimer's disease is often difficult, especially early in the disease process at the stage of mild cognitive impairment. Yet, it is at this stage that treatment is most likely to be effective, so there would be great advantages in improving the diagnosis process. We describe and test a machine learning approach for personalized and cost-effective diagnosis of AD. It uses locally weighted learning to tailor a classifier model to each patient and computes the sequence of biomarkers most informative or cost-effective to diagnose patients. Using ADNI data, we classified AD versus controls and MCI patients who progressed to AD within a year, against those who did not. The approach performed similarly to considering all data at once, while significantly reducing the number (and cost) of the biomarkers needed to achieve a confident diagnosis for each patient. Thus, it may contribute to a personalized and effective detection of AD, and may prove useful in clinical settings.

[2.2] Effect of Meteorological Conditions on Occurrence of Hand, Foot and Mouth Disease in Wuwei City, Northwestern China

The main objective of this paper is to supply scientific basics for preventing and forecasting the prevalence of hand, foot and mouth disease to explore the effect of different meteorological conditions on occurrence of hand, foot and mouth disease in Wuwei City, northwestern China. Here the data about the diseases and weather was collected from 2008-2010, and the correlation analysis, multiple linear regression and exponential curve fitting methods were made. The results showed that 2688 cases of hand, foot and mouth disease were collected from 2008 to 2010, and the annual average incidence was 47.62/100,000. The average prevalence of hand, foot and mouth disease at Liangzhou District, Minqin County, Gulang County and Tianzhu Tibetan Autonomous County were 42.69, 38.52, 65.92 and 49.18 per 100,000 respectively. This disease occurred year-round in Wuwei City, but had a clear seasonal climax. Generally, the incidence increased from April and rose to the first peak in May, Jun, July respectively. The second peak was in September or October every year. Different meteorological factors had different impact on the epidemic of disease in four areas, such as average temperature, relative humidity, atmospheric pressure, rainfall and evaporation capacity. The results of multiple linear regressions indicated that relative humidity and atmospheric pressure were the main influence factors in Liangzhou District, average temperature in Gulang County, atmospheric pressure in Tianzhu County. The incidence of the disease and average sunshine hours showed exponential function relationship in Minqin County. In conclusion, different weather conditions have different impact on the prevalence of hand, foot and mouth disease. A high correlation exists in four areas of Wuwei City between meteorological factors and hand, foot and mouth disease occurrence. And summer and autumn were the important seasons to prevent and control the disease.

[2.3] Developing an Index for Detection and Identification of Disease Stages

Spectral data have been widely used to estimate the disease severity levels of different plants. However, such data have not been evaluated to estimate the disease stages of the plant. This study aimed at developing a spectral disease index that is able to identify the stages of wheat leaf rust disease at various DS levels. To meet the aim of the study, the reflectance spectra of infected leaves with different symptom fractions and DS levels were measured with a spectroradiometer. Then, pure spectra of the different disease symptoms at the leaf scale were analyzed, and a new function was developed to find the wavelengths most sensitive to disease symptom fraction. The reflectance spectra with highest sensitivity were found at 675 and 775

nm. Finally, the normalized difference of DS and the ratio p_{675}/p_{775} was used as a new SDI to discriminate three different levels of the disease stage at the canopy level. The suggested SDI showed a promising performance to improve the detection disease stages in precision plant protection.

[2.4] Quantized Analysis for Heart Valve Disease based on Cardiac Sound Characteristic Waveform Method

In order to analyze heart valve disease accurately and effectively, a new quantized diagnosis method was proposed to analyze four clinical heart valve sounds, namely cardiac sound characteristic waveform. BIOPAC acquiring system was used to collect signal. The recorded data is transmitted to a computer by ethernet for storage ! analysis and display in real-time. Analytical model of single degree-of- freedom was established to extract characteristic waveform. Furthermore, diagnosis parameters were calculated to discriminate heart sound of normal and heart valve disease by easy-understanding graphical representation, so that, even for an inexperienced user is able to monitor his or her pathology progress easily. Finally, a case study on a heart valve disease patient before and after surgery is demonstrated to validate the usefulness and efficiency of the proposed method.

[2.5] Non-Linear Analysis of Heart Rate Variability in Patients with Coronary Heart Disease

The article emphasizes clinical and prognostic significance of non-linear measures of the heart rate variability, applied on the group of patients with coronary heart disease and age-matched healthy control group. Three different methods were applied: Hurst exponent, Detrended Fluctuation Analysis and approximate entropy. Hurst exponent of the R-R series was determined by the range rescaled analysis technique. DFA was used to quantify fractal long-range-correlation properties of heart rate variability. Approximate entropy measures the unpredictability of fluctuations in a time series. It was found that the short-term fractal scaling exponent. The patients with CHD had lower Hurst exponent in each program of exercise test separately, as well as approximate entropy than healthy control group.

CHAPTER 3

REQUIREMENT ANALYSIS

Requirement analysis, also called requirement engineering, is the process of determining user expectations for a new modified product. It encompasses the tasks that determine the need for analysing, documenting, validating and managing software or system requirements. The requirements should be documentable, actionable, measurable, testable and traceable related to identified business needs or opportunities and define to a level of detail, sufficient for system design.

[3.1] FUNCTIONAL REQUIREMENTS :

It is a technical specification requirement for the software products. It is the first step in the requirement analysis process which lists the requirements of particular software systems including functional, performance and security requirements. The function of the system depends mainly on the quality hardware used to run the software with given functionality.

Usability:

It specifies how easy the system must be use. It is easy to ask queries in any format which is short or long, porter stemming algorithm stimulates the desired response for user.

Robustness :

It refers to a program that performs well not only under ordinary conditions but also under unusual conditions. It is the ability of the user to cope with errors for irrelevant queries during execution.

Security :

The state of providing protected access to resource is security. The system provides good security and unauthorized users cannot access the system there by providing high security.

Reliability :

It is the probability of how often the software fails. The measurement is often expressed in MTBF (Mean Time Between Failures). The requirement is needed in order to ensure that the processes work correctly and completely without being aborted. It can handle any load and survive and survive and even capable of working around any failure.

Compatibility :

It is supported by version above all web browsers. Using any web servers like localhost makes the system real-time experience.

Flexibility :

The flexibility of the project is provided in such a way that it has the ability to run on different environments being executed by different users.

Safety :

Safety is a measure taken to prevent trouble. Every query is processed in a secured manner without letting others to know one's personal information.

[3.2]NON- FUNCTIONAL REQUIREMENTS :

Portability:

It is the usability of the same software in different environments. The project can be run in any operating system.

Performance:

These requirements determine the resources required, time interval, throughput and everything that deals with the performance of the system.

Accuracy:

The result of the requesting query is very accurate and high speed of retrieving information. The degree of security provided by the system is high and effective.

Maintainability :

Project is simple as further updates can be easily done without affecting its stability. Maintainability basically defines that how easy it is to maintain the system. It means that how easy it is to maintain the system, analyse, change and test the application. Maintainability of this project is simple as further updates can be easily done without affecting its stability.

EXISTING SYSTEM :

The before all existing system works on sets of both Deep learning and data mining. The existing system modules generates comprehensive report by implementing the strong prediction algorithm. A system developed by uses a combination of K-nearest neighbors (K-NN) and Artificial Neural Networks (ANN) to diagnose heart disease in patients and another study proposed a system that uses a combination of Naïve Bayes and Random Forest algorithms to classify heart disease patients. The model which is proposed for Heart Attack Prediction System is invented for using Deep learning algorithms and approach. But by using all the existing systems the accuracy is very less.

PROPOSED SYSTEM :

This proposed system have a data which classified if patients have heart disease or not according to features in it. The system will collect heart disease data from various sources, including electronic health records, medical research papers, and other relevant sources. The collected data will be preprocessed by cleaning, transforming, and preparing it for analysis. This step involves removing any duplicates or missing values, handling outliers, and scaling the data. The system will select the most relevant features that are most useful in predicting heart disease. This will be done using techniques such as correlation analysis, feature importance ranking, and other feature selection methods. The system will use SVM and Logistic Regression algorithms to train the model on the selected features. The training will be done using labeled data, where the model learns to classify the data into two classes: patients with heart disease and patients without heart disease. The system will compare the performance of the SVM and Logistic Regression algorithms to determine which algorithm is better suited for predicting heart disease in patients. Overall, this proposed system aims to provide a reliable and efficient method for identifying heart disease in patients using machine learning classification techniques. By using SVM and Logistic Regression algorithms, the system will be able to accurately predict heart disease in patients, which can help in the early diagnosis and treatment of the disease. Here, we use sigmoid function which helps in the graphical representation of the classified data.

ARCHITECTURE DIAGRAM :

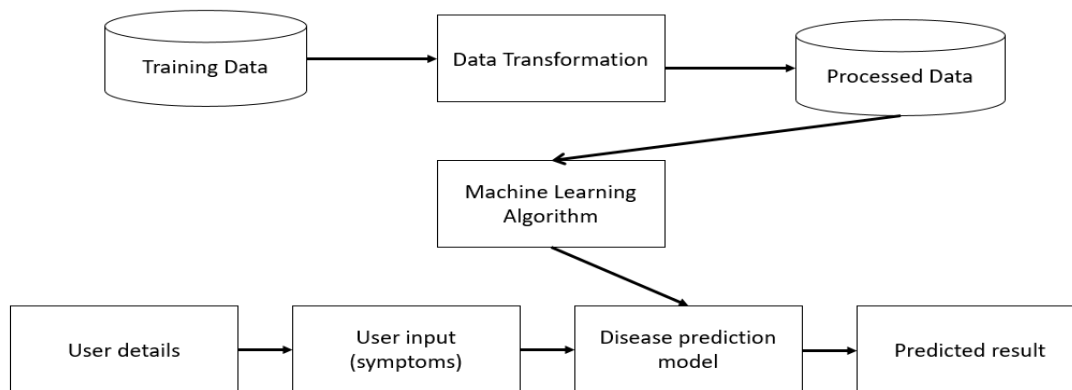


FIG.3.1 ARCHITECTURE DIAGRAM

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS

- Processor : Core i3/i5/i7
- RAM : 2-4GB
- HDD : 500 GB

SOFTWARE REQUIREMENTS

- Platform : Windows Xp/7/8
- Language : python

ALGORITHMS USED:

- LOGISTICS REGRESSION
- SVM (SUPPORT VECTOR MACHINE)

MODULES

- Data Collection Module
- Preparing the data Module
- Training a model
- Disease prediction Module

Data Collection Module :

- Be it the raw data from excel, access, text files etc., this step (gathering past data) forms the foundation of the future learning. The better the variety, density and volume of relevant data, better the learning prospects for the machine becomes.

Preparing the data Module :

- Any analytical process thrives on the quality of the data used. One needs to spend time determining the quality of data and then taking steps for fixing issues such as missing data and treatment of outliers. Exploratory analysis is perhaps one method to study the nuances of the data in details thereby burgeoning the nutritional content.

Training a model :

- This step involves choosing the appropriate algorithm and representation of data in the form of the model. The cleaned data is split into two parts – train and test (proportion depending on the prerequisites); the first part (training data) is used for developing the model. The second part (test data), is used as a reference.

Disease prediction Module :

- Patient will specify the symptoms caused due to his illness. System will ask certain question regarding his illness and system predict the heart disease based on the symptoms specified by the patient.

DATA FLOW DIAGRAM :

Data Flow Diagram (DFD) is a two-dimensional diagram that describes how data is processed and transmitted in a system. The graphical depiction recognizes each source of data and how it interacts with other data sources to reach a mutual output. In order to draft a data flow diagram one must

- Identify external inputs and outputs
- Determine how the inputs and outputs relate to each other
- Explain with graphics how these connections relate and what they result in.

Role of DFD:

- It is a documentation support which is understood by both programmers and nonprogrammers. As DFD postulates only what processes are accomplished not how they are performed.
 - A physical DFD postulates where the data flows and who processes the data.
- It permits analyst to isolate areas of interest in the organization and study them by examining the data that enter the process and viewing how they are altered when they leave.

UML DIAGRAMS :

UML is simply another graphical representation of a common semantic model. UML provides a comprehensive notation for the full lifecycle of object-oriented development.

ADVANTAGES :

- To represent complete systems (instead of only the software portion) using object oriented concepts
- To establish an explicit coupling between concepts and executable code
- To take into account the scaling factors that are inherent to complex and critical systems
- To creating a modeling language usable by both humans and machines

UML defines several models for representing systems

- The class model captures the static structure
- The state model expresses the dynamic behavior of objects
- The use case model describes the requirements of the user
- The interaction model represents the scenarios and messages flows
- The implementation model shows the work units
- The deployment model provides details that pertain to process allocation

USECASE DIAGRAM :

Use case diagrams overview the usage requirement for system. They are useful for

presentations to management and/or project stakeholders, but for actual development you will find that use cases provide significantly more value because they describe “the meant” of the actual requirements. A use case describes a sequence of action that provides something of measurable value to an action and is drawn as a horizontal ellipse.

