As per UGC guidelines an electronic bar code is provided to seure your paper

International Journal for Modern Trends in Science and Technology, 8(03):238-240, 2022

ISSN: 2455-3778 online
DOI: https://doi.org/10.46501/IJMTST0803043
Available online at: http://www.ijmtst.com/vol8issue03.html

Healthcare Data of Heart Disease Prediction using Machine Learning Techniques

M.Srilekha[1] | Dr.G.Minni[2]

[1]Department of IT, Prasad V Potluri Siddhartha Institute of Technology, Vijayawada, A.P., India.
[2]Professor & HOD, Dept. of Computer Science & Engineering, Nimra College of Engineering & Technology, A.P., India.

To Cite this Article
M.Srilekha and Dr.G.Minni. Healthcare Data of Heart Disease Prediction using Machine Learning Techniques. International Journal for Modern Trends in Science and Technology 2022, 8(03), pp. 238-240. https://doi.org/10.46501/IJMTST0803043

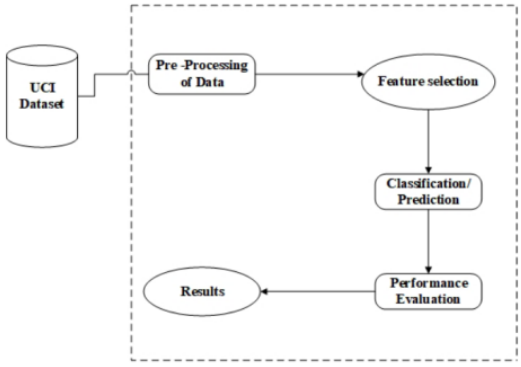
Article Info
Received: 16 February 2022; Accepted: 19 March 2022; Published: 24 March 2022.

ABSTRACT

Heart 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 heart disease with ML techniques.

1. INTRODUCTION

It is difficult to identify heart disease because of several contributory risk factors such as diabetes, high blood pressure, high cholesterol, abnormal pulse rate and many other factors. Various techniques in data mining and neural networks have been employed to find out the severity of heart disease among humans. The severity of the disease is classified based on various methods like K-Nearest Neighbor Algorithm (KNN), Decision Trees (DT), Genetic algorithm (GA), and Naive Bayes (NB) [11], [13]. The nature of heart disease is complex and hence, the disease must be handled carefully. Not doing so may affect the heart or cause premature death. The perspective of medical science and data mining are used for discovering various sorts of metabolic syndromes. Data mining with classification plays a significant role in the prediction of heart disease and data investigation.



2. PROBLEM STATEMENT

There is ample related work in the fields directly related to this paper. ANN has been introduced to produce the highest accuracy prediction in the medical field [6]. The back propagation multilayer perception (MLP) of ANN is used to predict heart disease. The obtained results are compared with the results of existing models within the same domain and found to be improved

