Myocardial Infraction From Patient Using Machine Learning Algorithm

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Abstract- *Day by day the cases of heart diseases are increasing at a rapid rate and it's very Important and concerning to predict any such diseases beforehand.This diagnosis is a difficult task i.e. it should be Performed precisely and efficiently. The research paper mainly focuses on which patient is more likely to have a heart disease based on various medical attributes. We prepared a heart disease prediction system to predict whether the patient is likely to be diagnosed with a heart disease or not using the medical history of the patient. We used different algorithms of machine learning such as logistic regression, Random Forest and KNN to predict and classify the patient with heart disease. A quite Helpful approach was used to regulate how the model can be used to improve the accuracy of prediction of Heart Attack in any individual. The strength of the proposed model was quiet satisfying and was able to predict evidence of having a heart disease in a particular individual by using random forest, KNN and Logistic Regression which showed a good accuracy in comparison which is used prediction. So, a quiet significant amount of pressure has been lift off by using the given model in finding the probability of the classifier to correctly and accurately identify the heart disease and got 91% accuracy and also we added cardiologist hospital's recommendations.*

I. INTRODUCTION

Heart disease (HD) is the critical health issue and numerous people have been suffered by this disease around the world .The HD occurs with common symptoms of breath shortness, physical body weakness and, feet are swollen. Researchers try to come across an efficient technique for the detection of heart disease, as the current diagnosis techniques of heart disease are not much effective in early time identification due to several reasons, such as accuracy and execution time. The diagnosis and treatment of heart disease is extremely difficult when modern technology and medical experts are not available. The effective diagnosis and proper treatment can save the lives of many people. According to the European Society of Cardiology,26 million approximately people of HD were diagnosed and diagnosed 3.6 million annually. putationally difficult to analyze.Thus, to develop a non-invasive diagnosis system based on classifiers of machine learning to resolve these issues.

Expert decision system based on machine learning classifiers and the application of artificial fuzzy logic is effectively diagnosis the HD as a result, the ratio of death decrease. According to the World Health Organization, every year 12 million deaths occur worldwide due to Heart Disease. Heart disease is one of the biggest causes of morbidity and mortality among the population of the world. Prediction of cardiovascular disease is regarded as one of the most important subjects in the section of data analysis.

The load of cardiovascular disease is rapidly increasing all over the world from the past few years. Many researches have been conducted in attempt to pinpoint the most influential factors of heart disease as well as accurately predict the overall risk. Heart Disease is even highlighted as a silent killer which leads to the death of the person without obvious symptoms. The early diagnosis of heart disease plays a vital role in making decisions on lifestyle changes in high-risk patients and in turn reduces the complications. Machine learning proves to be effective in assisting in making decisions and predictions from the large quantity of data produced by the health care industry. This project aims to predict future Heart Disease by analyzing data of patients which classifies whether they have heart disease or not using machine-learning algorithm. Machine Learning techniques can be a boon in this regard. Even though heart disease can occur in different forms, there is a common set of core risk factors that influence whether someone will ultimately be at risk for heart disease or not. By collecting the data from various sources, classifying them under suitable headings & finally analysing to extract the desired data we can say that this technique can be very well adapted to do the prediction of heart disease.The advent of the World Wide Web and the rapid adoption of social media platforms (such as Facebook and Twitter) paved the way for information dissemination that has never been witnessed in the human history before.Besides other use cases, news outlets benefitted from the widespread use of social media platforms by providing updated news in near real time to its subscribers. The news media evolved fromFacebook referrals account for

70% of traffic to news websites. These social media platforms in their current state are extremely powerful and useful for their ability to allow users to discuss and share ideas and debate over issues such as democracy, education, and health. However, such platforms are also used with a negative perspective by certain entities commonly for monetary gain and in other cases for creating biased opinions, manipulating mindsets, and spreading satire or absurdity. The phenomenon is commonly known as fake news.There has been a rapid increase in the spread of fake news in the last decade, most prominently observed in the 2016 US elections. Such proliferation of sharing articles online that do not conform to facts has led to many problems not just limited to politics but covering various other domains such as sports, health, and also science. One such area affected by fake news is the financial markets, where a rumour can have disastrous consequences and may bring the market to a halt.

