Prediction of Heart Disease Using BP-Neural Network & Genetic Algorithm

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Abstract- Heart disease is a health issue, and it impacts some individuals. Cardiovascular Disease (CVD) is one such state that causes the risk. Till recognized and cured at an early level it will cause disease. There isn't enough survey concentrate on investigation devices to find networks and patterns of information, particularly in the medical division. The medical industry gathers large amounts of heart disease statistics which, problematic to find unknown material for significant decision making. Human services industry today makes a lot of clinical information about patients and other curing facility assets. Information quarrying systems are used to inspect this rich gathering of information from another point of view and concluding valuable data. This scheme plans to sketch and generate discovery and expectation framework for heart illnesses given perceptive mining. A number of judgments have been headed to look at the implementation of different information quarrying methods including neural network and Genetic algorithm. In proposed work, a 13 attribute ordered medical database is used as a foundation information. Neural Networks are the important technique for data mining. Neural Network provides useful information of given statistics.

Index Terms- Neural Network, Query, Genetic Algorithm, Dataset.

1. INTRODUCTION

Heart disease is one the brutal diseases. There are different types of heart diseases coronary artery disease, congestive heart failure, bad heart rhythms. Heart diseases eventually lead to deaths, through several heart attacks, if not predicted early. But if the heart disease is predicted early, it can be cured. There are common symptoms of heart disease, based on that heart disease can be predicted. Symptoms like the pain in the chest, trouble breathing, swelling, cyanosis. If the heart disease is predicted then one can get cure from hospitals. Prediction of heart disease at an early stage is beneficial to the patients with respect to cost and time. The Early prediction may increase chances of no heart strokes with the help of proper medications.

2. PROPOSED FRAMEWORK

In our project, we are using two algorithms, which are Back Propagation Neural Network (BPNN) and Genetic Algorithm (GA). By using this algorithm on the dataset, the Heart Disease can be predicted with the reducing optimal attributes on Dataset with attributes.
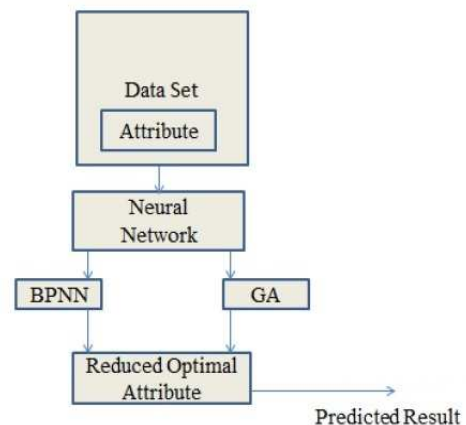

Fig-1: Architecture Diagram

3. PROPOSED ALGORITHMS
3.1 Backpropagation Neural Networks (BPNN)

Backpropagation technique is used in neural networks. Backpropagation is also called as error backpropagation algorithm, which is generally based on error correction. It consists of two main passes, which are, forward pass and backward pass.

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- Forward pass: It works in layer by layer manner. It affect network layer by taking input nodes on which activity pattern is applied. The actual response produced is set of outputs. Weights are fixed during the forward pass.
- Backward pass: The weights are adjusted according to some rule. The error signal is produced by subtracting actual response from desired response. This produced error signal is propagated backward through the network.

Example of two hidden layers
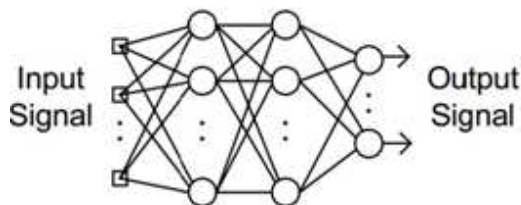
3.2. Genetic Algorithm

The human DNA genome consists of 46 chromosomes, which are strings of four different bases, abbreviated A, T, G and C. In total, there are about three billion nucleotides. These can be structured in genes, which carry one or more pieces information about the construction of the individual. However, it is estimated that only 3% of the genes carry meaningful information, the vast majority of genes - the "junk" genes - is not used. The genetic information itself, the genome, is called the genotype of the individual. The result, the individual, is called phenotype. The same genotype may result in different phenotypes. The basic GA operators are crossover, selection and mutation. Figure 1.3 illustrates the principle structure of a genetic algorithm. It starts with the random generation of an initial set of individuals, the initial population.
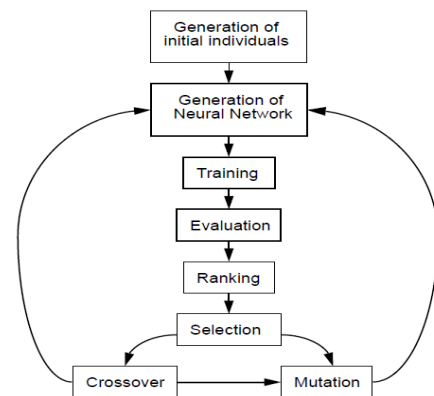

Figure 1.8: The Principle Structure of a GANN System

4. ADVANTAGE

- By applying data mining technique to help healthcare professionals in the diagnosis of heart disease.
- Less time consumption
- High Performance.
- High Accuracy

5. APPLICATIONS
- Healthcare industry

6. CONCLUSION

With the help of these algorithms, we would be able for heart disease prediction. Heart disease prediction will help both society and medical industry.

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