HEALTH CARE SYSTEM USING MACHINE LEARNING

AMEER ARSHAD J, MANIKANDAN T, GANESH V

DR. K. JAYASAKTHI VELMURUGAN

ASSOCIATE PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE

JEPPIAAR ENGINEERING COLLEGE.

ABSTRACT

we proposed has checking each and every patient heart disease by using naive Bayes classification in machine learning. so, we can be taken up the results of how much percentage for each and every patients and can be calculated in which stage the disease is currently for every patient as a positive information and negative information. Big data is more difficult to work with it by using the most relational database management systems, desktop statistics and visualization packages. So, we can use the machine learning concept for this system.

The proposed shows that the machine learning processing model is starts from the data mining perspective. By using classifiers, we are processing heart percentage and values in which they are showing as a confusion matrix. We have proposed a new classification scheme in which they can be effectively improves all of the classification performance in the situation that

Approximate coefficient and represented.By implementing these algorithms is used and the health care data which predicts the patient whether they are having heart disease or not.

even the training dataset are available. Stent diagnosis of heart disease. Furthermore, the resulting model has a high specificity rate in which these makes it a handy tool for junior cardiologists to screen out every patients who have a high probability of having the disease and they can be transfer those patients to senior cardiologists for further analysis.

INTRODUCTION

The heart is one of the major organs of the human body. It pumps blood through the blood vessels of the circulatory system. The circulatory system is extremely important because it will transports blood, oxygen and other materials to the different organs of the body. Heart plays the most crucial role in circulatory system. If the heart does not function properly then it will lead to serious health conditions including death.

The Random Forest algorithm tries to solve the problem, by using the tree representation. Each internal node of the tree corresponds to an attribute, and each leaf node corresponds to a class label.It creates a forest of trees where each tree is formed by a random selection of the features from the total features. Here, we can vary the number of trees that will be used to predict the class. We can also able to implementing the support vector machine to classify the datasets based on the class label. The support vector machine works on kernel and uses hyper plane to the group datasets.The logistic regression is also known as the sigmoid function which helps in the easy representation in graphs. It also provides high accuracy. In this algorithm first the data should be imported and then trained. By using equation the logistic regression algorithm the training data estimate the best and

MACHINE LEARNING

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from the experience without being explicitly programmed. Machine learning focuses on the development of the computer programs that can access data and use it to learn for themselves. The process of learning begins with the observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers to learn automatically without human intervention or assistance and to adjust actions accordingly.

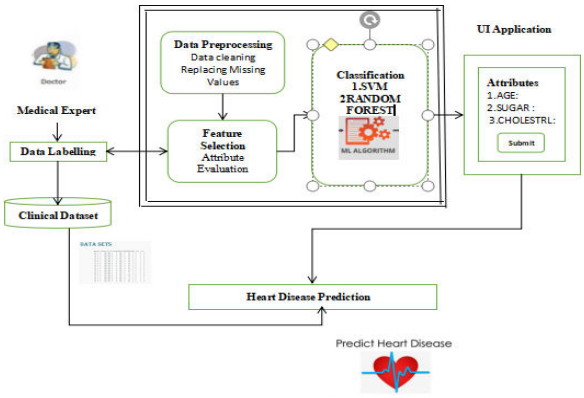
Steps Involved in the Machine Learning

- ✓ Defining aProblem
- ✓ PreparingData
- ✓ EvaluatingAlgorithms
- ✓ ImprovingResults
- ✓ PresentingResults

LITERATURE SURVEY

1. Based on Prediction of Heart Disease Using Machine Learning Algorithms based on the Naive Bayes and Decision Treetechnique
2. Based on Efficient heart disease prediction system Using Classification rules generated by the Decision treealgorithm
3. Based on Effective heart disease prediction using hybrid machine learning techniques combining the characteristics of Random Forest (RF) and Linear Method(LM).
4. Based on Optimized Stacked SVM based Expert systemfortheeffectivepredictionofHeartFailure using two models linear regularized L1 and L2 SVM.
5. Based on Automated Prediction of Heart Disease by Using the Spare DiscriminantAnalysis.
6. Non-Laboratory Based Risk Factors for Automated Heart Disease Disease Detection Model isgenerated.

SYSTEM MODEL



The above system model consists different phases : Data Collection, Data Preprocessing, Classification, Feature Specification, Application Attributes, Clinical Dataset. After collection of data , data preprocessing is done. In Data Preprocessing, the data is cleaned , integrated, transformed and then reduced. With the aid of UI applications, the features of the reduced data are selected and the corresponding attributes are evaluated. The result of the Feature Selection and the labelled data form the Clinical Dataset which finally helps in prediction of the heart disease.

