

Heart Disease Detection Using Genetic Algorithm And Neural Network Based On Risk Factors

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Abstract: Heart disease is the top reason for the increasing deaths around the globe. Heart disease detection is carried out by using techniques such as Data Mining. They are widely used in systems for prediction and diagnosis. They discover hidden patterns as well as relationships from the data. The reason behind creating such applications is the leading cause of death due to heart disease. Mostly the systems developed before predict heart disease use data having parameters which are obtained from labs conducted by doing complex tests. Mostly there are no system that predicts heart disease based on risk factors such as age, hypertension, tobacco intake, alcohol consumption, etc. Such common factors are present in heart disease patients. These factors can be used effectively for diagnosis. Generally these would not help medical professionals but would be a great help to people as it would warn them about probable presence of heart disease. This would warn them before visiting a hospital or doing expensive medical check-ups. Therefore this paper put forwards a technique for probable prediction of heart disease using risk factors. The data mining tools used in this system are genetic algorithm and neural network. This system optimizes the neural network weights. This system was implemented in MATLAB.

Keywords: Heart Disease, Heart Disease Prediction, Neural Networks, Genetic Algorithm, Risk Factors

I. Introduction

Nowadays, the leading cause of death around the globe is due to heart disease. An estimation of 17.3 billion people died suffering from heart disease. Hypertension, diabetes and high blood cholesterol are the major risk factors. Smoking, alcohol intake, obesity are also major risk factors. There are many studies which show that we can actually prevent heart disease. Framingham Risk Score (FRS) is a well-known risk prediction technique which is used in algorithms for prediction of heart disease. This technique includes creating an intelligent system based on risk factors.

II. Objectives

The main objectives are as follows:

1. To predict the presence of heart disease.
2. To save the expense of people of costly heart disease tests.
3. To warn people at a primary level.

III. Problem Statement

The number of deaths of people due to heart disease has reached to a large extent. Our contribution in this project is to predict heart disease of people without carrying out expensive heart disease tests and warn the people about the disease without actually visiting the hospital and doing costly tests.

IV. Material And Methods

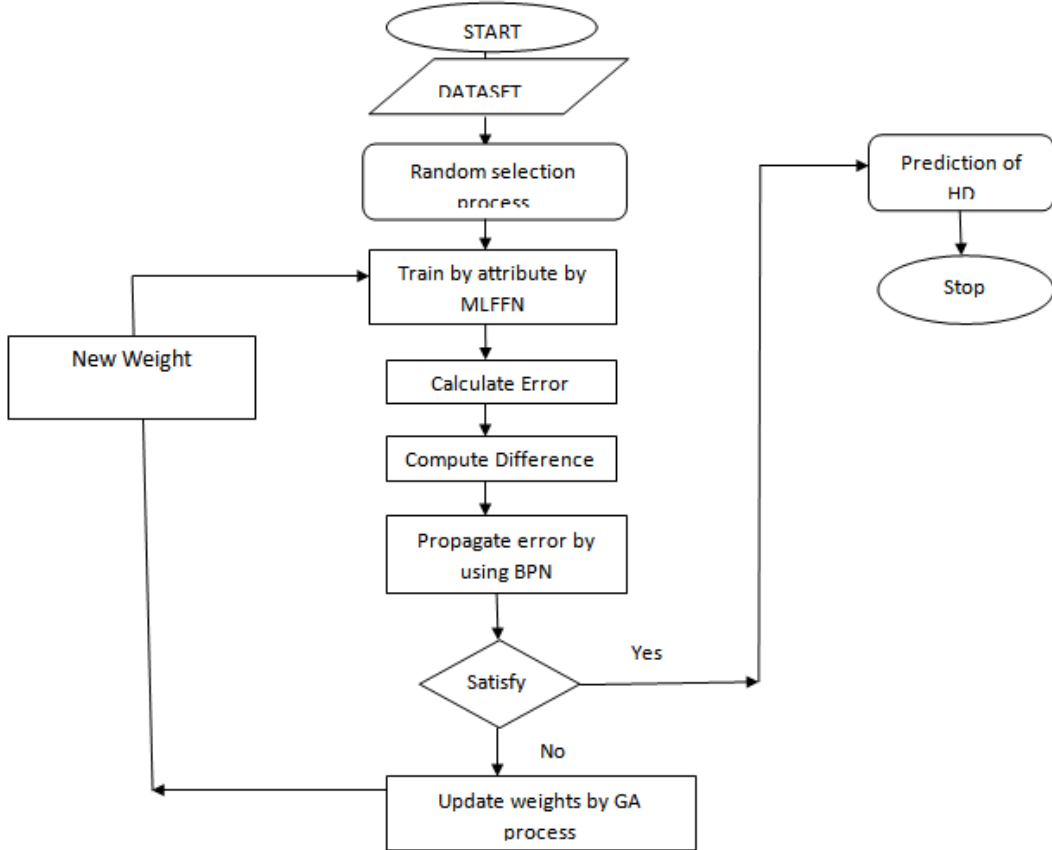
The methodology and materials implemented includes:

1. System Description.
2. System Block Diagram.
3. Software Requirements.
4. Hardware Requirements.

1. System Description

The user will be provided with an interface. This will include the risk factors in which user has to fill all the details about the risk factors mentioned. The system will perform its task and will give a output. The output will contain whether the person is suffering from a heart disease or not.

2. System Block Diagram



3. Software Requirements

- 1. Operating System: Windows 8, Windows 10.
- 2. MATLAB

4. Hardware Requirements

- 1. Internet Connectivity.
- 2. 80Mb Hard disk.
- 3. 1.6Ghz Pentium Processor.

V. Conclusion

Applied methods and techniques in the medical database has led to a revolution and due to this these systems have gained a significant progress in boosting up the health of people and overall class of medical favour. The system uses identified important risk factors for the prediction of heart disease and it does not require costly medical tests With the use of hybrid data mining techniques it is possible to design more correct systems for diseases to be diagnosed. Through this system we will be able to predict heart disease based on risk factors. This will also help to reduce costs and time to undergo expensive medical tests. Also people can think of some measures which could them from such type of disease. This would also help to keep a track on his own health.

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