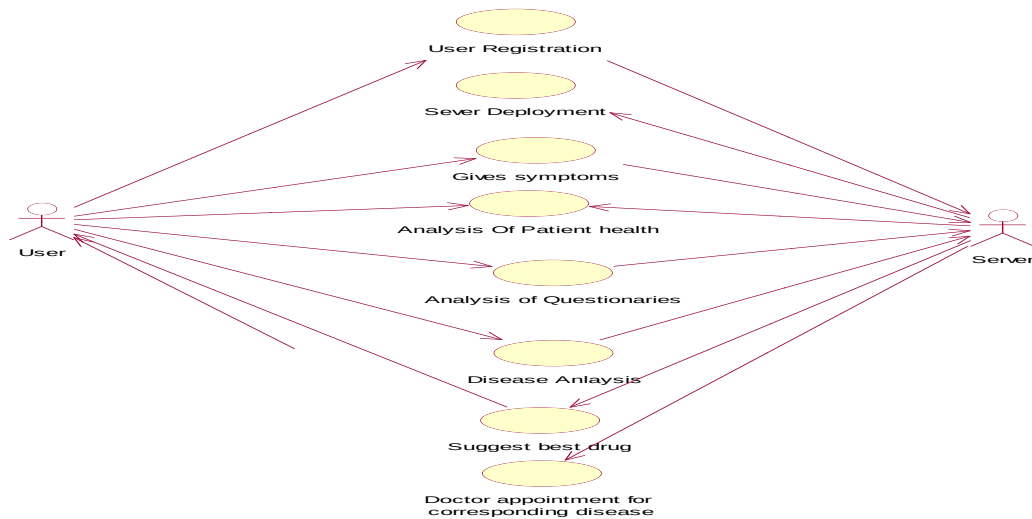


FIG.3.2 USECASE DIAGRAM

CLASS DIAGRAM :

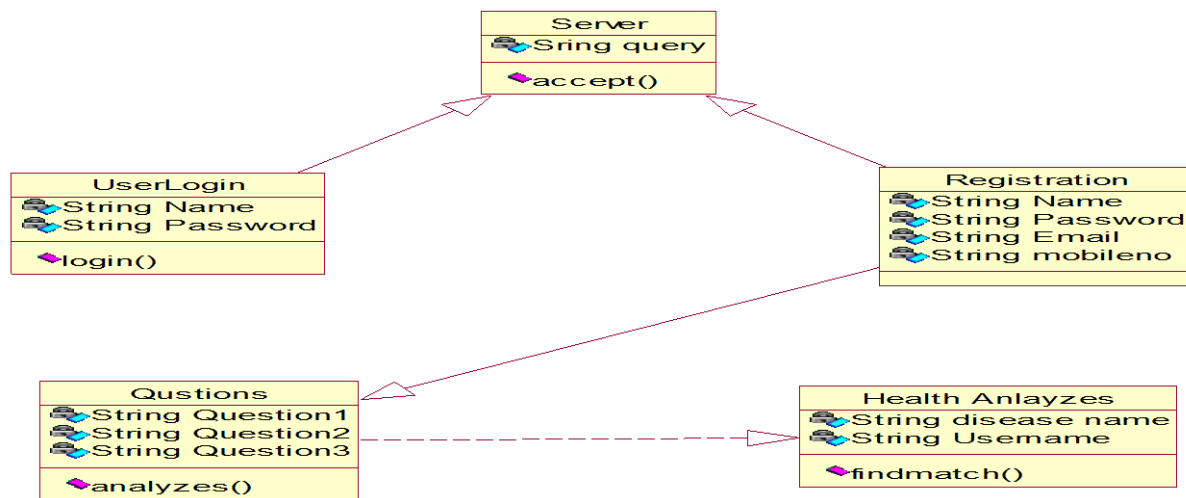


FIG.3.3 CLASS DIAGRAM

ACTIVITY DIAGRAM :

Activity diagram are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. The activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. Activity diagram consist of Initial node, activity final node and activities in between.

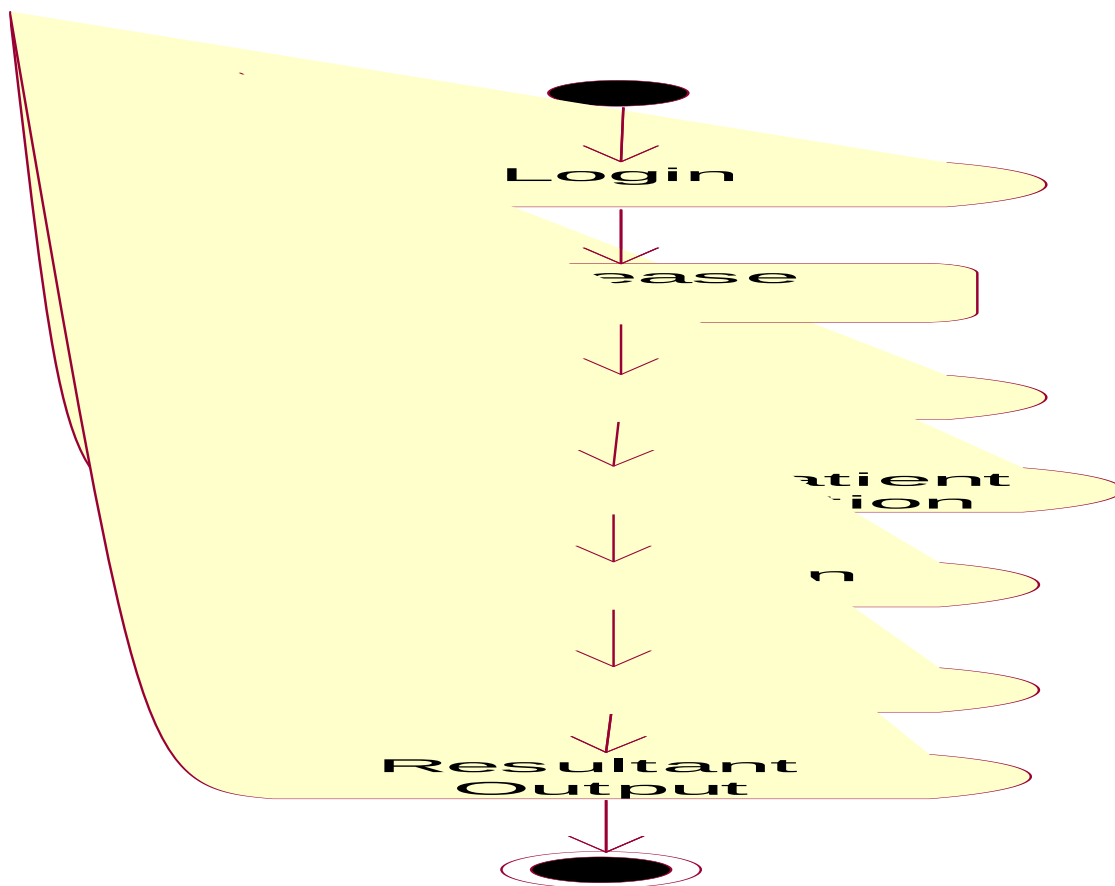


FIG.3.4 ACTIVITY DIAGRAM

SEQUENCE DIAGRAM :

Sequence diagram model the flow of logic within your system in a visual manner, enabling you both to document and validate your logic, and commonly used for both analysis and design purpose. Sequence diagram are the most popular UML artifact for dynamic modeling, which focuses on identifying the behavior within your system.

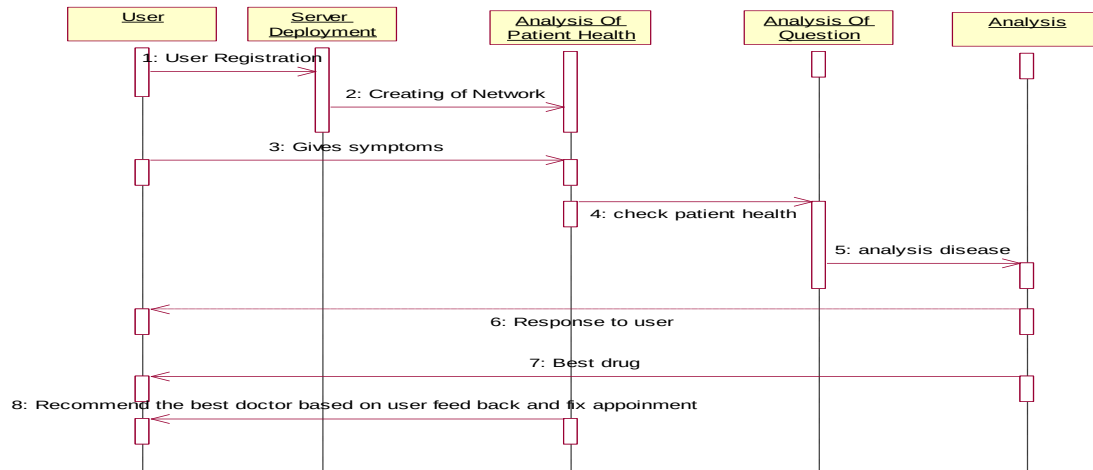


FIG.3.5 SEQUENCE DIAGRAM

COLLABORATION DIAGRAM :

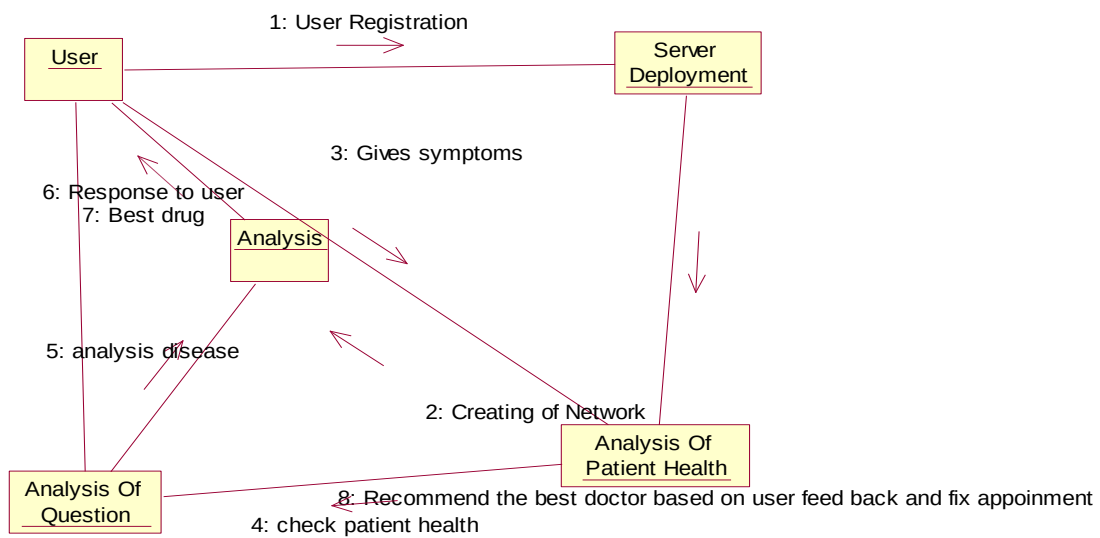


FIG.3.6 COLLABORATION DIAGRAM

CHAPTER 4

SYSTEM DESIGN AND TESTING PLAN

INPUT DESIGN

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making.

The output form of an information system should accomplish one or more of the following objectives.

- Convey information about past activities, current status or projections of the
- Future.
- Signal important events, opportunities, problems, or warnings.
- Trigger an action.
- Confirm an action.

Test plan :

Software testing is the process of evaluation a software item to detect differences between given input and expected output. Also to assess the feature of a software item. Testing assesses the quality of the product. Software testing is a process that should be done during the development process. In other words software testing is a verification and validation process.

Verification :

Verification is the process to make sure the product satisfies the conditions imposed at the start of the development phase. In other words, to make sure the product behaves the way we want it to.

Validation :

Validation is the process to make sure the product satisfies the specified requirements at the end of the development phase. In other words, to make sure the product is built as per customer requirements.

Basics of software testing :

There are two basics of software testing: black box testing and white box testing.

Black box Testing :

Black box testing is a testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and execution of the system. It is also called functional testing.

White box Testing :

White box testing is a testing technique that takes into account the internal mechanism of a system. It is also called structural testing and glass box testing. Black box testing is often used for validation and white box testing is often used for verification.

Types of testing :

There are many types of testing like

- Unit Testing
- Integration Testing
- Functional Testing
- System Testing
- Stress Testing
- Performance Testing
- Usability Testing
- Acceptance Testing
- Regression Testing
- Beta Testing

Unit Testing :

Unit testing is the testing of an individual unit or group of related units. It falls under the class of white box testing. It is often done by the programmer to test that the unit he/she has implemented is producing expected output against given input.

Integration Testing :

Integration testing is testing in which a group of components are combined to produce output. Also, the interaction between software and hardware is tested in integration testing if software and hardware components have any relation. It may fall under both white box testing and black box testing.

Functional Testing :

Functional testing is the testing to ensure that the specified functionality required in the system requirements works. It falls under the class of black box testing.

System Testing :

System testing is the testing to ensure that by putting the software in different environments (e.g., Operating Systems) it still works. System testing is done with full system implementation and environment. It falls under the class of black box testing.

Stress Testing :

Stress testing is the testing to evaluate how system behaves under unfavorable conditions. Testing is conducted at beyond limits of the specifications. It falls under the class of black box testing.

Performance Testing :

Performance testing is the testing to assess the speed and effectiveness of the system and to make sure it is generating results within a specified time as in performance requirements. It falls under the class of black box testing.

Usability Testing :

Usability testing is performed to the perspective of the client, to evaluate how the GUI is user-friendly? How easily can the client learn? After learning how to use, how proficiently can the client perform? How pleasing is it to use its design? This falls under the class of black box testing.

