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FUZZY LOGICS ASSOCIATED WITH NEURAL NETWORKS IN THE REAL TIME FOR BETTER WORLD

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Abstract

According to the science and technology a neural network is a computer system modeled on the human brain and nervous system. Neural network model represent complex input/output relationships. Neural network is formed by inter connecting the number of nodes to process the information. A Neural network is designed using computer system which works like a human brain.

Sometimes the computer may fail to perform certain actions .Then we try to perform the same action by using human brain. To avoid this type of problems we are using FUZZY-LOGICS in computer systems to make decisions like human brain.

In this paper we are trying to present the concepts related to neural networks and Fuzzy logics and how neural networks are associated with the Fuzzy logics. This paper also presents the Fuzzy logic applications in the real world and also focuses on the applications of the fuzzy logics that are used across the world in different ways. Neural networks, Computational intelligence techniques, intelligent control, instrumentation and robotics include Fuzzy logics to perform the action in easier and different way to perform in better manner.

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1. Introduction

1.1 Neural Network:

Many researchers have a large appeal towards Neural networks due to their great closeness to the structure of the brain, a characteristic which is not shared by more traditional systems.

In an analogy to the brain, neural networks are made up of interconnected elements called units, which takes the input and give respond in parallel to a set of input signals given to each of them.

A neural network consists of four major parts:

1. All Processing units will have a certain activation level at any point in the certain time.
2. Weighted nodes interconnections between the various active processing units which determine the activation of one processing unit leads to input for another unit.
3. An activation rule which will act on the set of input processing signals at a unit to produce a new output signals, or activation.
4. Additionally and optionally, learning rule which specifies adjustment of the weights for a given input/output pair.

1.2 Fuzzy-Logics:

The Fuzzy logic technique was introduced by Lotfi A Zadeh with the proposal of fuzzy set theory in 1965. From control theory to artificial intelligence the fuzzy logic technique has been applied to many fields. Fuzzy logic is a form of truth values of different variables which may result in between the range of 0 and 1. In concept of Boolean logic the variable values may be either '0' (represents false) or '1' (represents true). But the concept of fuzzy logic will support partial truth values also, where truth values of each variable may fall in between the range of 0 and 1.

In this paper we are using a Neuro-Fuzzy concept, which refers to the combination of neural network and Fuzzy logic. Neuro-fuzzy was introduced by J. S. R. Jang. Hybrid intelligent system can be formed by using Neuro-Fuzzy technique by combing real learning with human-brain and activities, where the interconnections are formed with neural networks. Neuro-Fuzzy technique is also called as Fuzzy Neural Networks(FNN) or Neuro-Fuzzy System(NFS).

In this paper we present a Neuro- Fuzzy concept to detect different views of face of any person. For the detection of face and finger prints we are using neural network concept and in this we are also using fuzzy logics for determining whether the output image is true or false(i.e., determining whether he is correct person or not). The main aspect of this paper is to face and finger print detection and finding determining whether it is true or false. This full process we will discuss in the next sessions.

The outline of the paper is organized as follows: Section II gives a glance to all the recent research. Section III gives a brief narration about the working of neural network and fuzzy logics. Section IV elucidates the proposed experimental methodology. Section V illustrates the experimental results and the graphical comparison of the present research with the previous ones and finally, Section VI concludes the paper.

2. Literature Survey

[1] S R Patil (Waghjale), S R Suralkar in their research on “Neural Network based Fingerprint Classification” they discussed new approach of finger print classification system based on neural network. In this classification will be done based on the individual points features like singular points. Singular point detection is used in this paper to detect the finger prints exactly. In this they used back propagation algorithm to improve the classification efficiency.

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