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Predicting Heart Disease At Early Stages

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OUTLINE

ABSTRACT

- Machine learning is an application of Artificial Intelligence where we give machines access to data and let them use that data to learn for themselves.
- Cardiovascular Diseases are a leading cause of deaths around the world and hence early detection is key.
- Machine learning algorithms have been applied to various medical data-sets for early detection and analysis.

INTRODUCTION

- Heart disease is any disorder that affects the heart which is caused by smoking, high blood pressure, high cholesterol, unhealthy diet, lack of exercise, and obesity.
- The diagnosis of heart disease is a challenging task,so an automated system will be useful for the physician to diagnose the patients efficiently.
- The diagnosis of heart disease is usually based on signs, symptoms and physical examination of the patient. There are several factors that increase the risk of heart disease, such as smoking habit, body cholesterol level, family history of heart disease, obesity, high blood pressure, and lack of physical exercise.

OBJECTIVE

- The system checks whether the patient is diagnosed with any cardiovascular heart diseases based on their medical attributes such as gender, age, chest pain,etc.
- Early detection reduces suffering and prevents complications.

SCOPE

- It will help in early prediction of the heart disease.
- It will be useful for the physician to diagnose the patients efficiently.
- it will be useful to the people because they can track their health issues by using this system.

PROBLEM DEFINITION

- Cardiovascular diseases(CVD) are the leading cause of death in men and women,and people of most racial and ethnic groups,globally.
- The annual number of deaths from CVD in India is projected to rise from 2.26 million (1990) to 4.77 million (2020).
- Thus,it is important to detect CVD as early as possible so that management with counselling and medicine can begin and control and reduce the chances for these diseases to be fatal for the patient.

LITERATURE SURVEY

1)Predicting Heart Disease at Early Stages using Machine Learning
2)Heart Disease Identification Method Using Machine Learning Classification in E-Healthcare
3)Early and Accurate Prediction of Heart Disease Using Machine Learning Model
4) Design and Implementation of Heart Disease Prediction using Machine Learning
5)Machine learning based heart disease prediction system

Predicting Heart Disease at Early Stages Using Machine Learning

- PROBLEM STATEMENT
  Heart disease can be managed effectively with a combination of lifestyle changes, medicine and in some cases, surgery.The overall objective of this work will be to predict accurately with few tests and attributes the presence of heart disease.It mainly helps the medical practitioners to make efficient decisions way based on the given parameters.
- TECHNOLOGY USED
  ANN, DT, NB, SVM
- ADVANTAGES
  Efficiency,accuracy,cost effective

Heart Disease Identification Method Using Machine Learning Classification in E-Healthcare

- PROBLEM STATEMENT
  Medical practitioners conduct different surveys on heart diseases and gather information of heart patients, their symptoms and disease progression.
- TECHNOLOGY USED
  Support vector machine, Logistic regression, Naïve bays, and Decision tree.
- ADVANTAGES
  Increase the classification accuracy,reduce the execution time of classification system.
- DISADVANTAGES
  Costly

Early and Accurate Prediction of Heart Disease Using Machine Learning Model

- PROBLEM STATEMENT
  The main objective is to develop a heart prediction system using certain machine learning algorithms.
- TECHNOLOGY USED
  Random forest,logistic regression,KNN,Decision tree.
- ADVANTAGES
  Extract hidden knowledge associated with diseases from a heart data set,accuracy.
- DISADVANTAGES
  Time consuming

Design and Implementation of Heart Disease Prediction Using Machine Learning

- PROBLEM STATEMENT
  System can be trained with a set of datasets using specific algorithm of machine learning and then can be used to predict the possibility of having the disease.
- TECHNOLOGY USED
  Logistic regression, decision tree, random forest, support vector machine(svm)gradient boost, naive bayes.
- ADVANTAGES
  Efficiency,accuracy

Machine learning based heart disease prediction system

- PROBLEM STATEMENT
  In the previous models used,the practical use of data collected from previous records is time consuming. Low accuracy rate.So ,to overcome this Random forest algorithm is implemented in order to achieve accurate results in less time.
- TECHNOLOGY USED
  RF,DT
- ADVANTAGES
  Efficiency,accuracy,less time consuming