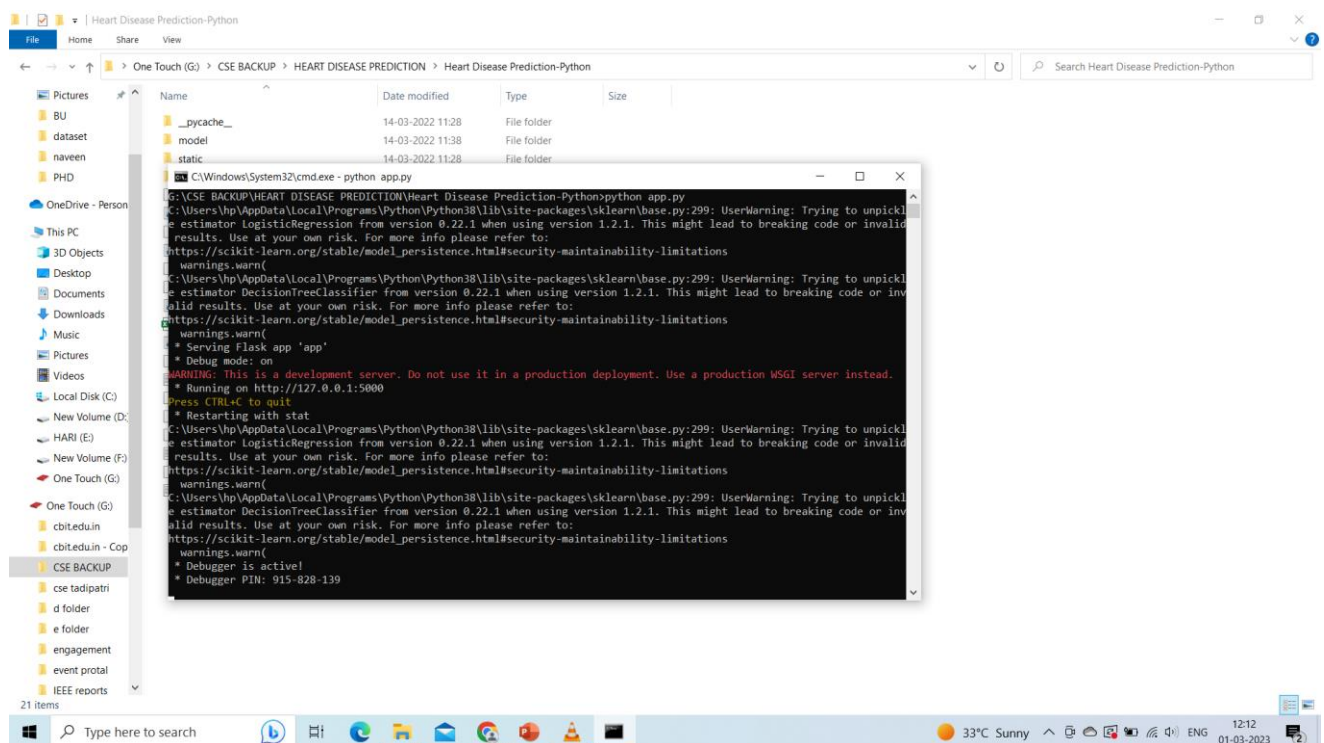
Acceptance Testing

Acceptance testing is often done by the customer to ensure that the delivered product meets the requirements and works as the customer expected. It falls under the class of black box testing.

Regression Testing :

Regression testing is the testing after modification of a system, component, or a group of related units to ensure that the modification is working correctly and is not damaging or imposing other modules to produce unexpected results. It falls under the class of black box testing.

Chapter 5 Result and conclusion



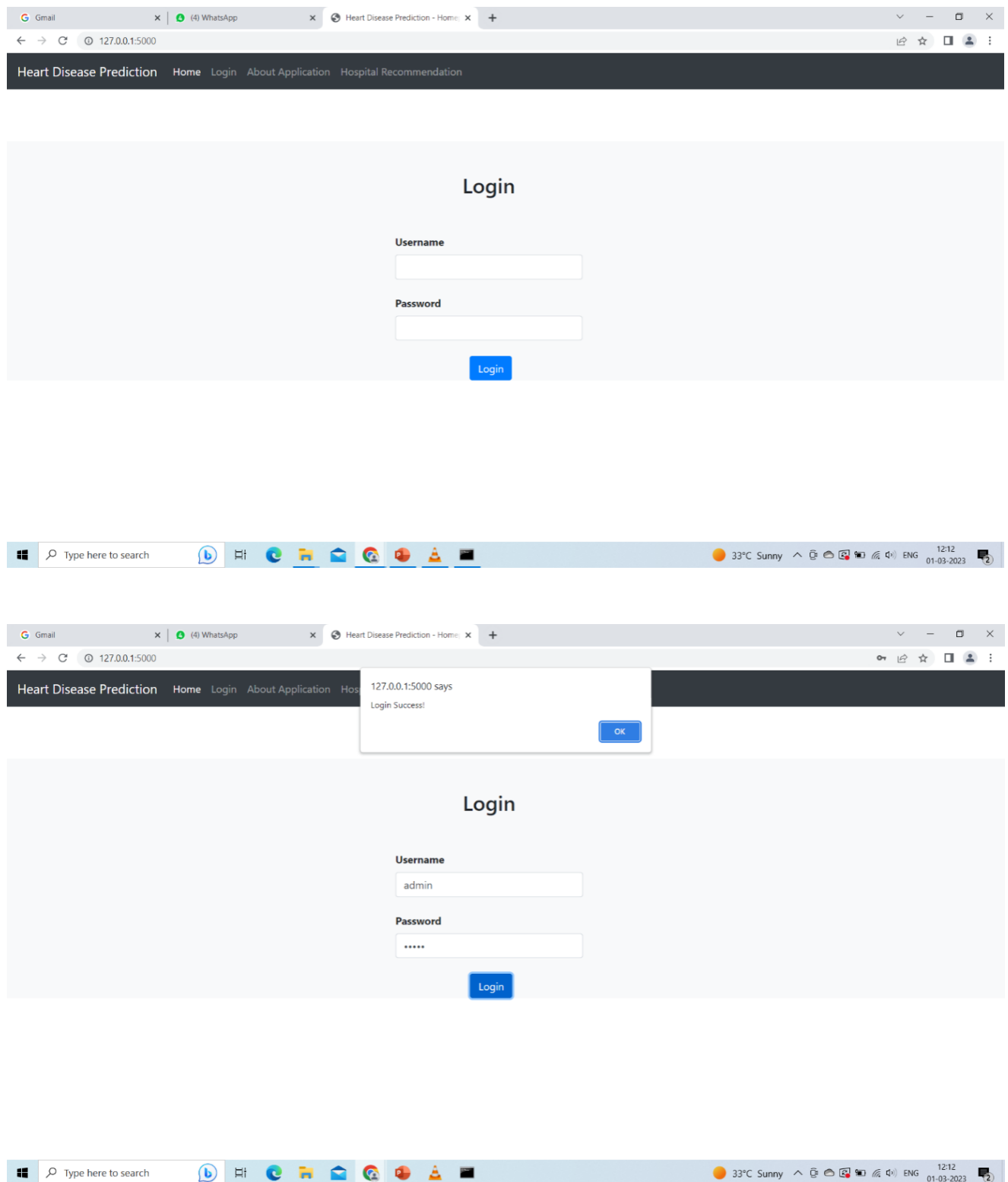


FIG.5.1 LOGIN PAGE

Heart Disease Detector Home About Application Hospital Recommendation

Heart Disease Probabilty Detector

Age :

Gender : ☐ Male ☐ Female

Height : **Weight :**

Systolic blood pressure : **Diastolic blood pressure :**

Cholestrol : ☐ High ☐ Medium ☐ Low **Glucose :** ☐ High ☐ Medium ☐ Low

Do you smoke ?

Height : Weight :

Systolic blood pressure : Diastolic blood pressure :

Cholestrol : ☒ High ☐ Medium ☐ Low Glucose : ☒ High ☐ Medium ☐ Low

Do you smoke ?

Do you consume alchol ?

Are you physically challenged ?

FIG.5.2 HOME PAGE

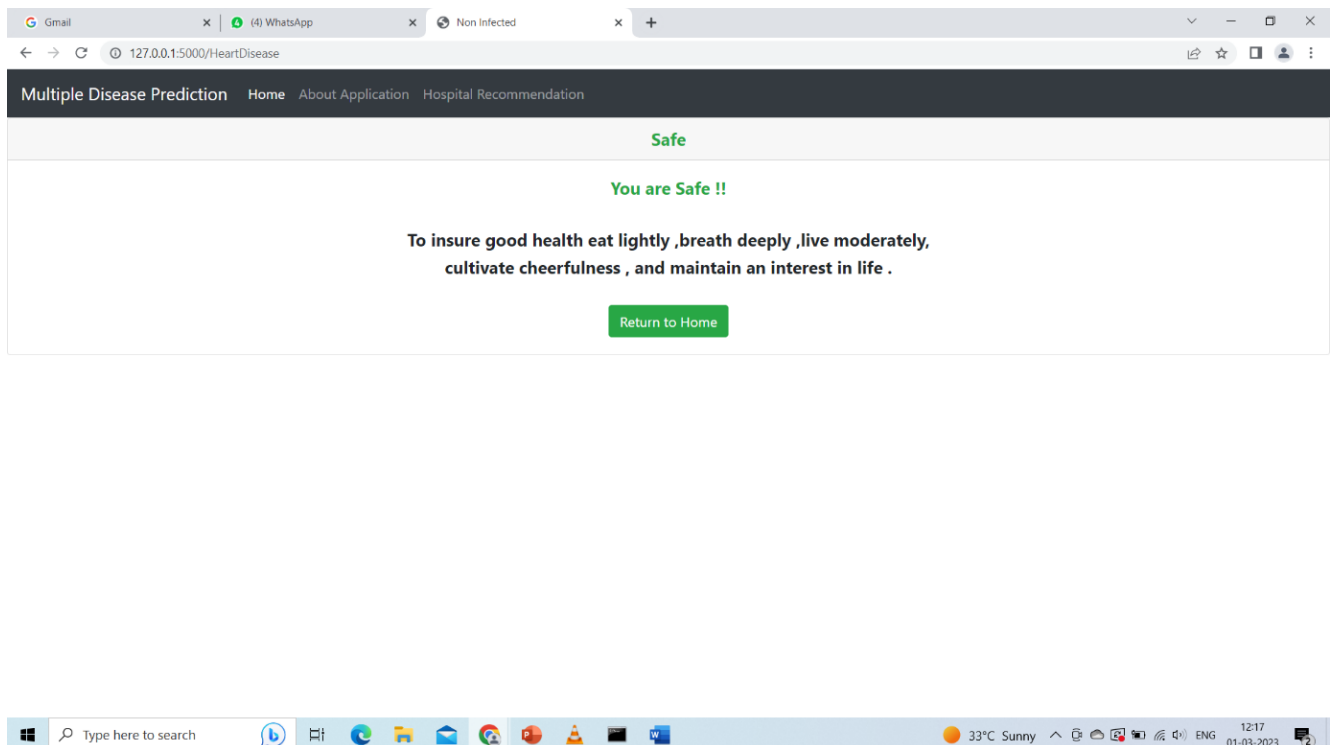
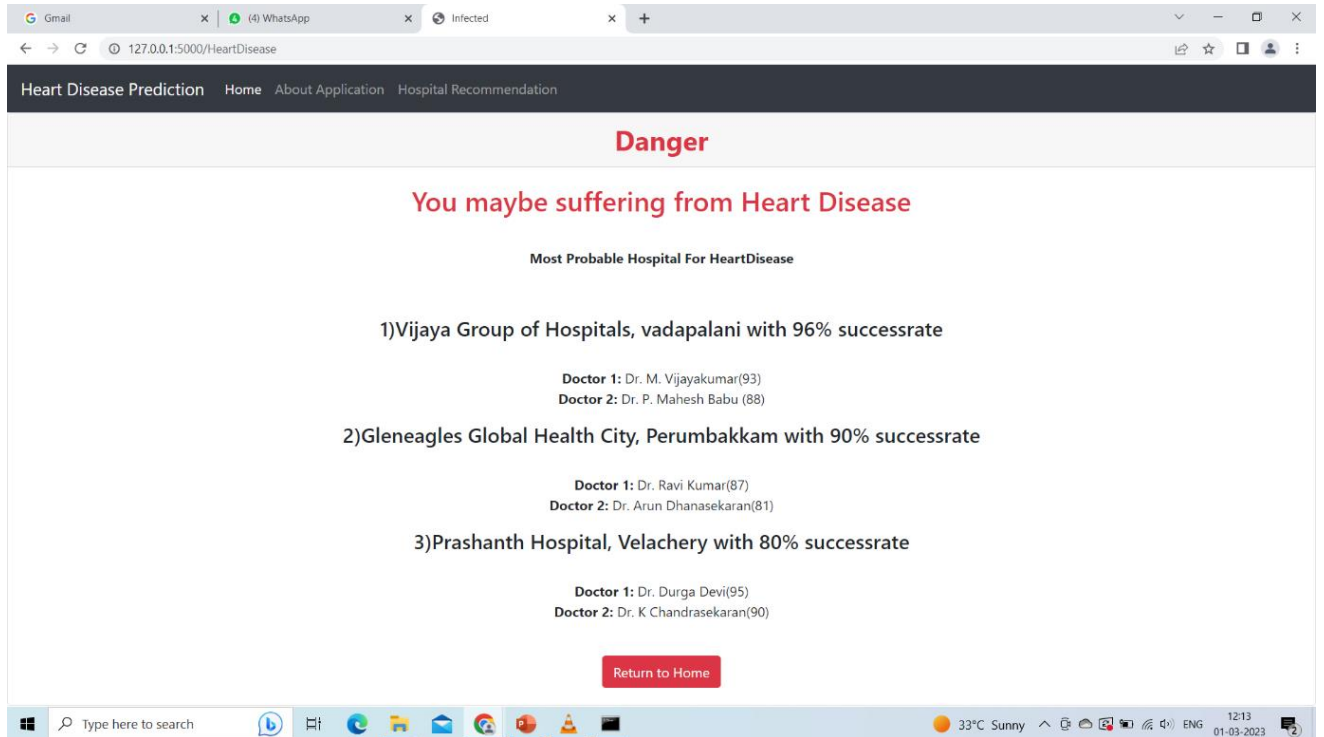


