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Application Of Machine Learning In The Field Of Health Care

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ABSTRACT:

These years, with artificial intelligence and machine learning becoming the hotspot of research, several applications have emerged in each of these areas. It exists not only as a kind of academic frontier but also something close to our life. In this trend, the combination of medical care and machine learning becomes more and more tighter. The proposal of its main idea also greatly alleviated the existing situation of unbalanced medical distribution and resources strain. This paper summarizes some application of machine learning and auxiliary tumor treatment in the process of medical resource allocation, and puts forward some new methods of application to realize it closer to human life in the era of artificial intelligence and the explores a good situation of mutual combination of medical industry and computer industry, which is benefit both.

Key words: Diabetese, ML, SVM, tumor, computer industry .

I. INTRODUCTION

Diabetese is one of the most extensive and vital organ of human body so the care of Diabetese is essential. Most of diseases are related to Diabetese so the prediction about Diabetese diseases is necessary and for this purpose comparative study needed in this field, today most of patient are died because

their diseases are recognized at last stage due to lack of accuracy of instrument so there is need to know about the more efficient algorithms for diseases prediction. Machine Learning is one of the efficient technologies for the testing, which is based on training and testing. It is the branch of Artificial Intelligence (AI) which is one of broad area of learning where machines emulating human abilities, machine learning is a specific branch of AI. On the other hand machines learning systems are trained to learn how to process and make use of data hence the combination of both technology is also called as Machine Intelligence. As the definition of machine learning, it learns from the natural phenomenon, natural things so in this project we use the biological parameter as testing data such as cholesterol, Blood pressure, sex, age, etc. and on the basis of these, comparison is done in the terms of accuracy of algorithms such as in this project we have used four algorithms which are decision tree, linear regression, k-neighbour, SVM. In this paper, we calculate the accuracy of four different machine learning approaches and on the basis of calculation we conclude that which one is best among them.

Literature survey

1) Effective Diabetese Disease Prediction Using Hybrid Machine Learning Techniques

AUTHORS: Senthil kumar mohan, chandrasegar thirumalai and Gautam Srivastva Diabetese disease is one of the most significant causes of mortality in the world today. Prediction of cardiovascular disease is a critical challenge in the area of clinical data analysis. Machine learning (ML) has been shown to be effective in assisting in making decisions and predictions from the large quantity of data produced by the healthcare industry. We have also seen ML techniques

being used in recent developments in different areas of the Internet of Things (IoT). Various studies give only a glimpse into predicting Diabetese disease with ML techniques. In this paper, we propose a novel method that aims at finding significant features by applying machine learning techniques resulting in improving the accuracy in the prediction of cardiovascular disease. The prediction model is introduced with different combinations of features and several known classification techniques. We produce an enhanced performance level with an accuracy level of 88.7% through the prediction model for Diabetese disease with the hybrid random forest with a linear model (HRFLM).

2)Prediction of Diabetese Disease using Machine Learning Algorithms: A Survey

AUTHORS: Himanshu Sharma and M A Rizvi

- Health care field has a vast amount of data, for processing those data certain techniques are used. Data mining is one of the techniques often used. Diabetese disease is the Leading cause of death worldwide. This System predicts the arising possibilities of Diabetese Disease. The outcomes of this system provide the chances of occurring Diabetese disease in terms of percentage. The datasets used are classified in terms of medical parameters. This system evaluates those parameters using data mining classification technique. The datasets are processed in python programming using two main Machine Learning Algorithm namely Decision Tree Algorithm and Naive Bayes Algorithm which shows the best algorithm among these two in terms of accuracy level of Diabetese disease.
- 3)Prediction of Diabetese Diseases Using Data Mining and Machine Learning Algorithms and Tools

- AUTHORS: M. Nikhil Kumar, K. V. S. Koushik, K. Deepak

Objectives: The objective of our work is to analyse various data mining tools and techniques in health care domain that can be employed in prediction of Diabetese disease system and their efficient diagnosis. Methods/Statistical Analysis: A Diabetese disease prediction model, which implements data mining technique, can help the medical practitioners in detecting the Diabetese disease status based on the patient's clinical data. Data mining classification techniques for good decision making in the field of health care addressed are namely Decision trees, Naive Bayes, Neural Networks and Support Vector Machines. Hybridizing or combining any of these algorithms helps to make decisions quicker and more precise. Findings: Data mining is a powerful new technology for the extraction of hidden predictive and actionable information from large databases that can be used to gain deep and novel insights. Using advanced data mining techniques to excavate valuable information, has been considered as an activist approach to improve the quality and accuracy of healthcare service while lowering the healthcare cost and diagnosis time. Using this technique presence of Diabetese disease can be predicted accurately. Using more input attributes such as controllable and uncontrollable risk factors, more accurate results could be achieved. Applications/Improvements: This method can be further expanded. It can use many of input attributes. Other data mining techniques are also be used for predication such as Clustering, Time series, Association rules. The unstructured data available in healthcare industry database can also be mined using text mining.

4)Application of Machine Learning in Diseases Prediction

- AUTHORS: Pahulpreet Singh Kohli and Shriya Arora

The application of machine learning in the field of medical diagnosis is increasing gradually. This can be

contributed primarily to the improvement in the classification and recognition systems used in disease diagnosis which is able to provide data that aids medical experts in early detection of fatal diseases and therefore, increase the survival rate of patients significantly. In this paper, we apply different classification algorithms, each with its own advantage on three separate databases of disease (Diabetese, Breast cancer, Diabetes) available in UCI repository for disease prediction. The feature selection for each dataset was accomplished by backward modeling using the p-value test. The results of the study strengthen the idea of the application of machine learning in early detection of diseases.

