# Heart Attack Prediction System

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**Abstract:** In today's modern world cardiovascular disease is the most lethal one. This disease assaults an individual right away that may make surprising ramifications for the human life. So diagnosing patients accurately on time is the most testing task for the medicinal crew. The coronary illness treatment is very high and not reasonable by the vast majority of the patients especially in India. The examination extension is to build up an early forecast treatment utilizing information mining advances. Nowadays every hospital keeps the periodical medical reports of cardiovascular patients through a few clinic management gadget to manage their health-care. The data mining techniques namely decision tree and random forest are used to analyze heart attack dataset where classification of more common symptoms related to heart attack is done using c4.5 decision tree algorithm, alongside, random forest is applied to boost the certainty of the classification result of heart attack prediction. In this system various data mining technologies are applied to make a proactive approach against failures in early predictions diagnosis of the disease. We proposed an automated system for medical diagnosis that would enhance medical care and reduce cost. Our intent is to provide a ubiquitous service that is both feasible, sustainable and which also make people to assess their risk for heart attack at that point of time or later.

**Keywords:** Storke prediction, Random forest algorithm, KNN, ANN, C4.5 algorithm.

## I. INTRODUCTION

Data mining has just settled as a novel field for investigating concealed examples in the colossal datasets. Medicinal science is another handle where enormous measure of information is created utilizing diverse clinical reports and other patient indications. Information mining can likewise be utilized vigorously for a similar reason in therapeutic datasets too. These investigated shrouded designs in therapeutic datasets can be utilized for clinical finding. In any case, therapeutic datasets are generally scattered, heterogeneous, and tremendous in nature. These datasets should be sorted out and coordinated with the clinic the executive's frameworks. Cardiovascular infections are one of the most elevated flying ailments of the advanced world1. As per world well being association about in excess of 12 million passing's happens around the world, consistently because of heart issues. It is additionally one of the deadly sicknesses in India which causes greatest losses. The analysis of this sickness is complicated procedure. It ought to be analyzed precisely and accurately. Because of confinement of the capability of the restorative specialists and their inaccessibility at specific spots put their patients at high hazard. Regularly, it is analyzed utilizing instinct of the restorative pro. It would be profoundly profitable if the strategies will be incorporated with the restorative data framework.

## II. RELATED WORK

**1] Abhishek Ta, "Heart Disease Prediction System Using Data Mining Techniques"**
In this study, the aim was to design a predictive model for heart disease detection using data mining techniques from tran thoracic echocardiography report dataset that is capable of enhancing the reliability of heart disease diagnosis using echocardiography.

**2] Aditya Methaila, Prince Kansal, "Early Heart Disease Prediction Using Data Mining Techniques"**
In this paper the focus is on using different algorithms and combinations of several target attributes for effective heart attack prediction using data mining. Decision Tree has outperformed with 99.62% accuracy by using 15 attributes. Also the accuracy of the Decision Tree and Bayesian Classification further improves after applying genetic algorithm to reduce the actual data size to get the optimal subset of attribute sufficient for heart disease prediction. Association classification technique Apriori algorithm, was along with a new algorithm MAFIA was used. Straight Apriori-based algorithms count all of the 2k subsets of each k-item set they discover, and thus do not scale for long item sets. They use "look a heads" to reduce the number of item sets to be counted. MAFIA is an improvement the item sets in the database are very long.

**3] S. Kiruthika Devi, S. Krishnapriya and Dristipona Kalita"Prediction of Heart Disease using Data Mining Techniques"**
The accuracy of the algorithms used in each technique can be enhanced by hybridizing or combining algorithms to a single algorithm which may not be accurate for weakly classified sets of data, and is expected to make quicker and more precise decisions.

**4] M. Lavanya, Mrs. P. M. Gomathi, "Prediction of Heart Disease using Classification Algorithms"**
Medical related information is huge in nature and it can be derived from different birthplaces which are not entirely applicable in feature. The research undertook an experience on application of varies data mining algorithm to predict the heart attacks and to compare the based method of prediction. The predictive accuracy determined by J48, REPTREE, Naive Bayes, neural networks, CART. The overall objective is to study the various data mining techniques available to predict the heart

**5] Hlaudi Daniel Masethe, Mosima Anna Masethe, "Prediction of Heart Disease using Classification Algorithms"**
The research undertook an experiment on application of various data mining algorithms to predict the heart attacks and to compare the best method of prediction. The research results do not presents a dramatic difference in the prediction when using different classification algorithms in data mining. The experiment can serve as an important tool for physicians to predict risky cases in the practice and advise accordingly. The model from the classification will be able to answer more complex queries in the prediction of heart attack diseases. The predictive accuracy determined by J48, REPTREE and SIMPLE CART algorithms suggests that parameters used are reliable indicators to predict the presence of heart diseases.