FIG.5.3 RESULT PAGE

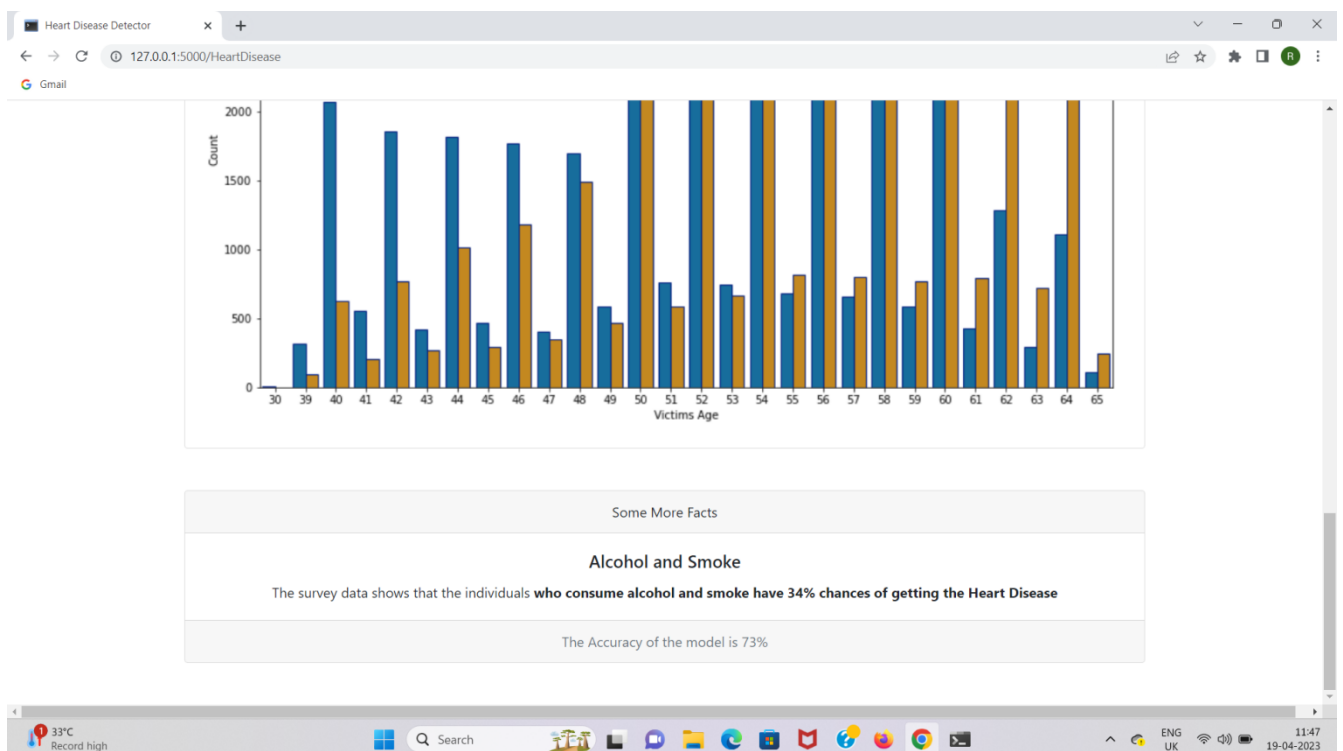
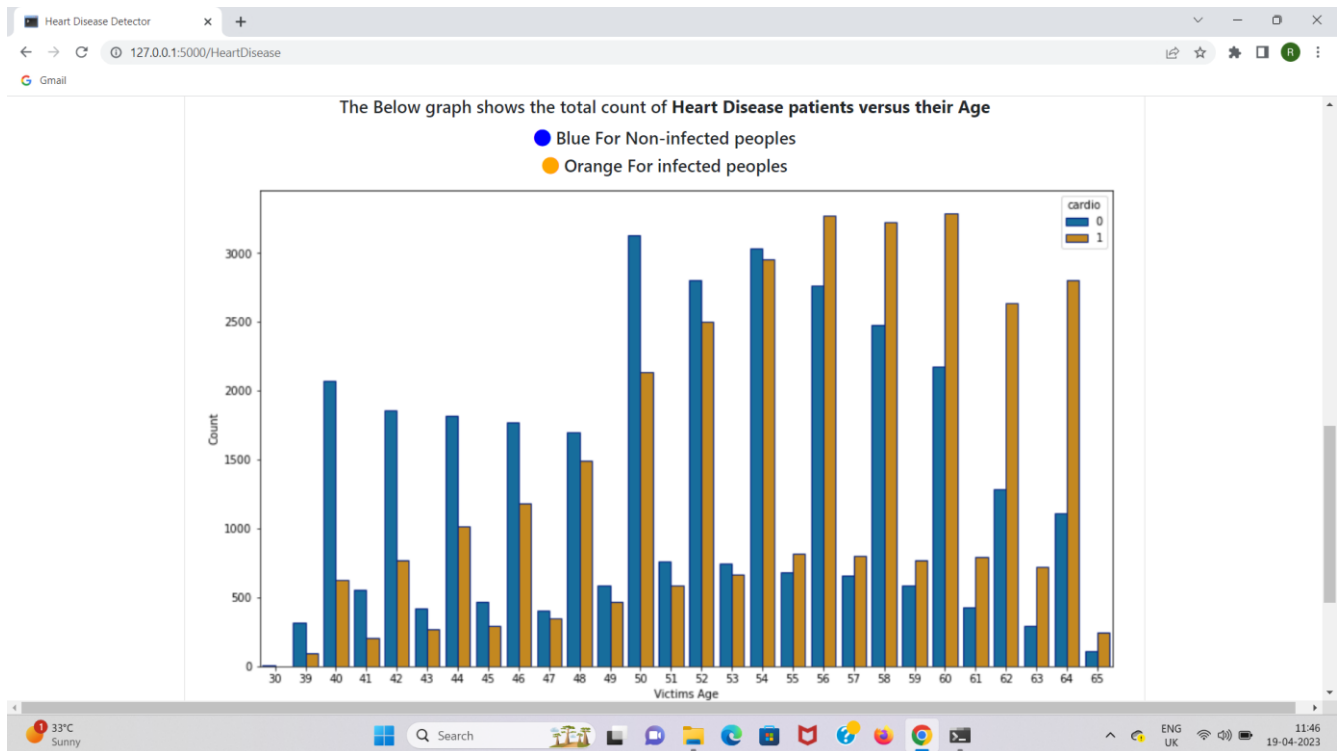


FIG.5.4 ACCURACY OF THE MODEL

11 Best Cardiology Hospitals in Chennai

medifree.com/list/best-cardiology-hospitals-in-chennai

MediFee Treatment Cost Doctors Services Search Book Appointment

Top 11 Cardiology Hospitals in Chennai

List of the best hospitals for cardiology in Chennai is as follows:

1. Apollo Hospitals, Greams Road [Book an Appointment](#)
2. Vijaya Group of Hospitals
3. Gleaneagles Global Health City, Perumbakkam [Book an Appointment](#)
4. Fortis Malar Hospital [Book an Appointment](#)
5. Apollo Hospital, Vanagaram [Book an Appointment](#)
6. Prashanth Hospital, Velachery [Book an Appointment](#)
7. Apollo First Med Hospital, Kilpauk [Book an Appointment](#)
8. Apollo Speciality Hospitals, O M R [Book an Appointment](#)
9. Billroth Hospital, Shenoy Nagar [Book an Appointment](#)
10. Apollo City Center Hospital Sowcarpet [Book an Appointment](#)
11. Billroth Hospitals, RA Puram [Book an Appointment](#)

Apollo Hospital, Greams Road

Top Hospitals in India

- Top Hospitals in India
- Top Medical Colleges in India
- Hospitals with Best Research Facilities in India
- Best Cardiology Hospitals in India
- Best Hospitals for Diabetes Care in India
- Best Cancer Hospitals in India
- Best Gynaecology Hospitals in India
- Best Children Hospitals (Paediatrics)
- Best Eye Hospitals in India (Ophthalmology)
- Best Orthopedics Hospitals in India

33°C Sunny Search ENG UK 11:54 19-04-2023

11 Best Cardiology Hospitals in Chennai

medifree.com/list/best-cardiology-hospitals-in-chennai

MediFee Treatment Cost Doctors Services Search Book Appointment

Apollo Hospital, Vanagaram

Apollo Hospital, Vanagaram belongs to the prestigious Apollo Group, a pioneer of several medical procedures in India. The medical staff at Apollo strives for constant innovation and compassionate patient care.

The department of cardiology at Apollo Hospital, Vanagaram is a recognized center of excellence where a number of treatment solutions are provided to suit the patients' needs.



Salient Features

- Accredited by JCI (Joint Commission International)
- Inpatient capacity of 260 beds
- Round the clock emergency services
- 24/7 pharmacy and laboratory services available
- Equipped with CCUs, NICU, PICU, isolation, pre and post operative units
- Special clinics to manage chest pain and stroke

Top Hospitals in India

- Best Gastroenterology Hospitals in Pune
- Best IVF Hospitals in Pune
- Top Hospitals in Kolkata
- Best Hospitals in Kolkata
- Best Maternity Hospitals in Kolkata
- Best Orthopaedic Hospitals in Kolkata
- Best Neurology Hospitals in Kolkata
- Best Hospitals in Top Cities
- Best Hospitals in Ahmedabad
- Best Hospitals in Bhopal
- Best Hospitals in Bhubaneswar

33°C Sunny Search ENG UK 11:54 19-04-2023

11 Best Cardiology Hospitals in C x +

medifree.com/list/best-cardiology-hospitals-in-chennai

Gmail

MediFree Treatment Cost v Doctors v Services v

Search

Gleneagles Global Health City, Perumbakkam

Spread over 21 acres, Gleneagles Global Health City, Perumbakkam is the largest medical facility in the Gleneagles group. It is equipped with latest technology and infrastructure in compliance to international standards. The medical and allied staff constantly innovate and upgrade their skills in order to provide the best treatment possible. It is among the favored destinations for safe and successful heart transplant surgery, along with solutions to other cardiac ailments.



Salient Features

- Inpatient capacity of more than 1000 beds
- Accredited by NABH (National Accreditation Board for Hospitals and Healthcare Providers)
- Recognized by NABL (National Accreditation Board for Testing and Calibration Laboratories)
- Approved by HALAL
- Round the clock pharmacy, emergency and laboratory services
- Diagnostic facilities include intravascular ultrasound, angiography, 3T MRI, CT scan, radiography, stress test, etc.

Best Cardiology Hospitals in Bangalore

- Best Children Hospitals (Pediatrics) in Bangalore
- Best Pulmonology Hospitals in Bangalore
- Best ENT Hospitals in Bangalore
- Best Gastroenterology Hospitals in Bangalore
- Best Cancer Hospitals in Bangalore
- Best IVF Hospitals in Bangalore

Top Hospitals in Hyderabad

- Best Hospitals in Hyderabad
- Best Maternity Hospitals in Hyderabad
- Best Children Hospitals (Pediatrics) in Hyderabad

34°C Sunny

Search

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11 Best Cardiology Hospitals in C x +

medifree.com/list/best-cardiology-hospitals-in-chennai

Gmail

MediFree Treatment Cost v Doctors v Services v

Search

- Inpatient capacity of 260 beds
- Round the clock emergency services
- 24/7 pharmacy and laboratory services available
- Equipped with CCUs, NICU, PICU, isolation, pre and post operative units
- Special clinics to manage chest pain and stroke
- Diagnostic facilities include angiography, radiography, CT scan, MRI, ECG, echocardiography, color doppler, etc.
- Electrophysiology studies conducted
- Equipped with digital flat plane cath lab

Esteemed panel of doctors

- Dr. Abraham K A, Cardiologist
- Dr. Anand Gnanaraj, Cardiologist
- Dr. Hari Krishnan P, Cardiologist
- Dr. K Narsimha Reddy, Cardiologist
- Dr. Premkumar K J, Cardiologist
- Dr. S Nagendra Boopathy, Cardiologist
- Dr. Sujit Kumar Sahu, Cardiologist
- Dr. Janardhana Reddy D, Cardiothoracic and Vascular Surgeon
- Dr. N Girish rao, Cardiothoracic and Vascular Surgeon
- Dr. Paul Ravindran Ponraj, Cardiothoracic and Vascular Surgeon

Address

Apollo Hospital
No. 64, Vanagaram-Ambattur Main Road,
Vanagaram, Chennai, Tamil Nadu 600095

We've compiled a list of the [best vascular surgeons in Chennai](#) for your reference.

