

HEART DISEASE AFTER COVID-19 PREDICTION USING MACHINE LEARNING

Project Reference No.: 45S_BE_3602

College : Amruta Institute of Engineering and Management Sciences, Bidadi
Branch : Department of Computer Science and Engineering
Guide(s) : Dr. M S Patel
Student(S) : Mr. Manu Shetgar
Ms. Sruthi
Ms. Preethi K P
Mr. Kirankumar

Introduction:

Human heart is the principal part of the human body. Basically, it regulates blood flow throughout our body. Any irregularity to heart can cause distress in other parts of body. Any sort of disturbance to normal functioning of the heart can be classified as a Heart disease. In today's contemporary world, heart disease is one of the primary reasons for occurrence of most deaths. Heart disease may occur due to unhealthy lifestyle, smoking, alcohol and high intake of fat which may cause hypertension. According to the World Health Organization more than 10 million die due to Heart diseases every single year around the world. A healthy lifestyle and earliest detection are only ways to prevent the heart related diseases.

Records of large set of medical data created by medical experts are available for analysing and extracting valuable knowledge from it. Data mining techniques are the means of extracting valuable and hidden information from the large amount of data available. Mostly the medical database consists of discrete information. Hence, decision making using discrete data becomes complex and tough task. Machine Learning (ML) which is subfield of data mining handles large scale well-formatted dataset efficiently. In the medical field, machine learning can be used for diagnosis, detection and prediction of various diseases.

Objectives:

1. A Machine Learning based framework is proposed to aid in the identification of heart diseases after COVID-19 and dealing with the escalation of cases using Machine Learning Models.
2. To detect and assess the presence of heart diseases in People based on ECG report.
3. Alert people if they are diagnosed with any heart disease.

Problem Identification:

From the literature, we concluded that the researcher had done a considerable amount of work for prediction of heart diseases. But, most of the work is focused on raw data without exploratory data analysis. Therefore, in this work, we have presented an EDA

with Hyper parameter tuning and calculated evaluation metrics using cross-validation and evaluated our tuned Machine learning classifier beyond accuracy. To extract valuable and hidden information we analysed the data in three different angles Heart disease frequency according to sex, Age vs. Max heart rate for heart disease, Heart disease frequency per chest pain type. To break the technology barrier and increase the accessibility to wider audience we have from scratch built the model in Google Colab as a notebook for easy access of information and the tool.

Methodology:

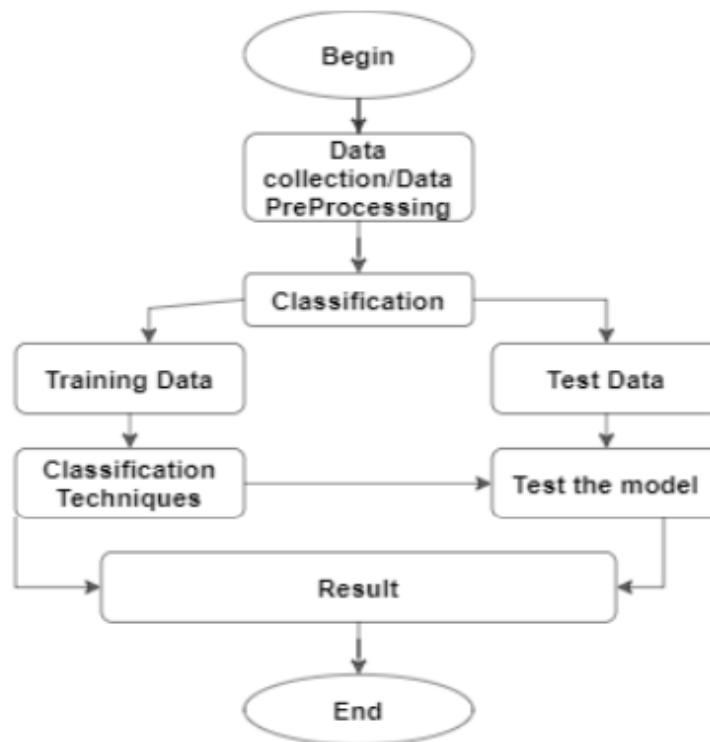


Fig. 1. Generic model predicting heart disease

During the Data collection and Data Pre-processing phase Exploratory data analysis is performed and to make the Data mining effective so that valuable information is extracted we analyse the data into three useful structures Heart disease frequency according to sex, Age vs. Max heart rate for heart disease, Heart disease frequency per chest pain type. The Data is then split into two parts training data and testing data, our model is fed the training data to train it effectively and the test data is used to test the model and check whether our expected output matches the predicted output.

Applications:

1. Can be implemented in remote places where workforce for healthcare is less.
2. Implemented in hospitals with high patients to bring down diagnosing time exponentially down.
3. Places where technology is a limitation as this tool could be run just from a Mobile browser as well.