Consolidated Table

PAPER .	PROBLEM STATEMENT	ALGORITHM	FINDINGS
Predicting Heart Disease at Early Stages using Machine Learning	to predict accurately with few tests and attributes the presence of heart disease	ANN ,DT ,NB ,SVM .	NB, DT and SVM has the highest accuracy
Heart Disease Identification Method Using Machine Learning Classification in E-Healthcare	Information of heart patients, their symptoms and disease progress are collected	SVM ,LR ,NB ,DT	The proposed system (FCMIM-SVM) has higher accuracy than previous model

Consolidated Table

Early and Accurate Prediction of Heart Disease using Machine Learning	To develop a heart prediction system using certain machine learning algoritm	RF ,LR ,KNN ,DT	NB, DT and SVM has the highest accuracy
Design and Implementation possibility of Disease Prediction using Machine Learning	To predict the symptoms of heart disease	LR ,DT ,RF ,SVM NB	Algorithm gives the nearby reliable output based on the input provided by the user

Consolidated Table

Machine learning based heart disease prediction system	To develop a heart prediction system that gives outputs at low time	RF ,DT	Random Forest is an efficient algorithm

Table: Consolidated table

REQUIREMENT SPECIFICATION

- EXTERNAL INTERFACE REQUIREMENT
  This system will provide the ability for patients to access this app by registering with their username and password.
  The admin of this app can manage their users.They can view patients details and also does the maintanence work. The app also provide authentication to avoid unauthorized access.
- FUNCTIONAL REQUIREMENT
  - Administrator login Operation
    Admin can login and manage users.
  - User login Operation
    Patients can login into the app and can view and update their personal and health details.
  - Modify User Operation
    Admin can modify the details of patients and doctors if required.
  - Sign Out Operation
    After the use, the users can sign out from the app which helps to prevent other users from accessing the system.

PROPOSED SYSTEM AND DESIGN

- The user input is taken and based on a machine learning algorithm,namely logistic regression,the possibility of heart disease is predicted.In the report,the result along with the details of available doctors are displayed.
- Initially,dataset for the prediction system is obtained and preprocessed
- The data is then split into training dataset and testing dataset.Important attributes are then identified.
- Finally,Machine learning algorithms are then used to predict if a patient has heart disease.

FEASIBILITY STUDY

Feasibility study is the analysis that considers different factors of a project to determine the likelihood of the project succeeding.

- Technical feasibility
  Inspects whether the project can be built using the available tools and experts.It includes:
  - Hardware and Software components
  - Technical risks and contraints
- Operational feasibility
  It can be described as a measure of how well a solution will work or be accepted in an organization.
- Economic feasibility
  Economic Feasibility is the study that gives us an idea about whether our application development and deployment fits our budget.