Best Hospitals in Bhopal

- Best Hospitals in Bhubaneswar
- Best Hospitals in Chandigarh
- Best Hospitals in Coimbatore
- Best Hospitals in Ghaziabad
- Best Orthopaedic Hospitals in Ghaziabad
- Best Hospitals in Indore
- Best Hospitals in Jaipur
- Best Hospitals in Jodhpur
- Best Hospitals in Kanpur
- Best Orthopaedic Hospitals in Kanpur
- Best Hospitals in Kochi
- Best Hospitals in Lucknow

33°C Sunny

Search

ENG UK 11:54 19-04-2023

FIG.5.5 BOOK AN APPOINTMENT

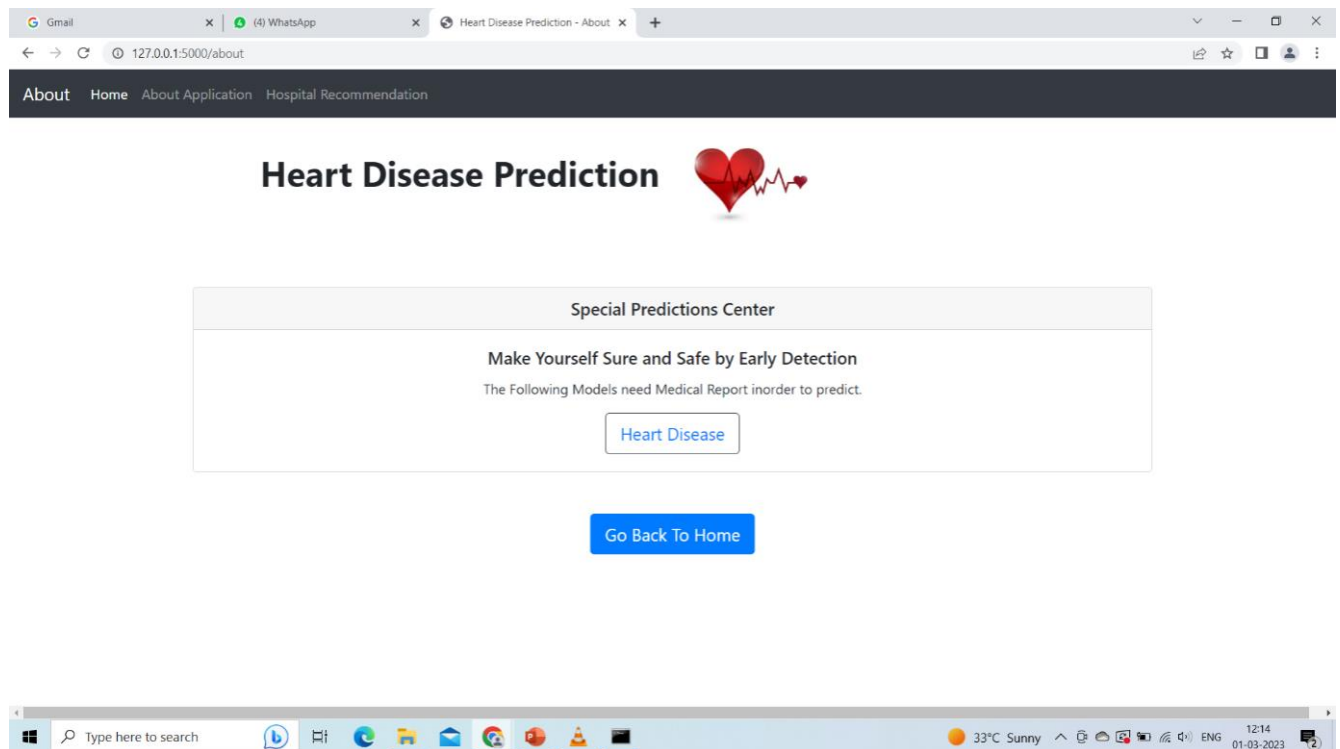


FIG.5.6 ABOUT APPLICATION PAGE

CONCLUSION :

In this paper, we propose an approach for answering drug queries to support drug prescription. Our focus is on how to obtain and rank answers based on incomplete information and provide personalization. To cope with incomplete and noisy data, we allow both exact and close matches when answering queries. We also present an intuitive approach to display answers to users, which aims to help users to understand the ranked results and possibly refine their queries.

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[15] Radhanath Patra and Bonomali Khuntia, (2019) Institute of Electrical and Electronics International Conference on Electronics, Computer, and Modern Communications, Predictive Analysis of Rapid Spread of Cardiovascular Disease using Data Mining (ICECCT).

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APPENDIX

A. SOURCE CODE

[1] About.html.bak

```
<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
  <link                                                                    rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
  integrity="sha384-
Vkoo8x4CGsO3+Hhvx8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh"
crossorigin="anonymous">
  <title>Heart Disease Prediction - About</title>
<style>
  * {
    margin: 0;
    padding: 0;
    box-sizing: border-box;
  }
  .form-actions {
    margin: 0;
    background-color: transparent;
    text-align: center;
  }
  .mobileContent {
    display: none;
  }
  @media only screen and (min-device-width:200px) and (max-device-width:770px) {
```

```

        .mobileContent {
            display: inline;
        }
        .table-responsive {
            display: none;
        }
        .newbtn {
            margin-top: 10%;
        }
    }
</style>
<script src="https://kit.fontawesome.com/a658a7b479.js"
crossorigin="anonymous"></script>
</head>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark" style="width:100%">
        <a class="navbar-brand" href="#">About</a>
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarSupportedContent"
        aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle
navigation">
            <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarSupportedContent">
            <ul class="navbar-nav mr-auto">
                <li class="nav-item active">
                    <a class="nav-link" href="{{ url_for('Homepage') }}">Home <span
class="sr-only">(current)</span></a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="{{ url_for('About') }}">About Application</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="{{ url_for('Contact') }}">Hospital Recommendation</a>

```

```

        </li>
    </ul>
</div>
</nav>
<br>
<div class="row">
    <div class="col">
        <h1 class="text-right mt-3 font-weight-bolder">Heart Disease Prediction</h1>
    </div>
    <div class="col">
        
    </div>
</div>
<!-- <div class="text-center">
    
    <h1 style="margin-right: 3%;">IMPULSE</h1>
</div> -->
<br>
<div class="container" style="width:100%">
    <!-- <div class="card">
        <h5 class="card-header text-center">Coronavirus Section</h5>
        <div class="card-body">
            <h5 class="card-title text-center">This Section Predicts whether an individual is been
infected with
                Coronavirus or not</h5>
            <div class="form-actions">
                <a href="{{ url_for('Coronavirus') }}" class="btn btn-primary btn-lg mx-5 newbtn
">Detect
                    COVID-19</a>
            </div>
        </div>
    </div> -->

```

```

<br>
<!-- <div class="card">
  <h5 class="card-header text-center">Disease Prediction</h5>
  <div class="card-body">
    <h5 class="card-title text-center">We predict the following Diseases !</h5>
    <div class="card-deck">
      <div class="card zoom" style="width: 100%;">
        <ul class="list-group list-group-flush">
          <li class="list-group-item text-center ">Malaria</li>
          <li class="list-group-item text-center">Dengue</li>
          <li class="list-group-item text-center">Heart Attack</li>
        </ul>
      </div>
    <div class="card" style="width: 100%;">
      <ul class="list-group list-group-flush">
        <li class="list-group-item text-center">Hypertesion</li>
        <li class="list-group-item text-center">Migraine</li>
        <li class="list-group-item text-center">Cervical spondylosis</li>
      </ul>
    </div>
    <div class="card" style="width: 100%;">
      <ul class="list-group list-group-flush">
        <li class="list-group-item text-center">Paralysis</li>
        <li class="list-group-item text-center">Drug Reaction</li>
        <li class="list-group-item text-center">Alcoholic hepatitis</li>
      </ul>
    </div>
    <div class="card" style="width: 100%;">
      <ul class="list-group list-group-flush">
        <li class="list-group-item text-center">Pneumonia</li>
        <li class="list-group-item text-center align-middle">Dimorphic
hemmorhoids(piles)
      </li>
      </ul>
    </div>
  </div>
</div>

```

```

        </div>
    </div>
    <div class="container">
    <div class="row align-items-center">
        <div class="col-4">Malaria</div>
        <div class="col-4">Dengue</div>
        <div class="col-4">Heart Attack</div>
    </div>
</div>
<br>
<div class="form-actions">
    <a href="{{ url_for('Disease') }}" class="btn btn-primary btn-lg">Track Your
Symptoms
        Now</a>
</div>
</div>
</div> -->
<br>
<div class="card">
    <h5 class="card-header text-center">Special Predictions Center</h5>
    <div class="card-body">
        <h5 class="card-title text-center">Make Yourself Sure and Safe by Early
Detection</h5>
        <p class="card-text text-center">The Following Models need Medical Report inorder
to predict.
        </p>
        <div class="form-actions">
            <a href="{{ url_for('CKD') }}" class="btn btn-outline-primary border-dark btn-lg
newbtn">Chronic
                Kidney
                Disease</a>
            <a href="{{ url_for('Heart_disease') }}"
                class=" newbtn btn btn-outline-primary border-dark mx-5 btn-lg">Heart
Disease</a>

```

```

        </div>
    </div>
</div>
<br><br>
<div class="form-actions">
    <a href="{{ url_for('Homepage') }}"><button type="submit" class="btn btn-primary btn-lg
mx-auto"
        type="submit">Go Back To Home
    </button></a>
</div>
</div>
</div>
<br>
<br>
</div>
<script src="https://code.jquery.com/jquery-3.4.1.slim.min.js"
    integrity="sha384-
J6qa4849bIE2+poT4WnyKhv5vZF5SrPo0iEjwBvKU7imGFAV0wwj1yYfoRSJoZ+n"
crossorigin="anonymous">
    </script>
    <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"
        integrity="sha384-
Q6E9RHvblyZFJoft+2mJbHaEWldlvI9IOYy5n3zV9zzTtml3UksdQVRVvoxMfooAo"
crossorigin="anonymous">
        </script>
        <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js"
            integrity="sha384-
wfSDF2E50Y2D1uUdj0O3uMBJnjuUD4Ih7YwaYd1iqfktj0Uod8GCExl3Og8ifwB6"
crossorigin="anonymous">
            </script>
</body>
</html>

```

[2] Contact.html.bak

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Heart Disease Prediction - Hospital Recommendation</title>
  <link                                rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
  <script
src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js"></script>
  <link            rel="stylesheet"            href="https://cdnjs.cloudflare.com/ajax/libs/font-
awesome/4.7.0/css/font-awesome.min.css">
  <script                                src="https://kit.fontawesome.com/c587fc1763.js"
crossorigin="anonymous"></script>
</head>
<style>
  .jumbotron {
    background: url(bg.png) fixed center no-repeat;
    background-size: cover;
  }
  a,
  a:focus,
  a:active {
    text-decoration: none;
    color: white;
  }
  a:hover {
    text-decoration: none;
    color: goldenrod;
  }

  @media only screen and (min-width: 320px) and (max-width:500px) {

```

```

    .main {
        margin-top: 20px;
    }
    .main:first-child {
        margin-top: -5%;
    }
    .conter {
        margin-bottom: -12%;
    }
}
</style>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark">
        <a class="navbar-brand" href="#">Hospital</a>
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-
expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarSupportedContent">
            <ul class="navbar-nav mr-auto">
                <li class="nav-item active">
                    <a class="nav-link" href="{{ url_for('Homepage') }}">Home <span
class="sr-only">(current)</span></a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="{{ url_for('About') }}">About Application</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="{{ url_for('Contact') }}">Hospital Recommendation</a>
                </li>
            </ul>
        </div>
    </nav>

```

```

<div class="container">
  <!--       -->
  <div class="container ">
    <form action="/contact" method="POST">
      <div class=" text-center">
        <h1 style="letter-spacing: 1px;word-spacing: 2px; ">Hospital
Recommendation</h1>
      </div>
      <br>
      <!--      <div class="form-group">
<label class="font-weight-bold">Select Disease</label>
<select class="form-control custom-select" id="alcohol" name="alcohol" required>
  <option value="">Select Disease</option>
  <option value="">Heart Disease</option>
  <option value="">Chronic Kidney Disease</option>
    <option value="">Corono Virus</option>
    <option value="">Malaria</option>
    <option value="">Pneumonia</option>
    <option value="">Dengue</option>
  <option value="">Liver Disease</option>
    <option value="">Skin Disease</option>
    <option value="">Cancer</option>
    <option value="">Fever</option>
  </select>
</div> -->
  <br>
  <!-- <button type="submit " class="btn btn-primary mx-auto d-block btn-lg ">Submit</button> -
->
  <br>
</form>

```

```

</div>
    <br>
    <div class="form-actions">
        <a href="https://www.medifree.com/list/best-cardiology-hospitals-in-chennai"><center><button type="submit" class="btn btn-primary btn-lg mx-auto"
            type="submit">Heart Disease
        </button></center></a>
        <br>
        <br>
        <br>
        <div class="form-actions">
            <center> <a href="{{ url_for('Homepage') }}" class="btn btn-danger">Return to
Home</a>
        </div>
        <br>
    </div>
    <br>
    <br>
</div>
</form>
</body>
</html>

```

[3] HeartInfected.html.bak