Our ability to take a decision relies mostly on the type of information we consume; our world view is shaped on the basis of information we digest. There is increasing evidence that consumers have reacted absurdly to news that later proved to be fake One recent case is the spread of novel corona virus, where fake reports spread over the Internet about the origin, nature, and behavior of the virus. The situation worsened as more people read about the fake contents online. Identifying such news online is a daunting task.

II. OBJECTIVE

The main objective of this research is to develop an Intelligent System using machine learning technique, namely, random forest, logistic regression and KNN. It is implemented as web-based application in this user answers.

The objective of heart disease prediction using machine learning is to develop an accurate model that can predict the likelihood of an individual developing heart disease based on their medical history, lifestyle, and other risk factors. Machine learning algorithms are used to analyze large amounts of data from various sources, including health records to identify patterns and risk factors that are associated with heart disease.

By using machine learning, healthcare providers can more accurately predict an individual's person's heart disease, which can help them take preventative measures to reduce their risk. This can include lifestyle changes, such as increasing physical activity, improving diet, or quitting smoking, as well as medication and other medical interventions. Ultimately, the goal of heart disease prediction using machine learning is to improve patient outcomes and reduce the overall burden of heart disease on individuals and society as a whole

III. MODULES OF HEART DISEASE

Step 1: Gathering Data.
Step 2: Preparing that Data.
Step 3: Choosing a Model.
Step 4: Training.
Step 5: Evaluation.
Step 6: Hyper parameter Tuning.
Step 7: Prediction.

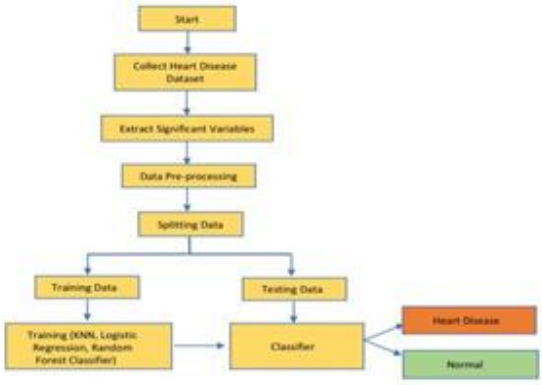
In this blog, we will discuss the workflow of a Machine learning project this includes all the steps required to build the proper machine learning project from scratch. We will also go over data pre-processing, data cleaning, feature exploration and feature engineering and show the impact that it has on Machine Learning Model Performance. We will also cover a couple of the pre-modelling steps that can help to improve the model performance. Python Libraries that would be need to achieve the task:

