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APPLICATION OF GENETIC ALGORITHM OPTIMIZED NEURAL NETWORK CONNECTION WEIGHTS FOR MEDICAL DIAGNOSIS OF PIMA INDIANS DIABETES

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ABSTRACT

Neural Networks are one of many data mining analytical tools that can be utilized to make predictions for medical data. Model selection for a neural network entails various factors such as selection of the optimal number of hidden nodes, selection of the relevant input variables and selection of optimal connection weights. This paper presents the application of hybrid model that integrates Genetic Algorithm and Back Propatation network(BPN) where GA is used to initialize and optmize the connection weights of BPN. Significant feactures identified by using two methods :Decision tree and GA-CFS method are used as input to the hybrid model to diagonise diabetes mellitus. The results prove that, GA-optimized BPN approach has outperformed the BPN approach without GA optimization. In addition the hybrid GA-BPN with relevant inputs lead to further improvised categorization accuracy compared to results produced by GA-BPN alone with some redundant inputs.

KEYWORDS

Back Propagation Network, Genetic algorithm, connection weight optimisation.

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DETERMINATION OF OVER-LEARNING AND OVER-FITTING PROBLEM IN BACK PROPAGATION NEURAL NETWORK

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ABSTRACT

A drawback of the error-back propagation algorithm for a multilayer feed forward neural network is over learning or over fitting. We have discussed this problem, and obtained necessary and sufficient Experiment and conditions for over-learning problem to arise. Using those conditions and the concept of a reproducing, this paper proposes methods for choosing training set which is used to prevent over-learning. For a classifier, besides classification capability, its size is another fundamental aspect. In pursuit of high performance, many classifiers do not take into consideration their sizes and contain numerous both essential and insignificant rules. This, however, may bring adverse situation to classifier, for its efficiency will been put down greatly by redundant rules. Hence, it is necessary to eliminate those unwanted rules. We have discussed various experiments with and without over learning or over fitting problem.

KEYWORDS

Neural Network, learning, Hidden Neurons, Hidden Layers

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AN APPROACH FOR IRIS PLANT CLASSIFICATION USING NEURAL NETWORK

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ABSTRACT

Classification is a machine learning technique used to predict group membership for data instances. To simplify the problem of classification neural networks are being introduced. This paper focuses on IRIS plant classification using Neural Network. The problem concerns the identification of IRIS plant species on the basis of plant attribute measurements. Classification of IRIS data set would be discovering patterns from examining petal and sepal size of the IRIS plant and how the prediction was made from analyzing the pattern to form the class of IRIS plant. By using this pattern and classification, in future upcoming years the unknown data can be predicted more precisely. Artificial neural networks have been successfully applied to problems in pattern classification, function approximations, ptimization, and associative memories. In this work, Multilayer feed- forward networks are trained using back propagation learning algorithm.

KEYWORDS

IRIS dataset, artificial neural networks, Back-propagation algorithm

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Decision Support System for the Intelligient Identification of Alzheimer using Neuro Fuzzy logic

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ABSTRACT

Alzheimer Disease (AD) is a form of dementia; it is a progressive, degenerative disease. Alzheimer is a brain disease that causes problems with memory, thinking and behavior. It is severe enough to interfere with daily activities. Alzheimer symptoms are characterized by memory loss that affects day-to-day function, difficulty performing familiar tasks, problems with language, disorientation of time and place, poor or decreased judgment, problems with abstract thinking, misplacing things, changes in mood and behavior, changes in personality and loss of initiative. Neuro-Fuzzy Logic explores approximation techniques from neural networks to find the parameter of a fuzzy system. In this paper, the traditional procedure for the medical diagnosis of Alzheimer employed by physician is analyzed using neuro-fuzzy inference procedure. The proposed system is a useful decision support approach for the diagnosis of Alzheimer.