DESIGN

- Architecture diagram
- Use case diagram
- Data flow diagram

ARCHITECTURE DIAGRAM

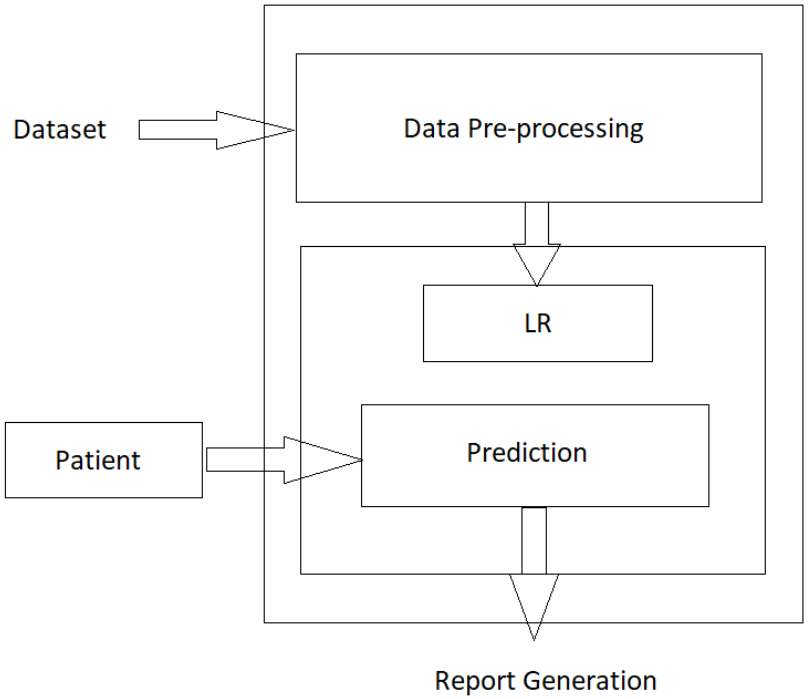


Figure: Architecture Design

USE CASE DIAGRAM

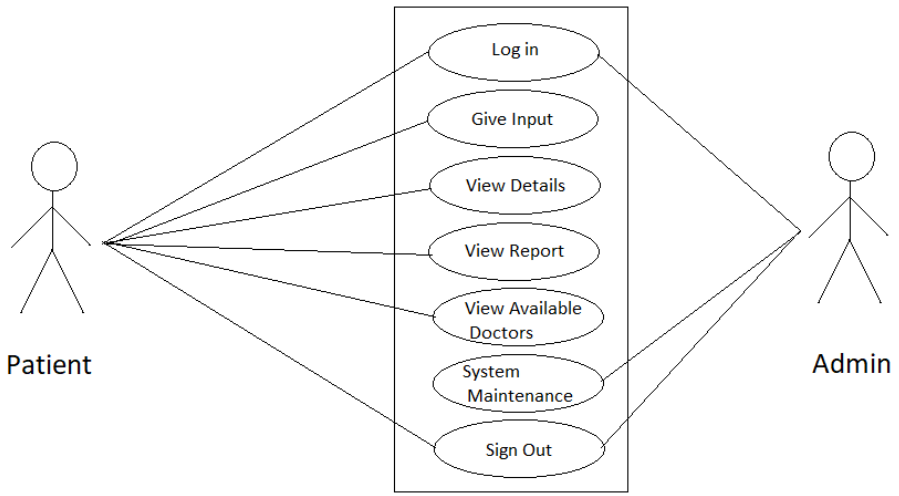
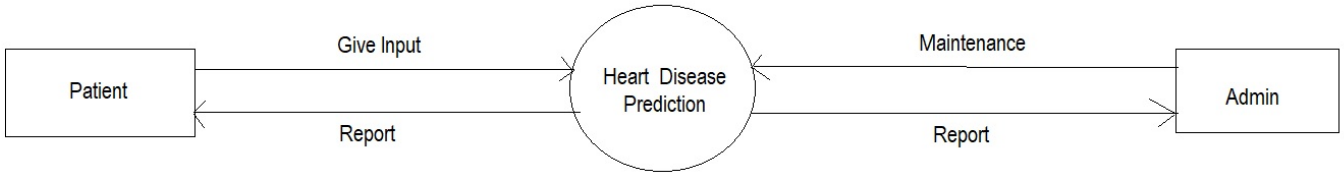
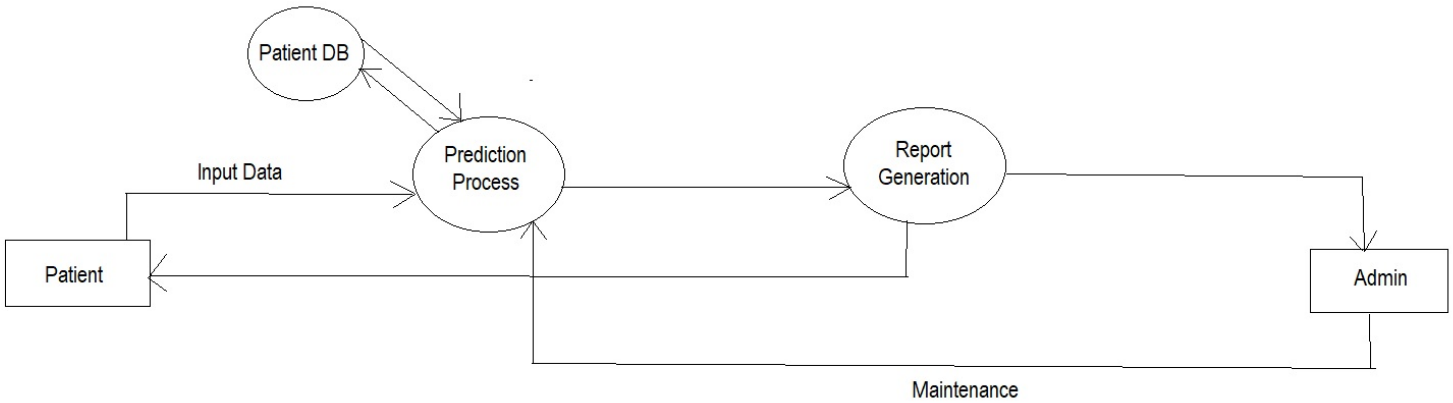


