Diseases Detection using Artificial intelligence

Mohit (069), Sanketh (102), Rahul (091), Surya (115)

Contents

- Introduction
- Literature Survey
- Existing System
- Proposed System
- Advantages
- Disadvantages
- System requirements
- Design
- Modules
- Algorithm
- References

INTRODUCTION

This project to enhance the pre-detection of the disease using querying symptoms of the patient and analysing of that data.

This will help the patient to easily detect the disease and take remedies.

What is Artificial Neural Network?

- An artificial neural network (ANN) is a computational model that attempts to account for the parallel nature of the human brain.
- An (ANN) is a network of highly interconnecting processing elements (neurons) operating in parallel. These elements are inspired by biological nervous systems.
- A subgroup of processing element is called a layer in the network. The first layer is the input layer and the last layer is the output layer.
- Between the input and output layer, there may be additional layer(s) of units, called hidden layer(s).

Literature Review

- R. Dybowski and V. Gant, Clinical Applications of Artificial Neural Networks, Cambridge University Press, 2007
  - Assign the patient to one of a small set of classes, on the basis of the measured features.
- O. Er, N. Yumusak and F. Temurtas, "Chest disease diagnosis using artificial neural networks", Expert Systems with Applications, Vol.37, No.12, 2010, pp. 7648-7655.
  - Presented a comparative chest disease diagnosis which was realized by using multilayer, probabilistic, learning vector optimization, and generalized regression.

Literature Review

- R. Das, I. Turkoglu and A. Sengur, "Effective diagnosis of heart disease through neural networks ensembles", Expert Systems with Applications, Vol.36, No.4, 2009, pp. 7675-7680.
  - Used SAS enterprise miner 5.2 to construct a neural networks ensemble based methodology for diagnosing of the heart disease. Three independent neural networks models used to construct the ensemble model. The number of neural networks node in the ensemble model was also increased but no performance improvement was obtained.
- D. Gil, M. Johnsson, J. M. Garicia Chemizo, A. S. Paya and D. R. Fernandez, "Application of Artificial Neural Networks in the Diagnosis of Urological Dysfunctions", Expert Systems with Applications, Vol.36, No.3, 2009, pp. 5754-5760.
  - Evaluated the work out of some artificial neural network models as tools for support in the medical diagnosis of urological dysfunctions. They developed two types of unsupervised and one supervised neural network.

Existing System

- In the existing system the patient have to consult doctor and using the symptoms of the system the doctor will detect the disease.
- The existing system use Support Vector Machine for the detection, which have given fast results in less training time. But this systems are not giving relevant results.

Disadvantages

- Its takes very less time to train the model so it learns less and gives inaccurate results.
- It is not capable of solving humans problems because it's restricted to multi-dimensional attributes only.
- Its slow results when compare to the ANN.

Proposed System

Feed-forward neural network allows signals to travel one-way only; from source to destination; there is no feedback. Each neuron in the hidden layer uses a transfer function to process data it receives from input layer and then transfers the processed information to the output neurons for further processing using a transfer function in each neuron.

20 hidden layer neurons are created and trained. The input and target samples are automatically divided into training, validation and test sets. The training set is used to teach the network. Training continues as long as the network continues improving on the validation set.

The data is created by a medical expert as a data set to test the expert system, which will perform the presumptive diagnosis of one of the urinary system diseases. The main idea of this data set is to construct the neural network model.

Neural network toolbox from Matlab 7.9 is used to evaluate the performance of the proposed networks.

Advantages

- It will give faster results.
- Its will give accurate results.
- We can use this model to solve more human like problems because ANN uses brain like structures which contain the neurons and links.