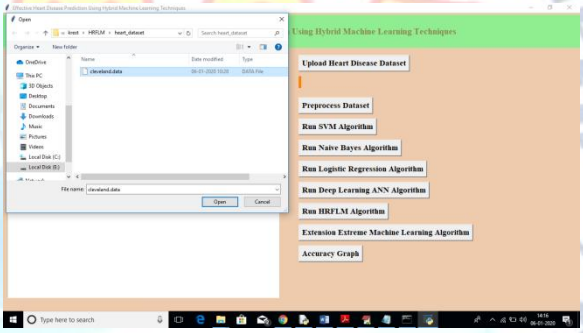
3. MODULE DESCRIPTION

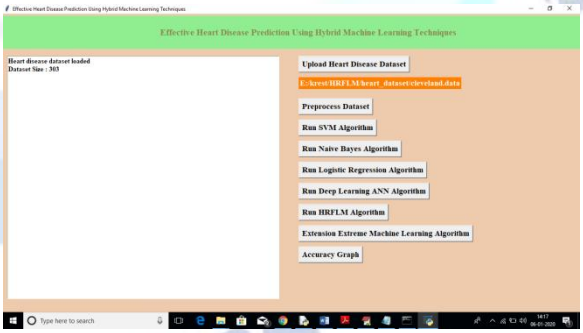
1) Upload Module: using this module we will upload heart disease dataset of previous patients
2) Pre-process Module: Using this module we will remove all those records which contains missing values. Dataset will be splitted to two parts called training and testing, all classifier will build train model using training data and then test train model by applying test data on that train model to get classification accuracy.
3) SVM Module: Using this module we will build train model using SVM algorithm and then apply test data on that SVM model to get classification accuracy.
4) Naïve Bayes: Using this module we will build train model by using Naïve Bayes algorithm and apply test data to get Naïve Bayes classification accuracy.
5) Logistic Regression: Here train model accuracy will be check with Logistic Regression algorithm
6) ANN Module: Deep Learning Artificial Neural Network train model will be generated and its accuracy can be calculated using test data.
7) HRFLM: Propose Hybrid Algorithm which is combination of Linear model and Random Forest algorithm. Hybrid model will be generated by using both algorithms and then Voting classifier will be used to choose best performing algorithm.
8) Extension Extreme Machine Learning Module: This is an extra module which is built for extension purpose and this module is based on advance Extreme Machine Learning algorithm which can get better prediction accuracy compare to all algorithms. Extreme Learning Machine (ELM) is a novel method for pattern classification as well as function approximation. This method is essentially a single feed forward neural network; its structure consists of a single layer of hidden nodes, where the weights between inputs and hidden nodes are randomly assigned and remain constant during training and predicting phases. On the contrary, the weights that connect hidden nodes to outputs can be trained very fast. Experimental studies in the literature showed that ELMs can produce acceptable predictive performance and their computational cost is much lower than networks trained by the back-propagation algorithm.
9) Graph: This module display accuracy of all algorithms in graph format as comparison

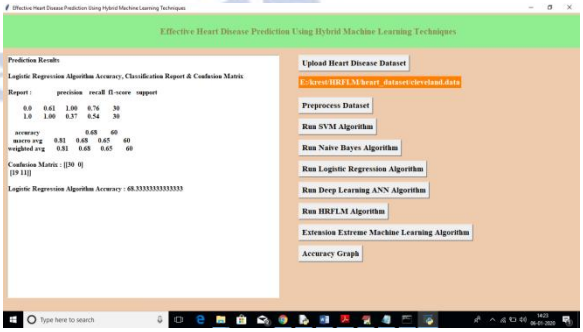
4. PROPOSED SYSTEM

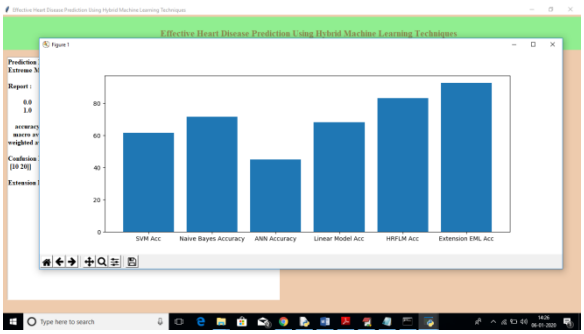
In this paper author is evaluating performance of various classification/prediction algorithms such as SVM, Naïve Bayes, and Logistic Regression etc to predict heart disease. All this algorithms are good in prediction but accuracy is not good enough. To get better prediction accuracy author is combining two classification algorithms such as Linear Model and Random Forest to build new algorithm called Hybrid Machine Learning to get better prediction accuracy of heart dataset. Hybrid algorithm will form up by using Voting classifier, Internally Voting classifier will build up using Linear Model and Random Forest and while classification voting algorithm will evaluate prediction accuracy of both algorithms and vote for that algorithm which gives better accuracy. So by using hybrid model always we will have better prediction accuracy algorithm which helps in better prediction of heart disease.