## III. PROPOSED ALGORITHM

In this paper, Data mining is the technique of finding previously unknown patterns and trends in databases and using that information to build predictive models. In this system using a android application user can uploads his/her health record in cloud storage. In cloud storage first user data is processed then training and testing data apply classification C4.5 algorithm to testing data and predict heart attack as shown in figure 1. The application of system studying and records mining techniques shows it provides better performance results. This app will expect the heart assault from the chest pain at an early stage and guide the person to take treatment early such as to get their ECG done as early as possible and get evaluated from a doctor to make diagnoses of heart attack.
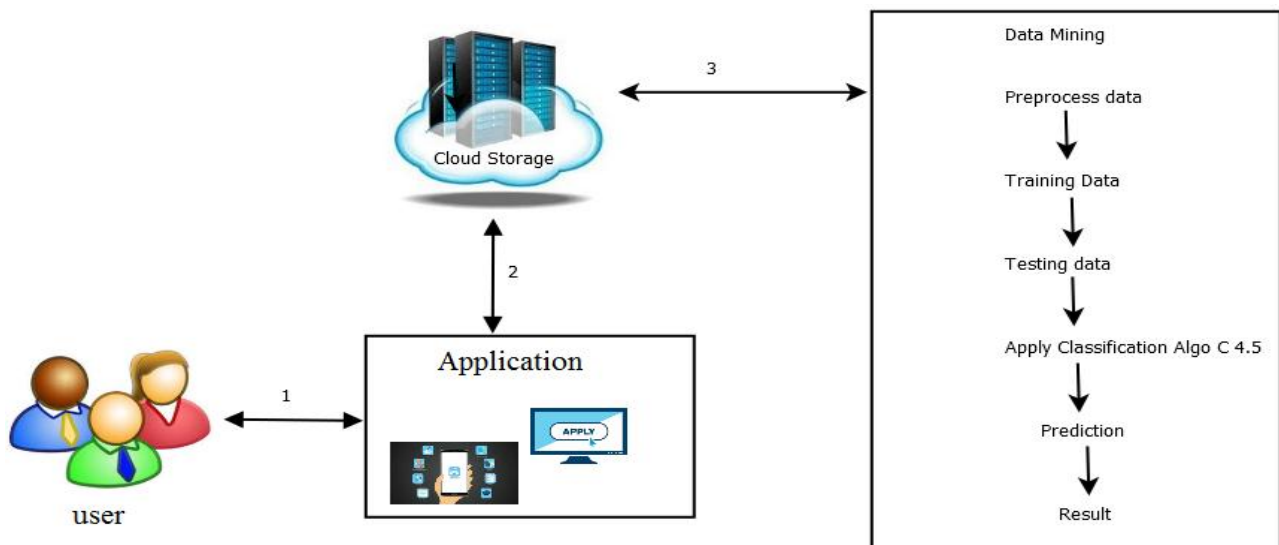
## IV. SYSTEM ARCHITECTURE