DATA COLLECTION

In this phase the data is collected to analyze the best proposed method. Datasets are used in our research for identifying the performance of proposed methods.

Age: displays the age of the individual.

Sex: displays the gender of the individual

Chest-pain type: displays the type of chest-pain experienced by the individual

Resting Blood Pressure: displays the resting blood pressure value of

anindividual in mmHg (unit)

Serum Cholestrol: displays the serum cholesterol in mg/dl (unit)

Fasting Blood Sugar: compares the fasting blood sugar value of an individual with 120mg/dl.

Resting ECG : displays resting electrocardiographic results

Max heart rate achieved : displays the max heart rate achieved by an individual.

DATA PREPROCESSING

It is a technique that is used to convert the raw data into a clean data set. In other words, whenever the data is gathered from different sources it is collected in raw format which is not feasible for the analysis.

Data goes through a series of steps during preprocessing:

DATA CLEANING: Data is cleansed through processes such as filling in missing values, smoothing the noisy data, or resolving the inconsistencies in the data.

DATA INTEGRATION: Data with different representations are put together and conflicts within the data areresolved.

DATA TRANSFORMATION: Data is normalized, aggregated and generalized.

DATA REDUCTION: This step aims to present a reduced representation of the data

Here the raw data in the heart disease data is cleaned and the metadata is appending to it by removing the things which are converted to the integer. So, the data is easy to train. Hear all the data. In this pre-processing, we first load the metadata into this and then this metadata will be attached to the data and replace the converted data with metadata. Then this data will be moved further and remove the unwanted data in the list and it will divide the data into the train and the test data For this splitting of the data into train and test we need to import train_test_split which in the scikit-learn this will help the pre-processed data to split the data into train and test according to the given weight given in the code. The division of the test and train is done in 0.2 and 0.8 that is 20 and 80 percent respectively.Here SVM is used for these process.

CLASSIFICATION: Classification is a classic Machine learning technique based on machine learning. Basically classification is used to classify each item in a set of data into one of predefined set of classes or groups. Classification method makes use of mathematical techniques such as decision trees, linear programming, neural network and statistics.

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MODEL EVALUATION

The machine learning algorithm is applied for the testing part and to get the accuracy of the model.

TRAINING

The training data set in Machine Learning is the actual dataset used to train the model for performing various actions.This is the actual data the ongoing development process models learn with various API and algorithm to train the machine to work automatically.

TESTING

It uses patterns identified by machine learning algorithms to predict the machine recognizes patterns in the data, the cross-validation data is used to ensure better accuracy and efficiency of the algorithm used to train the machine, and the test data is used to see how well the machine can predict based on its training.