System Requirements

- Hardware specification
    Processor   : Intel(R) Core(TM) CPU

    RAM   : 2.0 GB
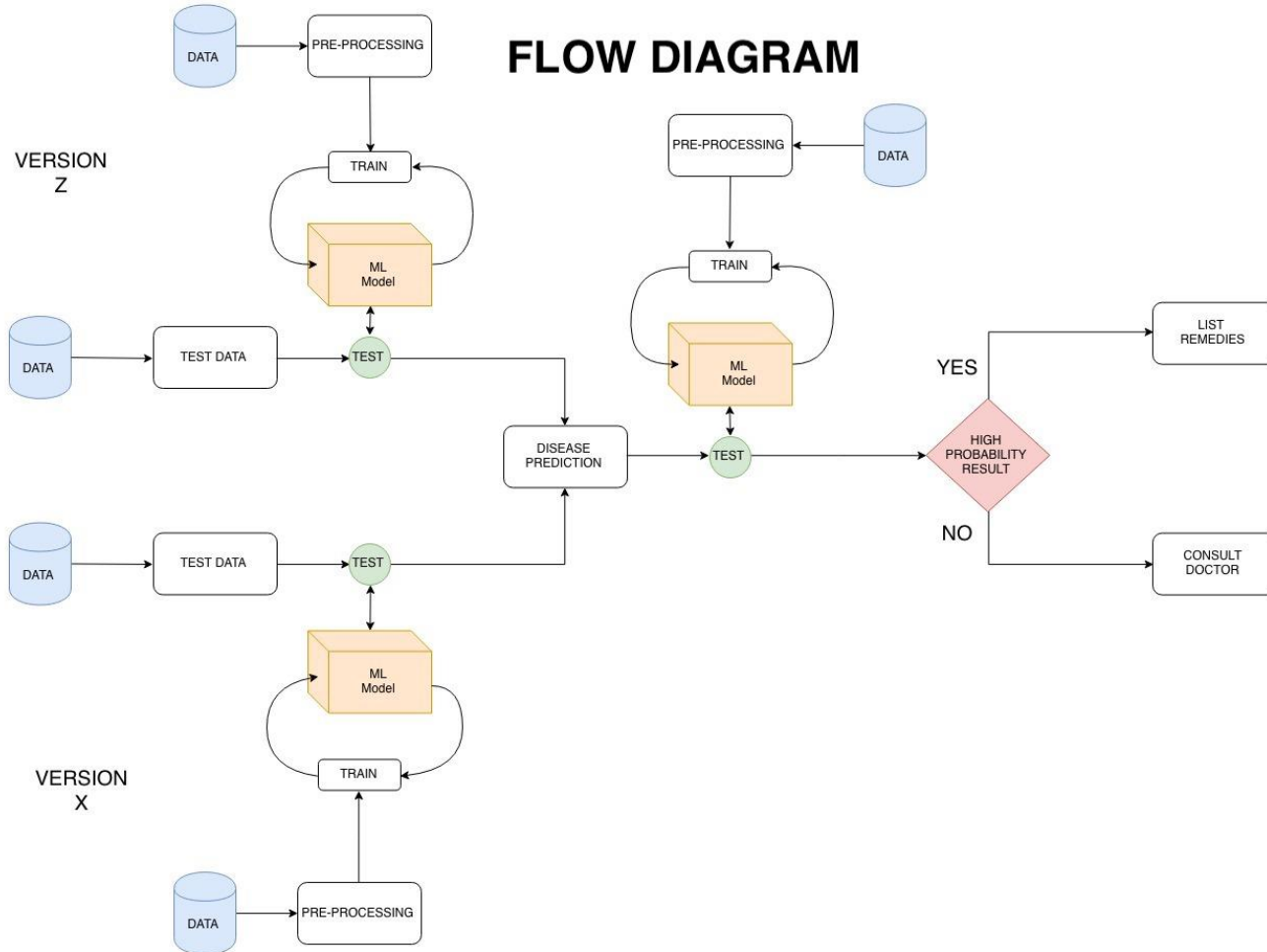
    System type   : 64-bit Operating system

    Hard disk   : 50 GB
- Software specification
    Operating system   : Windows 8 or macOS

FLOW DIAGRAM

Modules

- Dataset
- Preprocessing
- ML model
- Train
- Test

Algorithm

Artificial
Neural
Networks
(ANN)