Fig. 1. System Architecture
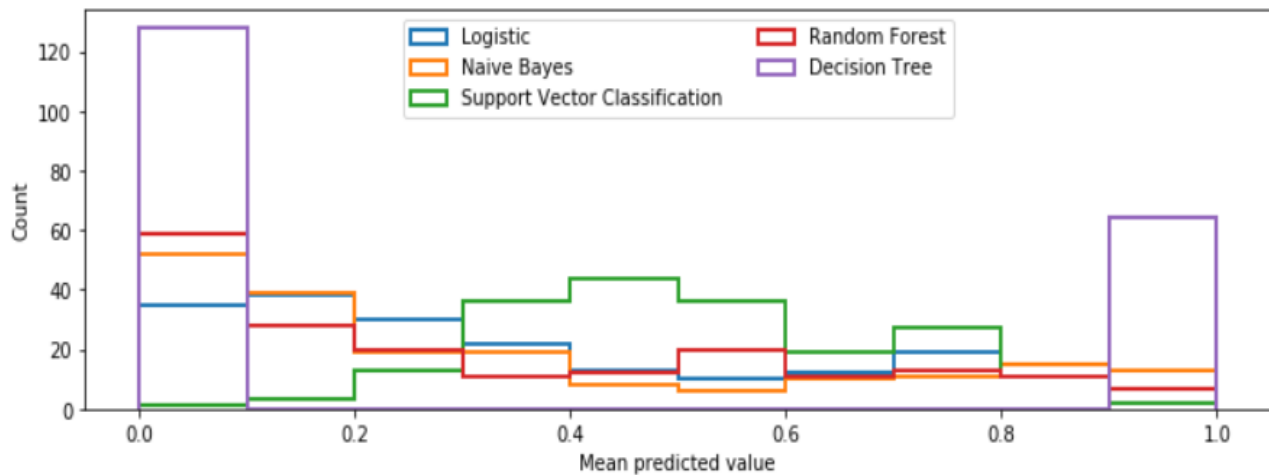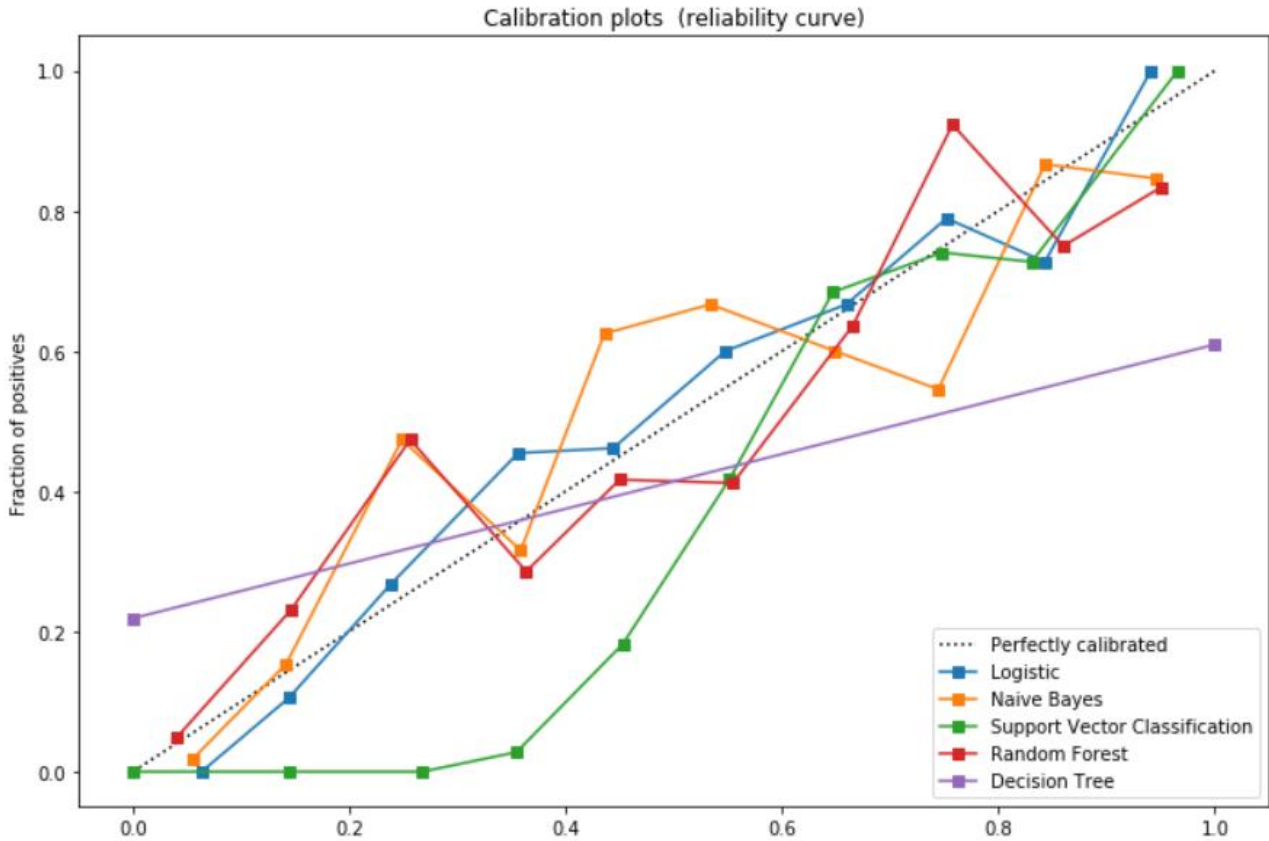
## V. SYSTEM REQUIREMENT

### A. Software Requirement
1) Operating System: Windows 7 or above
2) Programming Language: Python 3.7
3) IDE: Python IDLE

### B. Hardware Requirement
1) Processor: Pentium Processor Core 2 Duo or Higher
2) Hard Disk: 250 GB (min)
3) RAM: 1GB or higher
4) Processor Speed: 3.2 GHz or faster processor

## VI.      SIMULATION RESULTS



Calibration plots (reliability curve)

## VII.      CONCLUSION AND FUTURE WORK

The symptoms of heart disease are familiar for everyone but no one can predict when it may happen and also the prediction will not give any instance status i.e. normal or abnormal. Our research intention is to notify the patients that neither normal nor abnormal at its early stage. The purpose of statistics mining algorithms shows it better performance results among themselves. This app will expect the heart assault any obvious symptoms like chest pain and guide the person to take treatment as early as possible. In future along with heart attack prediction other life disease like cancer can also be included by adding few more parameters of the patient. In future genetic algorithm will be used in order to reduce the actual data size to get the optimal data subset of attribute sufficient for heart disease prediction. Prediction of the heart disease will be evaluated according to the result produced from it.

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