KEYWORDS

Neural Network, Fuzzy logic, Neuro Fuzzy System & Alzeimer

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A Directional Feature with Energy based Offline Signature Verification Network

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ABSTRACT

Signature used as a biometric is implemented in various systems as well as every signature signed by each person is distinct at the same time. So, it is very important to have a computerized signature verification system. In offline signature verification system dynamic features are not available obviously, but one can use a signature as an image and apply image processing techniques to make an effective offline signature verification system. Author proposes a intelligent network used directional feature and energy density both as inputs to the same network and classifies the signature. Neural network is used as a classifier for this system. The results are compared with both the very basic energy density method and a simple directional feature method of offline signature verification system and this proposed new network is found very effective as compared to the above two methods, specially for less number of training samples, which can be implemented practically.

KEY WORDS

Neural Network, Directional Feature, Energy Density, Neuron, Back propagation, AR, FRR

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HASH FUNCTION IMPLEMENTATION USING ARTIFICIAL NEURAL NETWORK

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ABSTRACT

In this paper an algorithm for one-way hash function construction based on a two layer feed forward neural network along with the piece-wise linear (pwl) chaotic map is proposed. Based on chaotic neural networks, a Hash function is constructed, which makes use of neural networks' diffusion property and chaos' confusion property. This function encodes the plaintext of arbitrary length into the hash value of fixed length (typically, 128-bit, 256-bit or 512-bit). Theoretical analysis and experimental results show that this hash function is one-way, with high key sensitivity and plaintext sensitivity, and secure against birthday attacks or meet-in-the-middle attacks. These properties make it a suitable choice for data signature or authentication.

KEYWORDS

One-way Hash function, Neural network, Chaotic map, Plaintext Sensitivity

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ACCURACY DRIVEN ARTIFICIAL NEURAL NETWORKS IN STOCK MARKET PREDICTION

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ABSTRACT

Globalization has made the stock market prediction (SMP) accuracy more challenging and rewarding for the researchers and other participants in the stock market. Local and global economic situations along with the company's financial strength and prospects have to be taken into account to improve the prediction accuracy. Artificial Neural Networks (ANN) has been identified to be one of the dominant data mining techniques in stock market prediction area. In this paper, we survey different ANN models that have been experimented in SMP with the special enhancement techniques used with them to improve the accuracy. Also, we explore the possible research strategies in this accuracy driven ANN models.

KEYWORDS

Artificial Neural Networks, Multilayer Perceptron, Back Propagation, Stock market prediction & Prediction accuracy.

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Solution of Inverse Kinematics for SCARA Manipulator Using Adaptive Neuro-Fuzzy Network

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ABSTRACT

Solution of inverse kinematic equations is complex problem, the complexity comes from the nonlinearity of joint space and Cartesian space mapping and having multiple solution. In this work, four adaptive neurofuzzy networks ANFIS are implemented to solve the inverse kinematics of 4-DOF SCARA manipulator. The implementation of ANFIS is easy, and the simulation of it shows that it is very fast and give acceptable error.

KEYWORDS

Inverse Kinematics, Adaptive Neuro-Fuzzy, SCARA Manipulator.

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An Artificial Neural Network Model for Classification of Epileptic Seizures Using HuangHilbert Transform

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ABSTRACT

Epilepsy is one of the most common neurological disorders characterized by transient and unexpected electrical disturbance in the brain. In This paper the EEG signals are decomposed into a finite set of band limited signals termed as Intrinsic mode functions. The Hilbert transom is applied on these IMF's to calculate instantaneous frequencies. The 2nd,3rd and 4th IMF's are used to extract features of epileptic signal. A neural network using back propagation algorithm is implemented for classification of epilepsy. An overall accuracy of 99.8% is achieved in classification.

KEYWORDS

Electroencephalogram(EEG),Hilbert-Huang transform(HHT), Instantaneous frequency (ifs), intrinsic mode function (IMF)

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NEURAL NETWORK BASED SUPERVISED SELF ORGANIZING MAPS FOR FACE RECOGNITION

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ABSTRACT

The word biometrics refers to the use of physiological or biological characteristics of human to recognize and verify the identity of an individual. Face is one of the human biometrics for passive identification with uniqueness and stability. In this manuscript we present a new face based biometric system based on neural networks supervised self organizing maps (SOM). We name our method named SOM-F. We show that the proposed SOM-F method improves the performance and robustness of recognition. We apply the proposed method to a variety of datasets and show the results.

KEYWORDS

Biometrics, Face, Supervised Self Organizing Maps (SOM).

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