- Numpy
- Pandas
- Sci-kit Learn
- Matplotlib

THREE TYPES OF DATA

1. Numeric e.g. income,age
2. Categorical e.g. gender, nationality
3. Ordinal e.g. low/medium/high

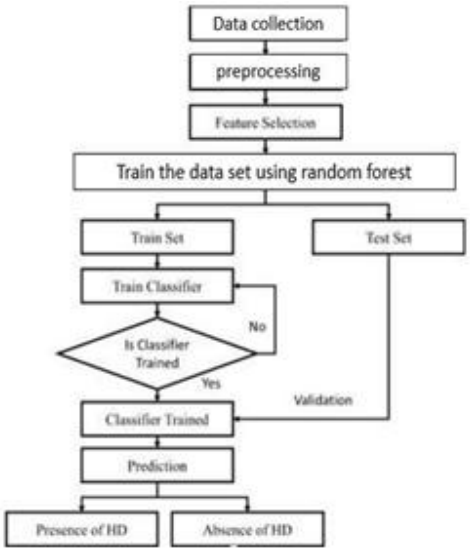
IV. ARCHITECTURE DIAGRAM



Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behavior. Artificial

intelligence systems are used to perform complex tasks in a way that is similar to how humans solve problems. This paper shows the analysis of various machine learning algorithms, the algorithms that are used in this paper are K nearest neighbors (KNN), Logistic Regression and Random Forest Classifiers which can be helpful for practitioners or medical analysts for accurately diagnose Heart Disease. This paperwork includes examining the journals, published paper and the data of cardiovascular disease of the recent times. Methodology gives a framework for the proposed model. The methodology is a process which includes steps that transform given data into recognized data patterns for the knowledge of the users. The proposed methodology (Figure 1.) includes steps, where first step is referred as the collection of the data than in second stage it extracts significant values than the 3rd is the preprocessing stage where we explore the data. Data preprocessing deals with the missing values, cleaning of data and normalization depending on algorithms used. After pre-processing of data, classifier is used to classify the pre-processed data the classifier used in the proposed model are KNN, Logistic Regression, Random Forest Classifier. Finally, the proposed model is undertaken, where we evaluated our model on the basis of accuracy and performance using various performance metrics.Here in this model, an effective Heart Disease Prediction System) has been developed using different classifiers. This model uses 13 medical parameters such as chest pain, fasting sugar, blood pressure, cholesterol, age, sex etc. for prediction.

V. DATA FLOW DIAGRAM



VI. RESULT

In this project, various machine learning algorithms like Random Forest, Logistic Regression, KNN are used to predict heart disease.This dataset dates from 1988 and consists of four databases:Cleveland, Hungary, Switzerland, and Long Beach V.It contains 76 attributes, including the predicted attribute, but all published experiments refer to using a subset of 14 of them.The "target" field refers to the presence of heart disease in the patient. It is integer valued 0= no disease and 1= disease. Attributes age, sex, chestpain type (4 values),resting blood pressure,serum cholestoral in mg/dl,fasting blood sugar>120 mg/dl, resting electrocardiographic results (values 0,1,2),maximum heart rate achieved, exercise induced angina,oldpeak=ST depression induced by exercise relative to rest, the slope of the peak exercise ST segment, number of major vessels (0-3) colored by flourosopy,thal:0=normal;1=fixed defect;2= reversable defect The names and social security numbers of the patients were recently removed from the database,replaced with dummy values.expand_less View less The accuracy for individual algorithms has to measure and whichever algorithm is giving the best accuracy, that is considered for the heart disease prediction.For evaluating the experiment,various evaluation metrics like accuracy, confusion matrix, precision, recall, and f1-score are considered. Accuracy- Accuracy is the ratio of the number of correct predictions to the total number of inputs in the dataset. And finally our project will recommend top cardiologist hospital's in Chennai.

VII. CONCLUSION

Heart diseases are a major killer in India and throughout the world, application of promising technology like machine learning to the initial prediction of heart diseases will have a profound impact on society. The early prognosis of heart disease can aid in making decisions on lifestyle changes in high-risk patients and in turn reduce the complications, which can be a great milestone in the field of medicine. The number of people facing heart diseases is on a raise each year. This prompts for its early diagnosis and treatment. The utilization of suitable technology support in this regard can prove to be highly beneficial to the medical fraternity and patients. In this paper, the different machine learning algorithms used to measure the performance are Decision Tree, Random Forest and KNN applied on the dataset. The expected attributes leading to heart disease in patients are available in the dataset which contains features and some important features that are useful to evaluate the system are selected among them. If all the features taken into the consideration then the efficiency of the system the author gets is less. To increase efficiency, attribute selection is done. In

this n features have to be selected for evaluating the model which gives more accuracy. The correlation of some features in the dataset is almost equal and so they are removed. If all the attributes present in the dataset are taken into account then the efficiency decreases considerably. All the machine learning methods accuracies are compared based on which one prediction model is generated. Hence, the aim is to use various evaluation metrics like confusion matrix, accuracy, precision, recall, and f1-score which predicts the disease efficiently.and our project will recommend top cardiologist hospital's in Chennai.

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