EXISTING SYSTEM:-

A. The main algorithm of machine learning

i. Decision Tree based Methods

The algorithm of decision tree is a method, which creates a decision tree by existing data and inputs the training set. According to the growth direction of decision tree, the test data can be classified. The main idea of decision tree is which feature is the best, how many branches can be generated and the time when to stop splitting. During this procession, it can be determined by the variable which is called impurity and some other mathematical method. However, due to the fact that it is a greedy approach, decision tree may disable to find the best tree sometimes.

ii. Naïve Bayes and Bayesian Belief Networks

Naïve Bayes is a ML method based on probability theory. It assumes that vents are independent and calculates through prior probability and posterior probability of the target object.

iii. K-means

In this method, the variable k is chosen by the actual situation. After choosing k objects as the primary center of clusters randomly, it calculates the distance between every object and the center of clusters and then assigns the object into the closest cluster. Until all objects have been assigned, the centroid of every cluster will be calculated again. The process will be repeated until the centroid doesn't change. The algorithm is an iterative and programming is less difficult.

A. Traditional and new ways of medical care

Focusing on researches about ML in medical care currently, its focus is basically on the judgement of the symptoms and the improvement of related medical measures. Certainly, relevant researches are able to reduce the investment of medical resources and avoid subjective error caused by human's judgement themselves. Considering the development and the existing research, at present, the traditional medical process must be registered in the hospital, and after arriving at the corresponding clinic, it is necessary to go through the inquiries and inspections of the department doctors to obtain a preliminary result. Even in many cases, it is necessary to transfer to other department. Therefore, we may wish to open up a new idea, not only to save the medical resources from the process, but to process the data from the pre-stage of the medical treatment, and classify the different patients by the machine. After the examination, the patients will no longer ask the original doctor for advice, instead, directly to the corresponding department required.

B. Dealing with information

If we want to make sure that the patient's condition is as correct as possible, you must first ensure that we have a database that covers as much

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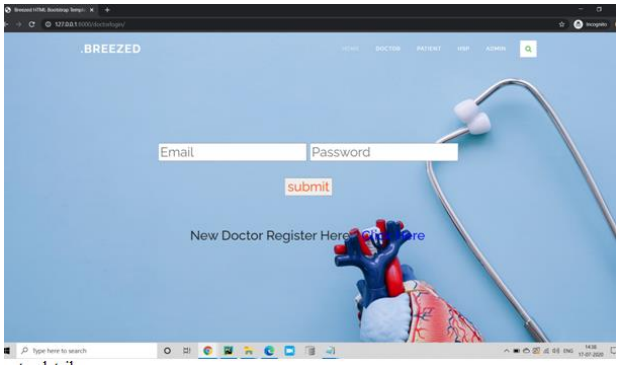
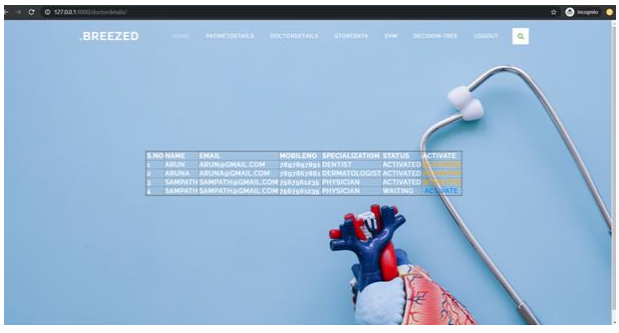
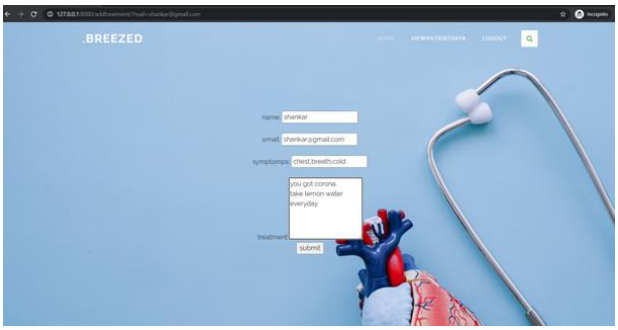
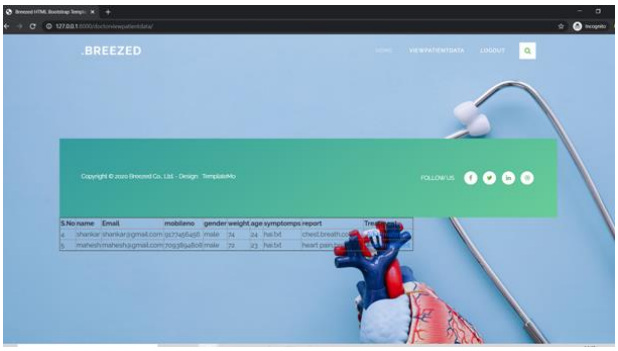
relevant information as possible, create a target data set, and then preprocess it (this process may cost 60 % About of the energy), and then through the data conversion to find useful data features, and then data mining. In the pre-processing of information, the past symptoms and cases are first entered into the database. Because there may be some defects in the cases, the decision tree algorithm that is not sensitive to the missing data is used for pre- processing.









V. CONCLUSION

Diabetese is one of the essential and vital organ of human body and prediction about Diabetese diseases is also important concern for the human beings so that the accuracy for algorithm is one of parameter for analysis of performance of algorithms. Accuracy of the algorithms in machine learning depends upon the dataset that used for training and testing purpose. When we perform the analysis of algorithms on the basis of dataset whose attributes, and

on the basis of confusion matrix, we find KNN is best one.

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