NEURAL NETWORKS CLASSIFICATION PERFORMANCE FOR MEDICAL DATASET

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ABSTRACT

Artificial neural networks (ANN) are designed to simulate the behavior of biological neural networks for several purposes. Neural networks (NN), with their remarkable ability to derive meaning from complicated or imprecise data, can be used to extract patterns and detect trends that are too complex to be noticed by either humans or other computer techniques. Multilayer Perceptron (MLP), Support Vector Machine (SVM) and Radial Basis Function (RBF) are classification techniques in neural networks that were used to train historical medical data. The study was based on different data set that obtained from UCI machine learning database and tested by the WEKA software machine learning tools. The comparison results of each method were based on the training performance of classifier in terms of accuracy, training time and complexity.

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INTRODUCTION

This section describes the context of the study that includes the introduction to the neural networks classification, followed by the problem statement, objectives of the study, scope of the study and finally, the significance of the study.

1.1   Neural Network and Medical Application

Artificial Neural Network is a system loosely modeled on the human brain (DKlerfors, 1998).The field goes by many names, such as connectionism, parallel distributed processing, neuro-computing, natural intelligent systems, machine learning algorithms, and artificial neural networks. It is an attempt to simulate within specialized hardware or sophisticated software, the multiple layers of simple processing elements called neurons. Each neuron is linked to certain of its neighbors with varying coefficients of connectivity that represent the strengths of these connections. Learning is accomplished by adjusting these strengths to cause the overall network to output appropriate results. Neural network has been proven of their capabilities in many domains such as medical application. Neural network with ability to learn by example makes them very flexible and powerful in medical diagnosis. Neural network show that experience from expertise is not enough in diagnosis. Nowadays, physicians combined this opportunity that give by neural network and their expertise to detect early stage of patients disease.

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