```

<!doctype html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
        rel="stylesheet"
        integrity="sha384-

```

Vkoo8x4CGsO3+Hh xv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh"

crossorigin="anonymous">

<title>Infected</title>

<style>

.form-actions {

margin: 0;

background-color: transparent;

text-align: center;

}

</style>

</head>

<body>

<nav class="navbar navbar-expand-lg navbar-dark bg-dark">

Multiple Disease Prediction

<button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

</button>

<div class="collapse navbar-collapse" id="navbarSupportedContent">

<ul class="navbar-nav mr-auto">

<li class="nav-item active">

Home (current)

<li class="nav-item">

About Application

<li class="nav-item">

Hospital Recommendation


```

    </div>
</nav>
<div class="card">
    <h2 class="card-header text-center text-danger font-weight-bold">Danger</h2>
    <div class="card-body">
        <h2 class="card-title text-danger text-center">You maybe suffering from {{
disease }}</h2>
        <br>
        <p class="card-text text-center"><b>Most Probable Hospital For
HeartDisease</b></p>
        <br>
        <center><p><h4>1)Vijaya Group of Hospitals, vadapalani with
96% successrate </h4> <br>
        <center><b>Doctor 1:</b> Dr. M. Vijayakumar(93) <br><b>
Doctor 2:</b> Dr. P. Mahesh Babu (88)</center> </p></center>
        <center><p><h4>2)Gleneagles Global Health City, Perumbakkam
with 90% successrate </h4><br>
        <center><b>Doctor 1:</b> Dr. Ravi Kumar(87) <br><b> Doctor
2:</b> Dr. Arun Dhanasekaran(81)</center> </p></center>
        <center><p><h4>3)Prashanth Hospital, Velachery with 80%
successrate </h4><br>
        <center><b>Doctor 1:</b> Dr. Durga Devi(95) <br><b> Doctor
2:</b> Dr. K Chandrasekaran(90)</center> </p></center>
        <br>
        <div class="form-actions">
            <a href="{{ url_for('Homepage') }}" class="btn btn-danger">Return to
Home</a>
        </div>
    </div>
</div>
<script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-
J6qa4849bIE2+poT4WnyKhv5vZF5SrPo0iEjwBvKU7imGFAV0wwj1yYfoRSJoZ+n"
crossorigin="anonymous">
</script>

```

```

    <script    src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"
integrity="sha384-
Q6E9RHvblyZFJoft+2mJbHaEWldlvI9IOYy5n3zV9zzTtmI3UksdQRVvoxMfooAo"
crossorigin="anonymous">
    </script>
    <script    src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js"
integrity="sha384-
wfSDF2E50Y2D1uUdj0O3uMBJnjuUD4Ih7YwaYd1iqfktj0Uod8GCExl3Og8ifwB6"
crossorigin="anonymous">
    </script>
</body>
</html>

```

[4] Homepage.html.bak

```

<!doctype html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <meta    name="viewport"    content="width=device-width,    initial-scale=1,    shrink-to-
fit=no">
    <link                                                    rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
integrity="sha384-
Vkoo8x4CGsO3+Hh xv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh"
crossorigin="anonymous">
    <title>Heart Disease Prediction - Homepage</title>

    <style>
        .form-actions {
            margin: 0;
            background-color: transparent;

```

```

        text-align: center;
    }
    .mobileContent {
        display: none;
    }
    @media only screen and (min-device-width:320px) and (max-device-width:480px)
{
        .mobileContent {
            display: inline;
        }
        .table-responsive {
            display: none;
        }
    }
}
</style>
</head>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark">
        <a class="navbar-brand" href="#">Heart Disease Prediction</a>
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-
target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-
expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-icon"></span>
        </button>
        <div class="collapse navbar-collapse" id="navbarSupportedContent">
            <ul class="navbar-nav mr-auto">
                <li class="nav-item active">
                    <a class="nav-link" href="{{ url_for('login') }}">Login <span
class="sr-only">(current)</span></a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="{{ url_for('Homepage') }}">Home </a>
                </li>
                <li class="nav-item">

```

```

        <a class="nav-link" href="{{ url_for('About') }}">About Application</a>
    </li>
    <li class="nav-item">
        <a class="nav-link" href="{{ url_for('Contact') }}">Hospital
Recommendation</a>
    </li>
</ul>
</div>
</nav>
<br>
<div class="row">
    <div class="col-6">
        
    </div>
    <div class="col float-left">
        <h1 class="text-left mt-3 mx-0 font-weight-bolder">Heart Disease
Prediction</h1>
    </div>
</div>
{% if feedback == "True" %}
<div id="alert" class="container">
    <br>
    <div class="alert alert-success text-center font-weight-bold fon" role="alert">
        <h5>Thanks for your Feedback !! </h5>
    </div>
</div>
{% endif %}
<br>
<div class="card bg-gradient-info">
    <h4 class="text-center p-3 font-italic" style="color:#0099ff;">To insure good health
eat lightly ,breath deeply , live moderately,cultivate cheerfulness , and maintain an
interest in life.</h4>
</div>

```

```

</div>
<!-- <div class="container">
  <br>
  <div class="table-responsive">
    <table cellspacing="1" cellpadding="25" class="table">
      <thead>
        <tr>
          <th rowspan=3 class="float-right"></th>
          <th colspan="3" class="text-center align-middle">
            <h2 class="font-weight-bold">Coronavirus Section </h2>
            <br>
            <h5 class="text-center">Track Coronavirus Symptoms </h5>
            <br>
            <a href="{{ url_for('Coronavirus') }}"><button type="submit" class="btn
btn-primary btn-lg "
              type="submit">COVID-19
              Detector</button></a>
          </th>
        </tr>
      </thead>
    </table>
  </div>
  <div class="mobileContent">
    <br>
    <h2 class="text-center font-weight-bold">Coronavirus </h2>
    <br>
    <!-- <div class="card container" style="width: 18rem;">
      <ul class="list-group list-group-flush">
        <li class="list-group-item text-center">Total Cases : {{ cases }}</li>
        <li class="list-group-item text-center">Total Cured : {{ cured }}</li>
        <li class="list-group-item text-center">Total Death : {{ death }}</li>
      </ul>
    </div>
  </div>

```

```

<h5 class="text-center">Track Coronavirus Symptoms </h5>
<br>
<div class="form-actions">
  <a href="{{ url_for('Coronavirus') }}"><button type="submit" class="btn btn-
primary btn-lg"
    type="submit">COVID-19
    Detector</button></a>
</div>
</div>
</div> -->
<br><br>
<!-- <div class="card text-center">
  <div class="card-header">
    Disease Prediction based on Symptoms
  </div>
  <div class="card-body">
    <h1 class="card-title">Track Symptoms And Be Sure</h1>
    <h5 class="card-text ">It Predicts Whether you have Dengue, Heart-Attack,
Paralysis , Hypertension and much more
  </h5>
  <br>
  <a href="{{ url_for('Disease') }}" class="btn btn-primary btn-lg">Track Now</a>
</div>
  <div class="card-footer text-muted">
    The Accuracy of Prediction is upto 99%
  </div>
</div> -->
<br><br>
<div class="container">
  <div class="card-deck">
    <!-- <div class="card">
      
      <div class="card-body">

```

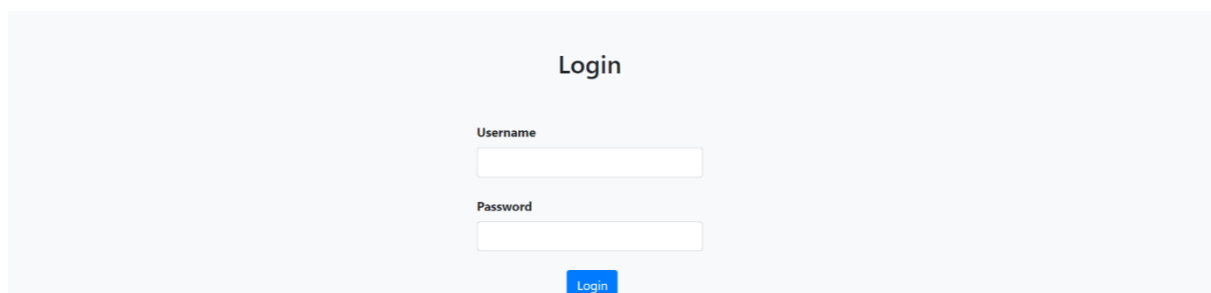
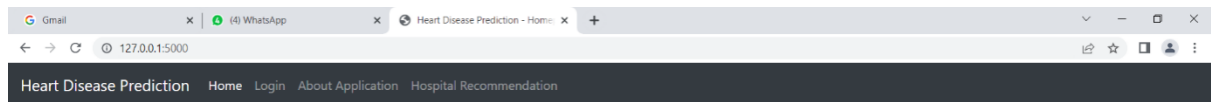
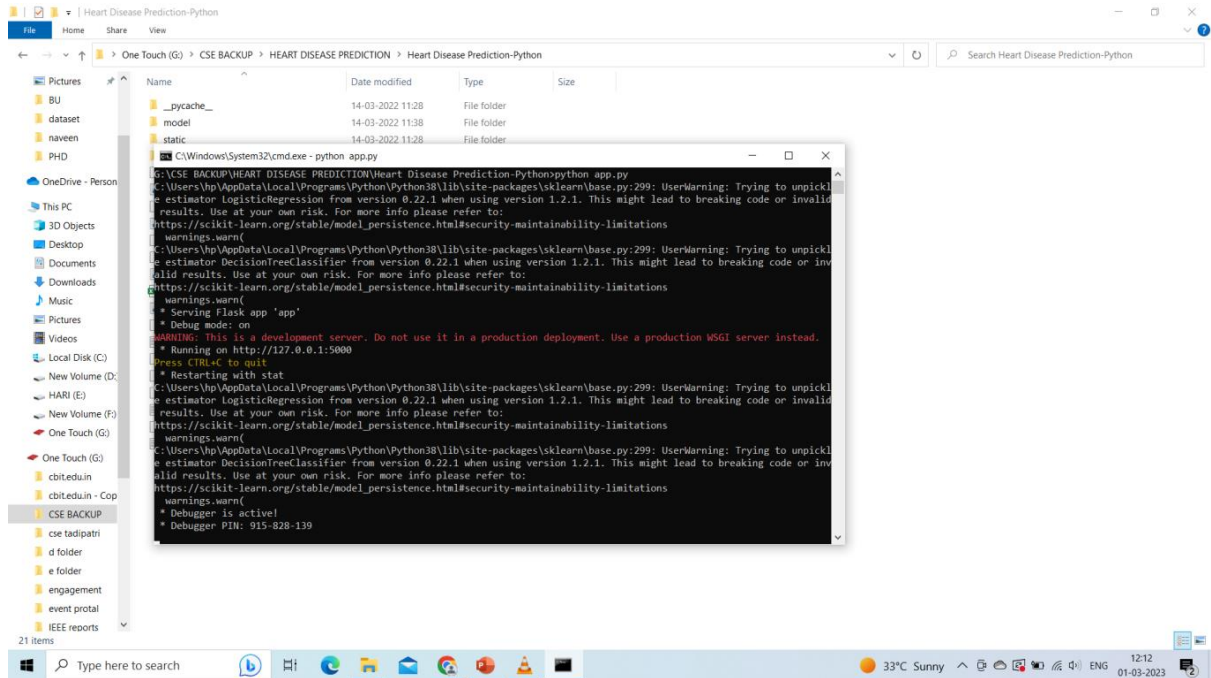
```

<h5 class="card-title text-center">Chronic Kidney Disease </h5>
<h5 class="card-title text-center">Detection</h5>
<br>
<div class="form-actions">
    <a href="{{ url_for('CKD') }}"><button type="submit" class="btn btn-
warning btn-lg mx-auto"
        type="submit">Detect
        Now</button></a>
</div>
</div>
</div> -->
<!-- <div class="card">
    
    <div class="card-body">
        <h5 class="card-title text-center">Breast Cancer Detection</h5>
        <br><br>
        <div class="form-actions">
            <a href="{{ url_for('BreastCancer') }}"><button type="submit"
                class="btn btn-warning btn-lg mx-auto" type="submit">Detect
                Now</button></a>
        </div>
    </div>
</div>
</div> -->
<div class="card">
    
    <div class="card-body">
        <h5 class="card-title text-center">Heart Disease Detection</h5>
        <br><br>
        <div class="form-actions">
            <a href="{{ url_for('Heart_disease') }}"><button type="submit"
                class="btn btn-warning btn-lg mx-auto" type="submit">Detect
                Now</button></a>
        </div>
    </div>
</div>

```