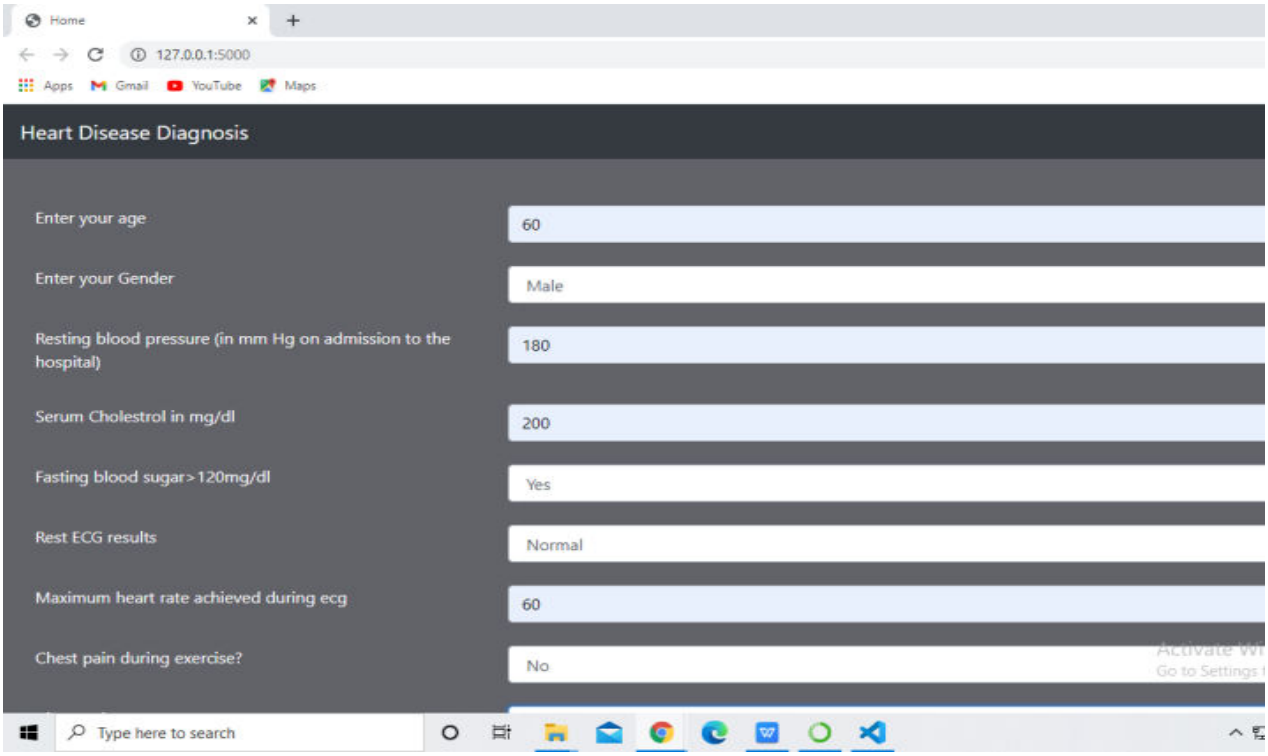
APPLICATION MODULES

This module is based on the Graphical User Interface where web page is created usingHTML/CSS.

PREDICTION

The prediction as it name implied is one of a Machine learning techniques logistic regression that discovers relationship between independent
variables and relationship between dependent and independent variables.It
will predict the final outcome based on training and testing of datasets

RESULT


Home
127.0.0.1:5000
Apps
Gmail
YouTube
Maps
Heart Disease Diagnosis
Enter your age
60
Enter your Gender
Male
Resting blood pressure (in mm Hg on admission to the hospital)
180
Serum Cholestrol in mg/dl
200
Fasting blood sugar>120mg/dl
Yes
Rest ECG results
Normal
Maximum heart rate achieved during ecg
60
Chest pain during exercise?
No
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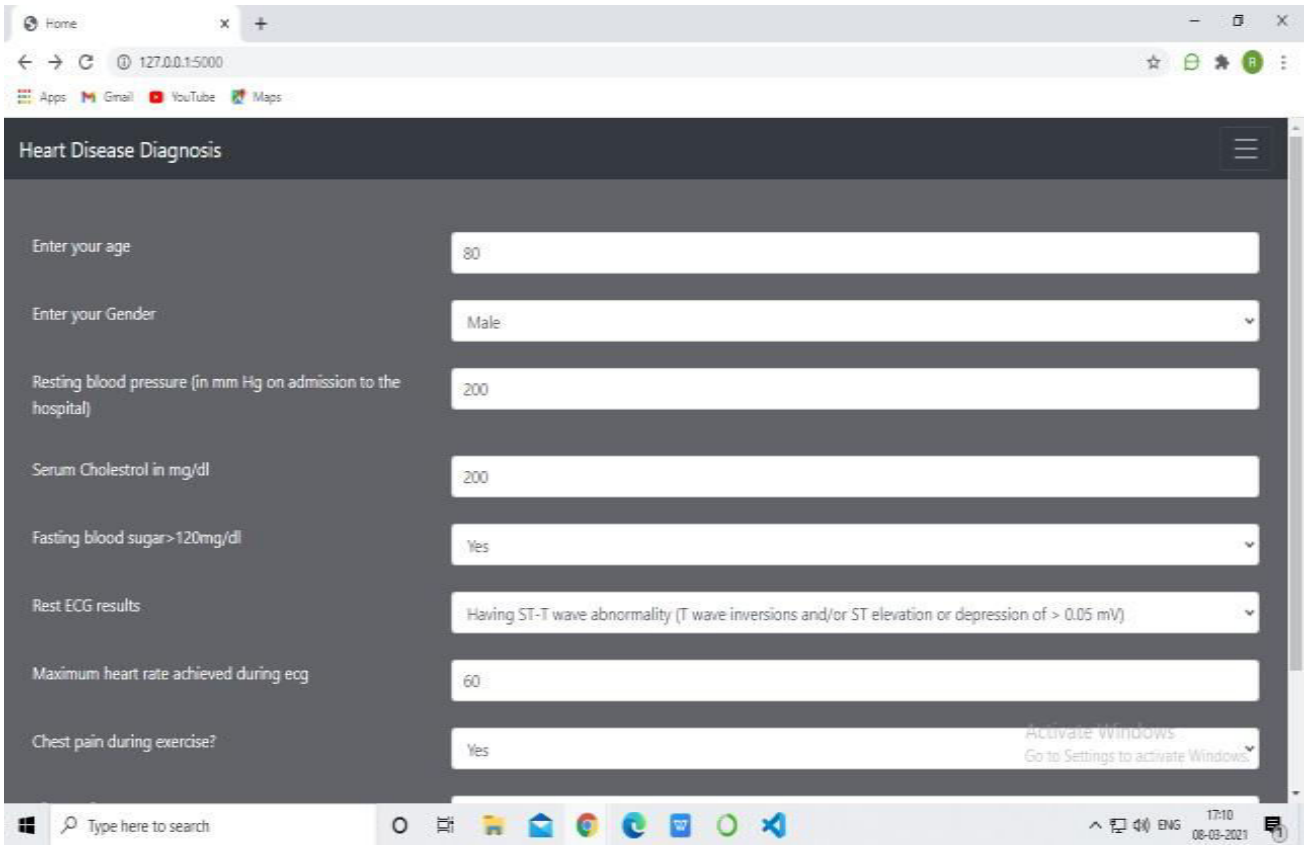
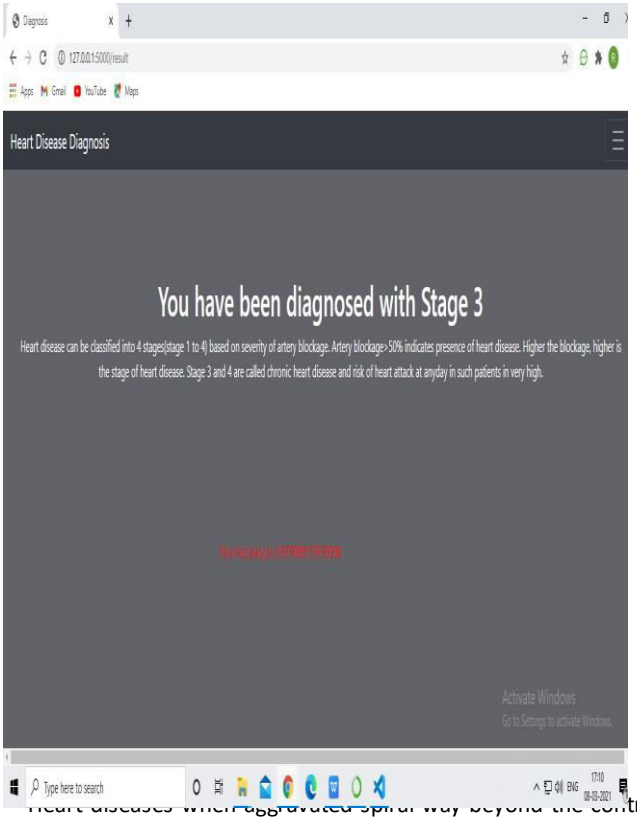

