Heart Disease Prediction System

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Abstract- *Now a day, health diseases are increasing day by day due to living style. Especially, heart disease has become more common these days. This report gives the survey about different classification techniques used for predicting the risk level of each person based on Age, Heart Rate, Slope of peak, old peak, Thalassemia, Angina, Resting Pulse Rates, BP, Fasting and non-fasting sugar levels, cardiogram based, ECG readings, etc. In this Project, the classification-based data mining techniques are applied to healthcare data. Cleveland database is used to test and justify the performance of Decision Trees, Naïve Bayes and clustering algorithm.Cleveland database is UCI repository that contains some patient's disease data. Naïve Bayes is used for comparing parameters with the database and fetch the information which is proportionate with patient details. Decision tree separates the parameters which are responsible for heart disease. And then give the chances of heart disease i.e. high, average and poor. Clustering algorithm is used for clustering and it forms cluster of positive parameters. Accuracy of the risk level is high when we are using more number of attributes.*

Keywords- Heart Disease, Data Mining, Clustering, Naïve Bayes, Decision Tree.

I. INTRODUCTION

The important organ in blood circulatory system is heart. Heart plays an important role. There are many things which make problems to heart i.e. smoking, poor eating habit, high pulse, cholesterol and high blood pressure etc. Diagnosis of heart disease is the challenging thing to the doctors or the hospitals.Heart disease prediction system can help in diagnosing the heart disease during early stages with the help of data mining. Therefore, risk of heart system can be find out as early as possible. Prediction is done based on the current data that is provided by the patient. The huge amount of data from the hospital contains charts, image, text and numbers[3]. Here system is being developed using three different data mining techniques; Naive Bayes, Decision Tree, K-means. Different classification algorithms analyses the input dataset and accuracy is compared for analysis. Cleveland heart disease dataset with 13 parameters like Age, ECG, Slope of peak, old peak, Cardiogram based, Blood pressure, Fasting and Non-

Fasting Sugar levels, Resting pulse rates, Angina, Thalassemia, Heart Rate, Sex, Cholesterols, Thalach, etc. The data is stored on to our system. Naive Bayes will basically predict the output whether the patient will have chances of getting the heart disease or not.

In many cases, diagnosis is generally based on patient's current test results & doctor's experience. Thus, the diagnosis is a complex task that requires much experience & high skill.
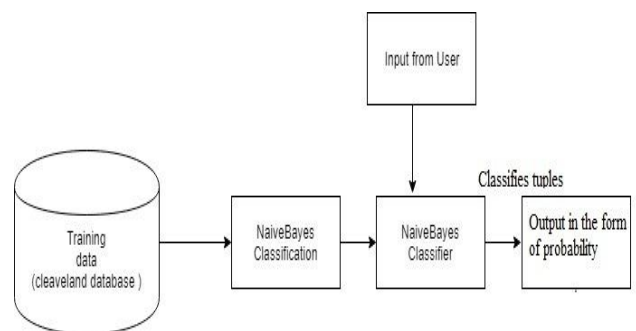
II. SYSTEM ARCHITECTURE

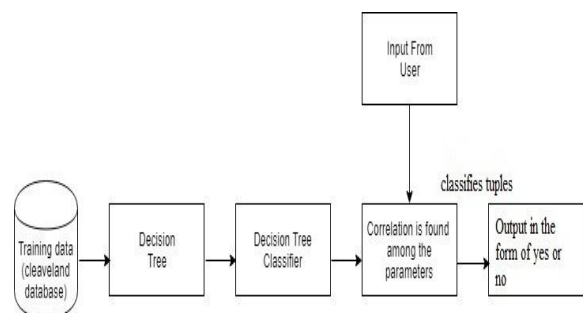Fig: System Architecture by Naïve Bayes

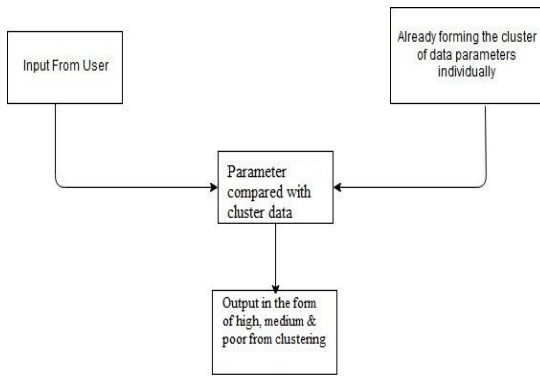Fig: System Architecture by Decision Tree
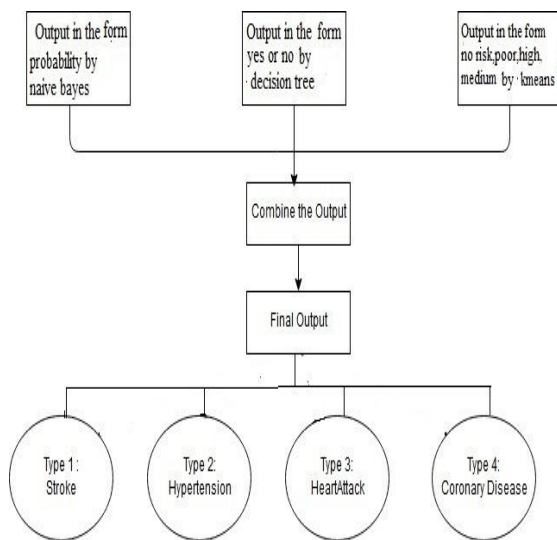
Fig: System Architecture by K-mean

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In this system we are implementing effective heart disease prediction system using K-means, Decision tree and Naive Bayes algorithm. We can provide the input as in manual form. After taking input from the patient/user the three data mining algorithms apply on that input that is K-means, Decision tree and Naive Bayes. From the database authentication is checked out. After accessing database, operation is performed and heart disease is produced in the types i.e. Type 1: Hypertension, Type2: Stroke, Type 3: Heart Disease and Type 4: Coronary Disease.

III. LITERATURE REVIEW

In [6] The John Gennari's CLASSIT conceptual clustering system achieved a 78.9%Accuracy on the Cleveland database.

In [5] author developed an intelligent Heart Disease Prediction System. This system is builds using Naïve Bayes Classification algorithm. Here the system is taking input as Cleveland database.Each attribute is used to predict the chances of heart disease. Here they conclude that the efficiency of heart disease can be improved by smoothing methodology and naïve basys.

In [7] this paper, they are implemented system to predict heart disease using three data mining techniques i.e. Naïve Bayes, Decision Tree and Neural Network. From results it has been seen that Neural Networks better than Decision trees & Naive Bayes.

In[3] In this paper intelligent heart disease prediction system is developed by naïve bayes, decision tree and neural network.They use hidden patterns and find relation between the parameters to predict the heart disease. It is web-based, user friendly and extensible.

In [9]this paper, they use decision tree algorithm to predict the heart disease.

IV. CONCLUSION

With our heart disease prediction system, we achieve more accuracy in prediction through the combination of Naive Bayes and Decision Tree from the analysis of heart disease causing parameters. The K-mean clustering algorithm helps in heart disease severity prediction by emphasizing on major attributes. System prediction capability can be improved by considering living style and eating habits.

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