International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

PREDICTION OF CARDIOVASCULAR DISEASE USING SUPERVISED LEARNING

Vasa Jothika Ganga (MCA Scholar), B V Raju College, Vishnupur, Bhimavaram, West Godavari District, Andhra Pradesh, India, 534202.
S. K. Alisha, B V Raju College, Vishnupur, Bhimavaram, West Godavari District, Andhra Pradesh, India, 534202.

ABSTRACT Heart Diseases have shown a tremendous hit in this modern age. As doctors deal with precious human life, it is very important for them to be right their results. Thus, an application was developed which can predict the vulnerability of heart disease, given basic symptoms like age, gender, pulse rate, resting blood pressure, cholesterol, fasting blood sugar, resting electrocardiographic results, exercise induced angina, ST depression ST segment the slope at peak exercise, number of major vessels colored by fluoroscopy and maximum heart rate achieved. This can be used by doctors to re heck and confirm on their patient‟s condition. In the existing surveys they have considered only 10 features for prediction, but in this proposed research work 14 necessary features were taken into consideration. Also, this paper presents a comparative analysis of machine learning techniques like Random Forest (RF), Logistic Regression, Support Vector Machine (SVM), and Naïve Bayes in the classification of cardiovascular disease. By the comparative analysis, machine learning algorithm Random Forest has proven to be the most accurate and reliable algorithm and hence used in the proposed system. This system also provides the relation between diabetes and how much it influences heart disease

1. INTRODUCTION

Coronary illness has the biggest level of passing on the planet. In 2012, around 17.5 million individuals kicked the bucket from coronary illness, implying that it comprises of the 31% of every single worldwide passing. Besides, coronary illness loss of life rises each year. It is relied upon to develop more than 23.6 million by 2030. The exploration from the January 2017 demonstrated that the main source of death worldwide is cardiovascular infections. The cardiovascular malady is considered as a world's biggest killer and is currently taking the top position in the record of ten reasons for passing in the previous 15 years and in 2015 was numeration for fifteen million passing. Various human lives could be spared by diagnosing on schedule. Along these lines, diagnosing the syndrome is significant and an exceptionally muddled undertaking. Mechanizing this procedure would conquer the issues with the diagnosis. The utilization of AI in ailment arrangement is normal and researchers are especially fascinated in the advancement of such frameworks for simpler following and analysis of cardiovascular diseases. Since MLpermits PC projects to ponder from information, building up a model to perceive ordinary examples and having the option to settle on choices dependent on assembled data, it doesn't have hitches with the deficiency of utilized medicinal database. The proposed model is to amass significant information relating all components identified with coronary illness and parameters impacting it, train the information according to the proposed calculation of AI andforesee how solid is

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
IJARST
ISSN: 2457-0362

there a probability for a patient to get a coronary illness. The relationship with the diabetes related credits is considered to set up the impact

2. INPUT AND OUTPUT DESIGN

INPUT DESIGN

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

What data should be given as input?

How the data should be arranged or coded?

The dialog to guide the operating personnel in providing input.

Methods for preparing input validations and steps to follow when error occur.

OBJECTIVES

1.Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system.

2. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

3.When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow

OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making.

1. Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will find the system can use easily and effectively. When analysis design computer output, they should Identify the

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

specific output that is needed to meet the requirements.

2.Select methods for presenting information.

3.Create document, report, or other formats that contain information produced by the system.

The output form of an information system should accomplish one or more of the following objectives.

Convey information about past activities, current status or projections of the Future.

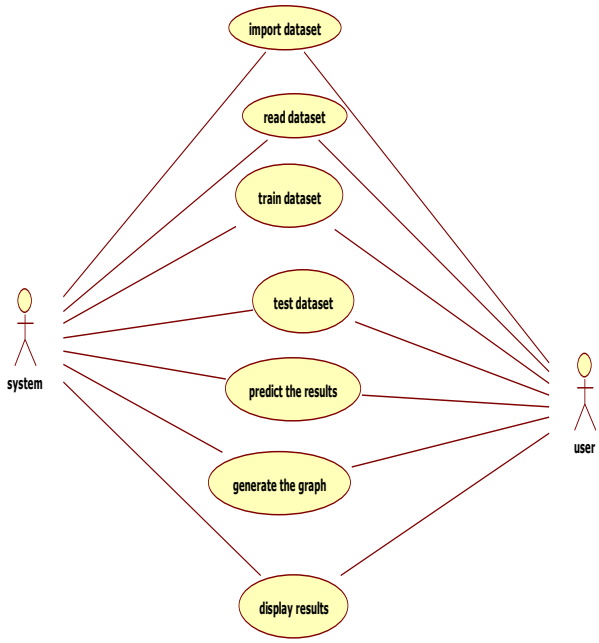
Signal important events, opportunities, problems, or warnings.