Home
127.0.0.1:5000
Apps
Gmail
YouTube
Maps
Heart Disease Diagnosis
Enter your age
80
Enter your Gender
Male
Resting blood pressure (in mm Hg on admission to the hospital)
200
Serum Cholestrol in mg/dl
200
Fasting blood sugar>120mg/dl
Yes
Rest ECG results
Having ST-T wave abnormality (T wave inversions and/or ST elevation or depression of > 0.05 mV)
Maximum heart rate achieved during ecg
60
Chest pain during exercise?
Yes
Type here to search



Heart diseases when aggravated spiral way beyond the control. Heart diseases are complicated and takes away lots of lives every year .When the early symptoms of heart diseases are ignored, the patient might end up with drastic consequences in a short span of time. Sedentary lifestyle and excessive stress in today's world have worsened the current situation. If the disease is detected in the early stage then it can be kept under control. However, it is always advisable to take exercise daily and kindly discard unhealthy habits at the earliest itself.

In the above page, We have studied various classification algorithms that can be used for classification of heart disease databases and also we have seen different techniques in which it can be used for classification and even the accuracy obtained by them.

This investigation tells us about dissimilar technologies that are used for the dissimilar papers with the dissimilar count of the attributes with different accuracies depending on the tools for designed of execution.

FUTURE WORK

In future, An intelligent system may be developed in which it can be lead to the selection of proper treatment methods for a patient diagnosed with the heart disease. A lot of work has been done already for making this models that can predict whether a patient is likely to have heart disease or not. There are several treatment methods for a patient once diagnosed with a particular form of heartdisease.

Data mining can be of very good help in deciding the line of treatment to be followed by the extracting the knowledge from such suitable databases.

The accurateness of the structure can be further upgraded by creating the various combinations of the data mining techniques and by the parameter tuning also.

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