SAMPLE RESULTS









5. CONCLUSION & FUTURE WORK

Identifying the processing of raw healthcare data of heart information will help in the long term saving of human lives and early detection of abnormalities in heart conditions. Machine learning techniques were used in this work to process raw data and provide a new and novel discernment towards heart disease. Heart disease prediction is challenging and very important in the medical field. However, the mortality rate can be drastically controlled if the disease is detected at the early stages and preventative measures are adopted as soon as possible. Further extension of this study is highly desirable to direct the investigations to real-world datasets instead of just theoretical approaches and simulations. The proposed hybrid HRFLM approach is used combining the characteristics of Random Forest (RF) and Linear Method (LM). HRFLM proved to be quite accurate in the prediction of heart disease. The future course of this research can be performed with diverse mixtures of machine learning techniques to better prediction techniques. Furthermore, new featureselection methods can be developed to get a broader perception of the significant features to increase the performance of heart disease prediction.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

REFERENCES

[1] A. S. Abdullah and R. R. Rajalaxmi, ''A data mining model for predicting the coronary heart disease using random forest classifier,'' in Proc. Int. Conf.Recent Trends Comput.Methods, Commun. Controls, Apr. 2012, pp. 22–25.

[2] A. H. Alkeshuosh, M. Z. Moghadam, I. Al Mansoori, and M. Abdar, ''Using PSO algorithm for producing best rules in diagnosis of heart disease,'' in Proc. Int. Conf. Comput. Appl. (ICCA), Sep. 2017, pp. 306– 311.

[3] N. Al-milli, ''Backpropogation neural network for prediction of heart disease,'' J. Theor. Appl.Inf. Technol., vol. 56, no. 1, pp. 131–135, 2013.

[4] C. A. Devi, S. P. Rajamhoana, K. Umamaheswari, R. Kiruba, K. Karunya, and R. Deepika, ''Analysis of neural networks based heart disease prediction system,'' in Proc. 11th Int. Conf. Hum. Syst. Interact. (HSI), Gdansk, Poland, Jul. 2018, pp. 233–239.

[5] P. K. Anooj, ''Clinical decision support system: Risk level prediction of heart disease using weighted fuzzy rules,'' J. King Saud Univ.-Comput. Inf. Sci., vol. 24, no. 1, pp. 27–40, Jan. 2012. doi: 10.1016/j.jksuci.2011.09.002.

[6] L. Baccour, ''Amended fused TOPSIS-VIKOR for classification (ATOVIC) applied to some UCI data sets,'' Expert Syst. Appl., vol. 99, pp. 115–125, Jun. 2018. doi: 10.1016/j.eswa.2018.01.025.

[7] C.-A. Cheng and H.-W. Chiu, ''An artificial neural network model for the evaluation of carotid artery stenting prognosis using a national-widedatabase,'' in Proc. 39th Annu. Int. Conf. IEEE Eng. Med. Biol. Soc. (EMBC), Jul. 2017, pp. 2566–2569.

[8] H. A. Esfahani and M. Ghazanfari, ''Cardiovascular disease detection using a new ensemble classifier,'' in Proc. IEEE 4th Int. Conf. Knowl.- Based Eng. Innov. (KBEI), Dec. 2017, pp. 1011–1014.

[9] F. Dammak, L. Baccour, and A. M. Alimi, ''The impact of criterion weights techniques in TOPSIS method of multi-criteria decision making in crisp and intuitionistic fuzzy domains,'' in Proc. IEEE Int. Conf. Fuzzy Syst. (FUZZ-IEEE), vol. 9, Aug. 2015, pp. 1–8.

[10] R. Das, I. Turkoglu, and A. Sengur, ''Effective diagnosis of heart disease through neural networks ensembles,'' Expert Syst. Appl., vol. 36, no. 4, pp. 7675–7680, May 2009. doi: 10.1016/j.eswa.2008.09.013.

[11] M. Durairaj and V. Revathi, ''Prediction of heart disease using back propagation MLP algorithm,'' Int. J. Sci. Technol. Res., vol. 4, no. 8, pp. 235–239, 2015.

[12] B. S. S. Rathnayakc and G. U. Ganegoda, ''Heart diseases prediction with data mining and neural network techniques,'' in Proc. 3rd Int. Conf. Converg. Technol. (I2CT), Apr. 2018