```
        </div>
    </div>
</div>
</div>
<br>
<br>
<br>
</div>
<script src="https://code.jquery.com/jquery-3.4.1.slim.min.js" integrity="sha384-
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crossorigin="anonymous">
</script>
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/js/bootstrap.min.js"
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crossorigin="anonymous">
</script>
</body>
</html>
```

B. SCREENSHOTS



Gmail x (4) WhatsApp x Heart Disease Prediction - Home: x +

127.0.0.1:5000

Heart Disease Prediction Home Login About Application Hospital Recommendation

Login

Username

Password

Login

Windows Taskbar: Type here to search, (4) WhatsApp, Heart Disease Detector, 33°C Sunny, 12:12, 01-03-2023

Gmail x (4) WhatsApp x Heart Disease Detector x +

127.0.0.1:5000/HeartDisease

Heart Disease Detector Home About Application Hospital Recommendation

Heart Disease Probability Detector

Age :

Gender : ☐ Male ☐ Female

Height : **Weight :**

Systolic blood pressure : **Diastolic blood pressure :**

Cholestrol : ☐ High ☐ Medium ☐ Low **Glucose :** ☐ High ☐ Medium ☐ Low

Do you smoke ?

Windows Taskbar: Type here to search, (4) WhatsApp, Heart Disease Detector, 33°C Sunny, 12:12, 01-03-2023

Gmail

(4) WhatsApp

Heart Disease Detector

+

127.0.0.1:5000/HeartDisease

Height :

5

Weight :

50

Systolic blood pressure :

120

Diastolic blood pressure :

80

Cholesterol :

☒ High ☐ Medium ☐ Low

Glucose :

☒ High ☐ Medium ☐ Low

Do you smoke ?

No

Do you consume alcohol ?

Yes

Are you physically challenged ?

No

Submit

Type here to search

33°C Sunny

12:13

01-03-2023

Gmail

(4) WhatsApp

Infected

+

127.0.0.1:5000/HeartDisease

Heart Disease Prediction Home About Application Hospital Recommendation

Danger

You maybe suffering from Heart Disease

Most Probable Hospital For HeartDisease

1)Vijaya Group of Hospitals, vadapalani with 96% successrate

Doctor 1: Dr. M. Vijayakumar(93)

Doctor 2: Dr. P. Mahesh Babu (88)

2)Gleneagles Global Health City, Perumbakkam with 90% successrate

Doctor 1: Dr. Ravi Kumar(87)

Doctor 2: Dr. Arun Dhanasekaran(81)

3)Prashanth Hospital, Velachery with 80% successrate

Doctor 1: Dr. Durga Devi(95)

Doctor 2: Dr. K Chandrasekaran(90)

Return to Home

Type here to search

33°C Sunny

12:13

01-03-2023

Heart Disease Prediction

Special Predictions Center

Make Yourself Sure and Safe by Early Detection
The Following Models need Medical Report in order to predict.

[Heart Disease](#)

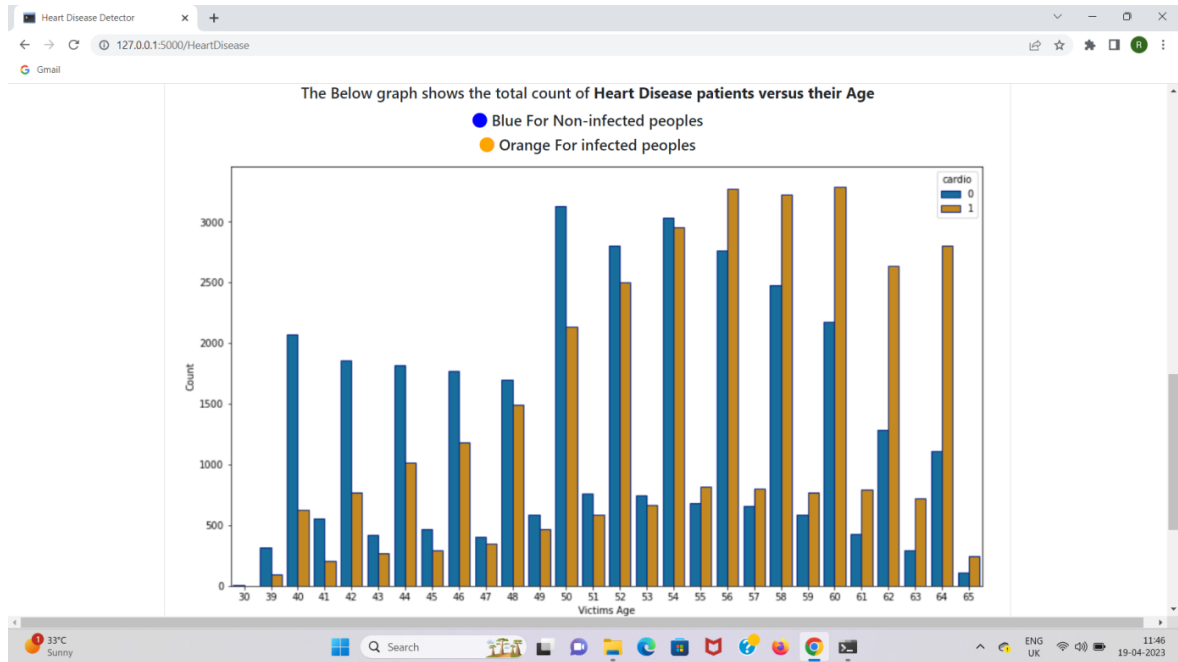
[Go Back To Home](#)

Safe

You are Safe !!

To insure good health eat lightly ,breath deeply ,live moderately,
cultivate cheerfulness , and maintain an interest in life .

[Return to Home](#)



11 Best Cardiology Hospitals in Chennai

medifee.com/list/best-cardiology-hospitals-in-chennai

MediFee Treatment Cost Doctors Services

Search Book Appointment

Top 11 Cardiology Hospitals in Chennai

List of the best hospitals for cardiology in Chennai is as follows:

- Apollo Hospitals, Greams Road [Book an Appointment](#)
- Vijaya Group of Hospitals [Book an Appointment](#)
- Gleaneagles Global Health City, Perumbakkam [Book an Appointment](#)
- Fortis Malar Hospital [Book an Appointment](#)
- Apollo Hospital, Vanagaram [Book an Appointment](#)
- Prashanth Hospital, Velachery [Book an Appointment](#)
- Apollo First Med Hospital, Kilpauk [Book an Appointment](#)
- Apollo Speciality Hospitals, O M R [Book an Appointment](#)
- Billroth Hospital, Shenoy Nagar [Book an Appointment](#)
- Apollo City Center Hospital Sowcarpet [Book an Appointment](#)
- Billroth Hospitals, RA Puram [Book an Appointment](#)

Top Hospitals in India

- [Top Hospitals in India](#)
- [Top Medical Colleges in India](#)
- [Hospitals with Best Research Facilities in India](#)
- [Best Cardiology Hospitals in India](#)
- [Best Hospitals for Diabetes Care in India](#)
- [Best Cancer Hospitals in India](#)
- [Best Gynaecology Hospitals in India](#)
- [Best Children Hospitals \(Paediatrics\)](#)
- [Best Eye Hospitals in India \(Ophthalmology\)](#)
- [Best Orthopedics Hospitals in India](#)

Apollo Hospital, Greams Road

11 Best Cardiology Hospitals in C

medifee.com/list/best-cardiology-hospitals-in-chennai

Gmail

MediFee

Treatment CostDoctorsServices

Search

Book Appointment

Apollo Hospital, Vanagaram

Apollo Hospital, Vanagaram belongs to the prestigious Apollo Group, a pioneer of several medical procedures in India. The medical staff at Apollo strives for constant innovation and compassionate patient care.

The department of cardiology at Apollo Hospital, Vanagaram is a recognized center of excellence where a number of treatment solutions are provided to suit the patients' needs.



Salient Features

- Accredited by JCI (Joint Commission International)
- Inpatient capacity of 260 beds
- Round the clock emergency services
- 24/7 pharmacy and laboratory services available
- Equipped with CCUS, NICU, PICU, isolation, pre and post operative units
- Special clinics to manage chest pain and stroke

Best Vascular Surgery Hospitals in Pune

Best IVF Hospitals in Pune

Top Hospitals in Kolkata

Best Hospitals in Kolkata

Best Maternity Hospitals in Kolkata

Best Orthopaedic Hospitals in Kolkata

Best Neurology Hospitals in Kolkata

Best Hospitals in Top Cities

Best Hospitals in Ahmedabad

Best Hospitals in Bhopal

Best Hospitals in Bhubaneswar

33°C Sunny

Search

ENG UK

11:54 19-04-2023

11 Best Cardiology Hospitals in C

medifee.com/list/best-cardiology-hospitals-in-chennai

Gmail

MediFee

Treatment CostDoctorsServices

Search

Book Appointment

- Inpatient capacity of 260 beds
- Round the clock emergency services
- 24/7 pharmacy and laboratory services available
- Equipped with CCUS, NICU, PICU, isolation, pre and post operative units
- Special clinics to manage chest pain and stroke
- Diagnostic facilities include angiography, radiography, CT scan, MRI, ECG, echocardiography, color doppler, etc.
- Electrophysiology studies conducted
- Equipped with digital flat plane cath lab

Esteemed panel of doctors

- Dr. Abraham K A, Cardiologist
- Dr. Anand Gnanaraj, Cardiologist
- Dr. Harikrishnan P, Cardiologist
- Dr. K Narsimha Reddy, Cardiologist
- Dr. Premkumar K J, Cardiologist
- Dr. S Nagendra Boopathy, Cardiologist
- Dr. Sujit Kumar Sahu, Cardiologist
- Dr. Janardhana Reddy D, Cardiothoracic and Vascular Surgeon
- Dr. N Girish rao, Cardiothoracic and Vascular Surgeon
- Dr. Paul Ravindran Ponraj, Cardiothoracic and Vascular Surgeon

Address

Apollo Hospital
No. 64, Vanagaram-Ambattur Main Road,
Vanagaram, Chennai, Tamil Nadu 600095

Book an Appointment

We've compiled a list of the [best vascular surgeons in Chennai](#) for your reference.

Best Hospitals in Ahmedabad

Best Hospitals in Bhopal

Best Hospitals in Bhubaneswar

Best Hospitals in Chandigarh

Best Hospitals in Coimbatore

Best Hospitals in Ghaziabad

Best Orthopaedic Hospitals in Ghaziabad

Best Hospitals in Indore

Best Hospitals in Jaipur

Best Hospitals in Jodhpur

Best Hospitals in Kanpur

Best Orthopaedic Hospitals in Kanpur

Best Hospitals in Kochi

Best Hospitals in Lucknow

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11:54 19-04-2023

C. RESEARCH PAPER

CORONARY ARTERY DISEASE PREDICTION FROM DISTRIBUTED MEDICAL DATABASE USING MACHINE LEARNING

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ABSTRACT

In cutting-edge times, demise from heart sickness has come to be a severe hassle, with about one individual death from heart disorder per minute. This applies to each male and girl categories, and this ratio may additionally range relying on the location, and this ratio is considered a ratio of humans's age. This does now not mean that heart sickness cannot arise in other age businesses. This hassle can start at an early age, and now it's far a hassle of extra importance to are expecting the cause and disease. Here in this article we have used hybrid algorithms.

Keywords: Heart disease classification,

Features selection, Disease diagnosis,

Intelligent system, Medical data analytics

INTRODUCTION

The content material of this newsletter in particular makes a speciality of the various facts mining strategies which are beneficial for predicting coronary heart disorder via the diverse data mining equipment available. If the heart does no longer work well, it's going to affect different elements of the human body, along with the mind, kidneys, and so on. Heart ailment is a type of sickness that impacts the functioning of the coronary

heart. In the modern-day age, coronary heart disease is the main reason of demise. According to forecasts from WHO and the World Health Organization, 12 million human beings die each yr from heart disorder. Some of the coronary heart diseases are cardiovascular, heart attack, coronary and stroke. A heart palpitation is a condition that results from a hardening, blockage, or narrowing of the blood vessels passing through the mind, or it is able to be due to excessive blood stress. The primary trouble that the healthcare enterprise is presently dealing with is the provision of gadget. The correct analysis of the sickness and the prescription of powerful remedy for patients determine the pleasant of treatment. Poor diagnosis ends in disastrous consequences that aren't addressed. There are many statistics or information in scientific records, but they're taken from many disparate sources. The interpretations that docs make of this statistics are very important. Real-international information can be noisy, incomplete, and inconsistent, so directive data can also require preprocessing to fill in lacking values in the database. Although cardiovascular diseases have long been taken into consideration a supply of exceptional importance in the world, they have been declared to be the maximum preventable and treatable sicknesses.

Holistic and accurate remedy of the disorder is based totally on a well timed prognosis of the disorder. There is a robust need for an correct and methodical tool to identify high-danger sufferers and gather records through a timely evaluation of cardiac contamination. Different human beings can display extraordinary signs of cardiovascular disorder, that may consequently vary. However, they often encompass returned ache, jaw pain, neck ache, shortness of breath, chest ache, and pain in the fingers and shoulders. Many exclusive coronary heart situations, inclusive of heart failure, stroke, and coronary heart ailment. Cardiovascular specialists create and shop a terrific and large database of sufferers. It additionally opens up high-quality possibilities for extracting beneficial information from such datasets. A big amount of studies has been performed to decide the danger factors for cardiovascular diseases in exceptional patients, by specific researchers with extraordinary statistical processes and numerous data mining. Statistical analysis confirmed a number of heart danger factors, including smoking, age, blood pressure, diabetes, general ldl cholesterol and hypertension, records of heart disorder, pain, and shortage of workout. In order to prevent sufferers and sufferers who may be addicted to coronary heart disease, it's far vital to have know-how of coronary heart illnesses.

OBJECTIVE

Accurate evaluation is reduced when the high-quality of medical records is incomplete. In addition, one-of-a-kind areas exhibit specific traits of certain local illnesses, that could weaken the prediction of sickness outbreaks. However, the ones current works specifically treated statistics

structures. There aren't any proper techniques for managing semi-established and unstructured information. The proposed machine will account for both structured and unstructured records. The accuracy of the analysis is improved through the usage of system mastering algorithms.

LITERATURE SURVEY