Figure: use case diagram for patient

DATA FLOW DIAGRAM



DATA FLOW DIAGRAM



DATA FLOW DIAGRAM

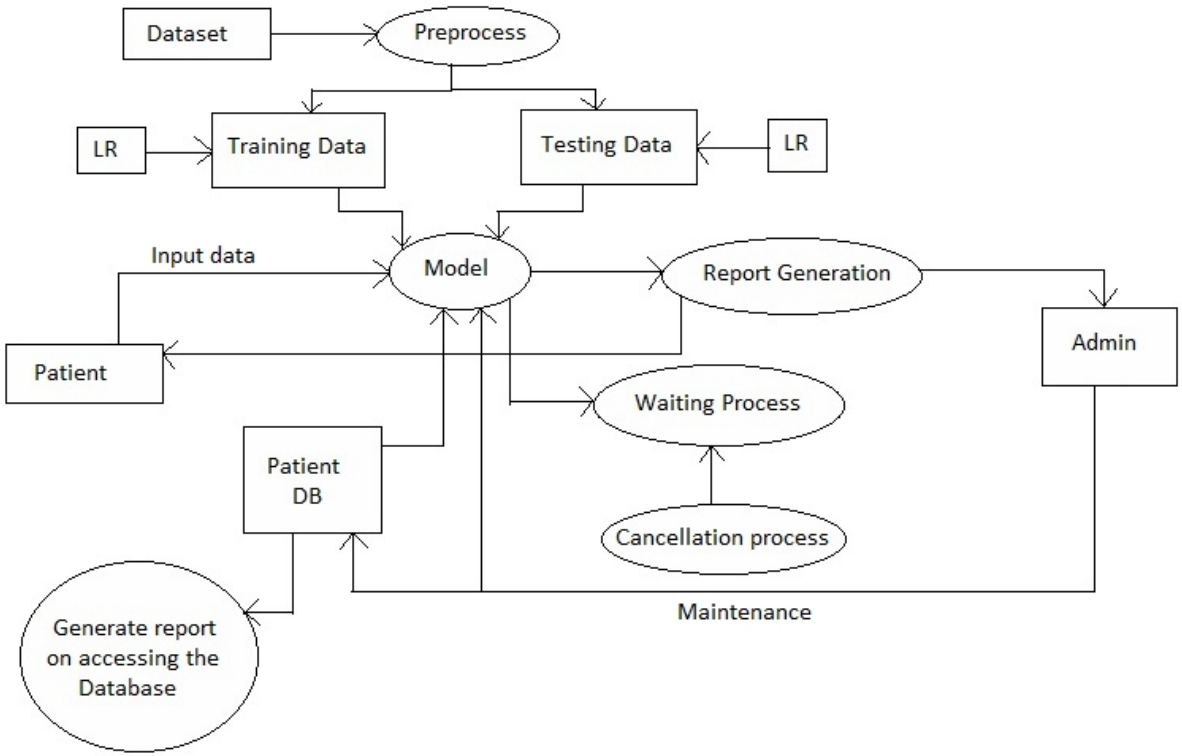


Figure: DFD Level 2

GANTT CHART


Blank diagram
Farisa kp | June 20, 2022
Problem Statement
May
Learning Survey
May
Learning phase
June
Design
June

CONCLUSION

- Heart disease is a critical issue in the present world. So we need an automated system to predict and detect heart disease at early stages.It will help patients to keep track of their health.
- Some expert automated system is discussed in this project along with certain algorithms like logistic regression,naive bayes, decision tree which help in achieving better results in predicting heart disease.

REFERENCES

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