Trigger an action.

Confirm an action.

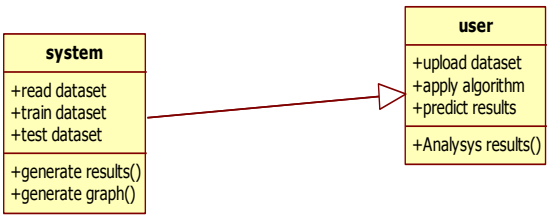
3. USE CASE DIAGRAM

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.



4. CLASS DIAGRAM

In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.



5. CONCLUSION

Heart disease prediction which uses Machine learning algorithm provides users a prediction result if the user has heart disease. Recent advancements in technology made machine learning algorithms to evolve. In this proposed method Random Forest Algorithm was

used because of its efficiency and accuracy. This algorithm is also used to find the heart disease prediction percentage by knowing the correlation details between diabetes and heart diseases. The similar prediction systems can be built by calculating correlation between heart diseases and other diseases. Also new algorithms can be used to achieve increased accuracy. Better performance is obtained with more parameter used in these algorithms.

6. REFERENCES

[1] Jaymin Patel, Prof.Tejal Upadhyay, Dr.Samir Patel "Heart disease prediction using Machine learning and Data Mining Technique" Volume 7.Number1 Sept 2015-March 2016.

[2] Thenmozhi.K and Deepika.P, Heart Disease Prediction using classification with different decision tree techniques. International Journal of Engineering Research & General Science, Vol 2(6), pp 6-11, Oct 2014.

Igor Kononenko" Machine learning for medical diagnosis: history, state of art& perspective"

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 904 - 912 Received 20 Ja nuary 2021; Accepted 08 February 2021. 912 http://annalsofrscb.ro

Elsevier -Artificial intelligence in Medicine, Volume23, Aug 2001.

[4] Gregory F. Cooper, Constantin F. Alfieris", Richard Ambrosino, John Aronisb, Bruce G. Buchanan, Richard Caruana', Michael J. Fine, Clark Glymour", Geoffrey Gordon", Barbara H. Hanusad, Janine E. Janoskyf, Christopher Meek", Tom Mitchell", Thomas Richardson", Peter Spirtes" An evaluation of machine-learning methods for predicting of pneumonia mortality"-Elsevier Feb 1997

[5] Sana Bharti, Shailendra Narayan Singh" Analytical study of heart disease comparing with different algorithms": Computing, Communication & Automation (ICCCA), 2015InternationalConference.

[6] B.Dhomse Kanchan, M. Mahale Kishore "Study of Machine learning algorithms for special disease predictions using the principal of component analysis" Global Trends in Signal Processing, Information Computing and Communication (ICGTSPICC), 2016.

[7] MatjazKuka, Igor Kononenko, Cyril Groselj, Katrina Kalif, JureFettich" Analysing and improving the diagnosis of ischaemic heart disease with machine learning" Elsevier -Artificial intelligence in Medicine, Volume23, May 1999.

[8] Geert Meyfroidt, FabianGuiza, Jan Ramon, Maurice Brynooghe" Machine learning techniques to examine large patient databases"-Best practice & Reasearch Clinical Anaesthesiology, Elsevier Volume 23 (1) Mar 1, 2009.

[9] Gregory F.Cooper, ConstantinF.Aliferis, Richard Ambrosino"An evaluation of Machine learning methods for predicting pneumonia mortality"-Elsevier, 1997.

[10] Sanjay Kumar Sen" Predicting and Diagnosing of Heart Disease Using Machine Learning Algorithms", International Journal of Engineering And Computer Science ISSN:2319-7242Volume6Issue 6 June 2017.

[11] Abhishek Taneja" Heart Disease Prediction SystemUsing Data Mining Techniques"-Vol.6, No(4) December 2013