Literature overview is the most critical step in the software improvement process. Before the device is developed, the time thing, the financial system and the energy of the enterprise have to be determined. When some of these situations are met, the next step is to determine which running device and language can be used to develop the tool. When programmers begin constructing a tool, they want plenty of external assist. This assist can be obtained from older software, from books, or from web sites. Before developing a gadget, the ones considerations are taken into account while the system is being developed. The most a part of the undertaking improvement is considering and fully studying all of the requirements vital for the improvement of the mission. For any motive, literature assessment is the maximum essential a part of the software program development procedure. Before developing the applicable tools and techniques, it's miles essential to decide the time issue and the interest, the want for sources, the labor force, the financial system and the power of the agency. With these items glad and fully understood, the next step is to determine the specification of the software program within the respective system, as to what form of running device is required for the purpose, and what is wanted to transport in all the

vital software. To the subsequent steps to develop associated equipment and sports.

Machine learning-based method for personalized and cost-effective detection of Alzheimer's disease

A machine learning approach has been developed to aid in the diagnosis of Alzheimer's disease, particularly in the early stages when it is difficult to detect. This approach is personalized and cost-effective, using locally weighted learning to create a classifier model tailored to each patient. It identifies the most informative or cost-effective biomarkers to diagnose patients, reducing the number and cost of biomarkers needed to obtain a definitive diagnosis. The method has been tested using ADNI data and has shown promise in differentiating between AD patients and controls, as well as predicting which patients with mild cognitive impairment will progress to AD within a year. This approach could potentially be useful in a clinical setting to improve the personalized and efficient detection of Alzheimer's disease.

Effect of Meteorological Conditions on Occurrence of Hand, Foot and Mouth Disease in Wuwei City, Northwestern China

The aim of this article is to establish a systematic basis for the prevention and prediction of the occurrence of hand, foot and mouth disease (HFMD) in Wuwei city, China by examining the impact of different meteorological conditions on the disease. The study collected data on disease and weather conditions from 2008 to 2010 and performed correlation analysis, multiple regression, and exponential curve fitting. The results showed that HFMD occurred in Wuwei city throughout the year but had significant seasonal peaks, with a higher incidence in April to July and another peak in September to October. The average annual incidence was 47.62 per 100,000 people. The study found that different meteorological factors had varying effects on the disease in the four districts of Wuwei

city, including temperature, humidity, atmospheric pressure, precipitation, and evaporative potential. The study also found that summer and autumn were important seasons for disease prevention and control. The results of multiple linear regression showed that relative humidity and atmospheric pressure were the main factors in Liangzhou district, average temperature in Gulang county, and atmospheric pressure in Tianzhu county. In Minqin county, there was an exponential relationship between disease incidence and the average number of hours of light. In conclusion, the study shows that weather conditions have a significant impact on the incidence of HFMD in Wuwei city, and different meteorological factors have varying effects on the disease in different regions.

Developing an Index for Detection and Identification of Disease Stages

The study aimed to create a spectral disease index (SDI) for identifying wheat leaf rust disease levels based on spectral data, which is not commonly used for this purpose. The researchers measured reflectance spectra of infected leaves with different levels of disease severity and developed pure spectra of disease symptoms. They then created a function to determine the sensitivity of disease symptoms and found that the reflection spectra with the highest sensitivity were at 675 and 775 nm. Finally, the SDI was created using the normalized difference in disease severity and the ratio ρ_{675}/ρ_{775} . This approach has potential for improving the detection of plant diseases in precision agriculture.

Quantized Analysis for Heart Valve Disease based on Cardiac Sound Characteristic Waveform Method

A new method for diagnosing heart valve disease is proposed, called the four clinical heart valve sound analysis, which uses a BIOPAC data acquisition system to collect heart wave signals. The signals are then transferred to a computer network for storage, analysis, and real-time display. An

analytical model is used to extract features, and diagnostic parameters are calculated to differentiate between normal heart sounds and diseased valves, with an easy-to-understand image representation. A case study is presented to demonstrate the effectiveness of the proposed method for tracking the progression of heart valve disease before and after surgery.

Non-Linear Analysis of Heart Rate Variability in Patients with Coronary Heart Disease

The article discusses the use of non-linear indicators of cardiac variability to evaluate patients with coronary heart disease compared to healthy individuals. Three methods were used: Hurst exponent, infinite fluctuation analysis, and approximate entropy. DFA was used to measure the fractal correlation properties of long-range cardiac variability, while approximate entropy measured the fluctuation of a time series. The study found that patients with IHD had lower Hurst index and approximate entropy compared to healthy controls during exercise testing. The results suggest that non-linear indicators of cardiac variability can provide important clinical and prognostic information for patients with coronary heart disease.

EXISTING SYSTEM

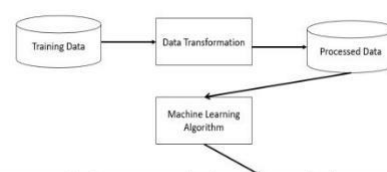
The pre-current gadget runs on deep knowledge and data mining assets. System modules create a complete document byway of implementing a powerful prediction set of rules. The essential objectives of the modern-day device are to examine and take a look at the previous patient who has the sickness and the brand new ailment of the affected person, and to decide the destiny cases of heart sickness in any affected person. For the above instance, we will achieve the intention of growing a gadget with better accuracy for estimating heart attack percentage in a new affected person.

A proposed version for a heart attack prediction system became designed the usage of an set of rules and a deep getting to know approach. But while using all the present structures the accuracy is too low.

PROPOSED SYSTEM

This reason is given as a machine that suggests whether or not sufferers have coronary heart ailment or not based totally on their traits. This proposed machine will try to use this statistics to create a model that tries to expect (study the statistics and examine the information) whether or not the patient has this sickness. In this proposed gadget, use a random (classification) set of rules. It implements a Random Forest set of rules to acquire correct outcomes. Finally, examine the effects by means of model comparisons and confusion matrix. The information we've within the numerous data systems should be categorized according to the traits of the affected person's coronary heart. Based on the availability of records, we want to create a version that predicts the patient population using the Random Forest set of rules. First, we need to import the dataset. Read the dataset, the statistics must comprise diverse variables together with age, gender, sex, cp (chest ache), top, target. The records must be tested to verify the data. Make a time variable and also build a version for Forest Forest. Here we use the sigmoid function, which enables within the graphical illustration of categorised information. When the use of Random Forest, the accuracy degree increases.

ARCHITECTURE DIAGRAM



ALGORITHMS:

LOGISTICS REGRESSION

SVM (SUPPORT VECTOR MACHINE

MODULES

- Data Collection Module
- Preparing the data Module
- Training a model
- Disease prediction Module

Data Collection Module

Collecting past data is a crucial step in machine learning, regardless of whether it comes in the form of raw data from Excel, Access, text, or other sources. This step lays the foundation for future learning and prediction. The more diverse, abundant, and relevant data that is available, the higher the accuracy and effectiveness of machine learning models can be expected to be.

Preparing the data Module

Before starting any analytical process, it is important to ensure that the quality of the data being used is good. This includes checking for missing data and addressing any issues that may arise. Exploratory analysis can be helpful in uncovering nuances in the data, which can improve the overall quality of the analysis. Ultimately, the quality of the data will have a significant impact on the accuracy and usefulness of the final results.

Training a model

In this step, the focus is on selecting the most appropriate algorithm and creating a model to represent the data. The cleaned data is divided into two parts - training and testing, with the ratio depending on the

specific conditions. The first part, known as the training data, is used to develop the model. The second part is used for reference or testing the accuracy of the model.

Disease prediction Module

It seems like you are describing a symptom checker or diagnostic tool that uses patient-reported symptoms to predict the likelihood of heart disease. The tool would ask the patient specific questions about their symptoms and use an algorithm or model to analyze the responses and provide a prediction about the likelihood of heart disease.

SYSTEM DESIGN AND TESTING PLAN

INPUT DESIGN

The input process is a crucial aspect of a data system that connects it with the user. It involves developing a specification and a method for preparing data in a way that can be easily used. This can be achieved by either having a computer read data from a written or printed script, or by having individuals input data through keyboards or other input methods. Input planning is important in order to control the amount of data required, reduce errors, prevent delays, avoid unnecessary steps, and keep the process simple. Additionally, login procedures should be designed to ensure security and protect user privacy.

The committee's enter changed into as follows:

- What records must be furnished for enter?
- How is the facts organized or encoded?
- Alternate box to help employees input information.
- Methods of getting ready enter validation and taking moves on mistakes.

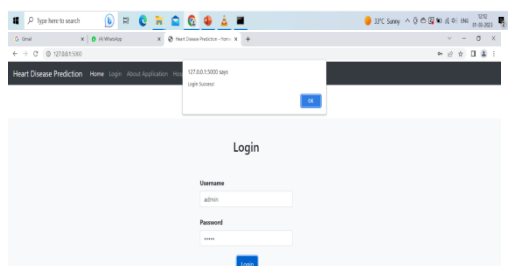
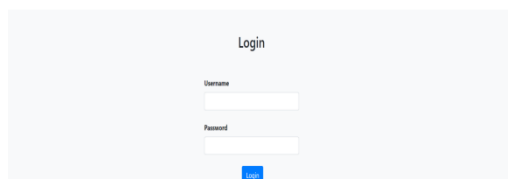
OUTPUT DESIGN

The quality of a system is determined by whether it meets the requirements of the end user and presents information clearly. Outputs are the results of a process that are communicated to users and other systems. The output plan determines how data is moved for immediate use and for printed output. It is the primary and immediate source of information for the user. A well-designed output system can improve the efficiency and intelligence of the information system, helping the user make informed decisions. The output design of the information system should perform one or more of the following functions.

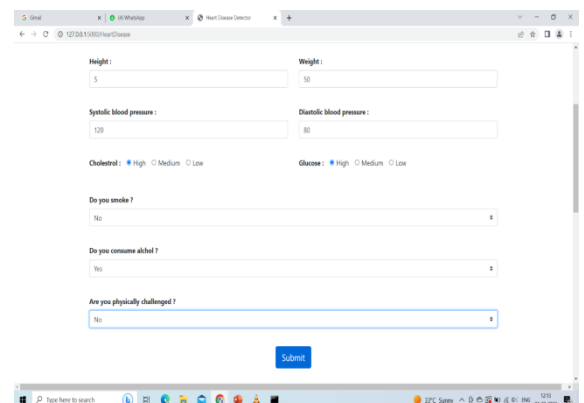
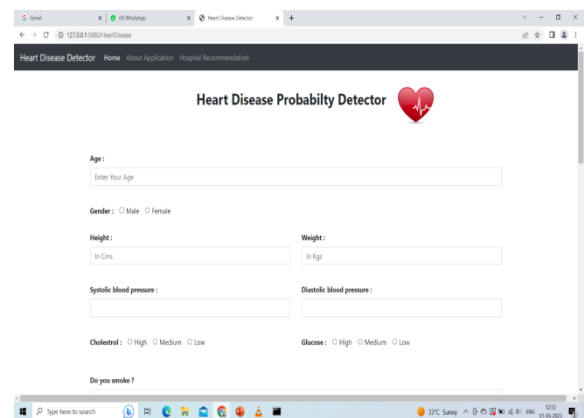
- Communicate records approximately past activities, present day popularity or forecast
- The destiny
- Essential activities, opportunities, questions or reminders.
- Lead the action.
- Confirm movement.

RESULT

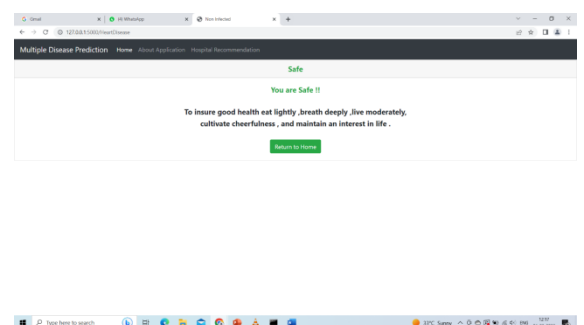
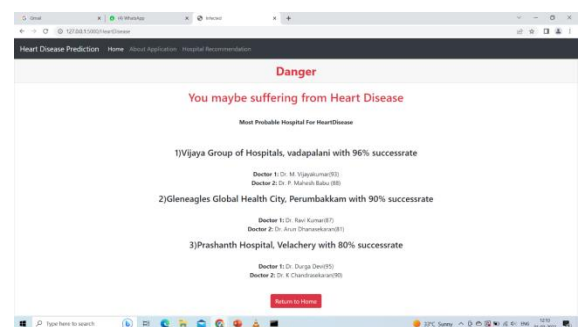
Login page:



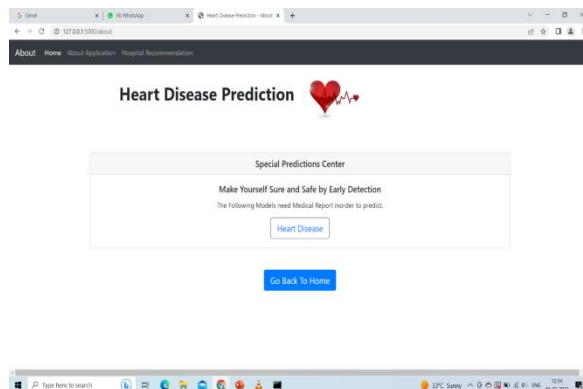
Home page:



Result page:



About page:



CONCLUSION

In this text, we advise an approach to responding to medication requests to help prescribe medication. We consciousness on how to get and organize responses in incomplete records and to gain personalization. To deal with incomplete and noisy information, we allow each precise and closest suits within the answers to the question. We additionally introduce an intuitive technique to offering solutions to users, which facilitates users recognize the numerical outcomes and perhaps sharpen their questions.

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