Artificial Neural Networks And Their Interaction With Information Processing Artificial Neural Networks (Artificial Neural Network ANN)

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Abstract: Industrial nerve network (Artificial Neural Networks ANN) It is a system to deal with evidence In simulates and resembles the method used by neural networks Natural To humans or the organism (i.e. the human nervous system).. Neural network (Neural Network) contains a large number of (small systems to process information) called cell Neural Neuron. A proposal And Theory Sports Describe How Are Labor in Cell Nerve Natural Human...and here Are Exchange References Nerve from Hives to Hives Other in Device Nervous Natural. Any in Network Nerve Natural Neuronal networks generally consist simple processing elements are simple job but the overall behavior of the network is determined through communication between these various elements, called neurons here and indicators of these elements element parameters. The first to suggest the idea of neural networks came from the work of brain neurons that can be likened to biological electrical networks to process information to the brain mechanism. Each neural knot receive a set of input by tribal contacts neurons and all knots have continued activation activation function or continued conversion transfer function, node determines when and how it works any moment and the value of the output that you should give just as biological neuron. The attempt to build neural networks by programming (ie the neural network is a computer program) put an end to the number of neutrons that we want to use to solve a particular problem. Today this way can the use of a few hundred neurons only because of the difficulty teaching neuronal networks.

Keywords: Neuronal networks generally consist simple processing elements

Introduction

Also known networks neuronal Alake simulated neural network or SNN: that it is a coherent set of neurons virtual create computer programs to the similarity of the work of biological neuron or built electronic (electronic chips designed to mimic the action of neurons) used a mathematical model to process information based on the way communication in computing. Neuronal networks generally consist simple processing elements are simple job but the overall behavior of the network is determined through communication between these various elements, called neurons here and indicators of these elements element parameters. The first to suggest the idea of neural networks came from the work of brain neurons that can be likened to biological electrical networks to process information to the brain mechanism. In these networks suggested Donald Hebb that nervous plays a key role in guiding the treatment process and this prompted to think about the idea of connectivity and artificial neural networks. Neural networks, artificial composed of contract or what have mentioned previously that neurons neurons or processing units processing elements, connected together to form a network of nodes, and all communication between these nodes have a set of values called weights contribute to the identification resulting from each treatment based on the element values entering values for this element
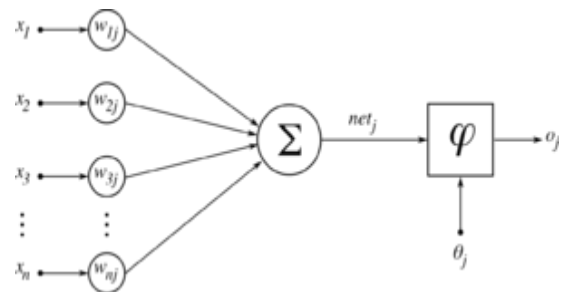

Figure 1-1 illustrates the neural network

Figure 2-1 shows General description of the mechanism of action of artificial neuron

What are the Artificial Neural Network?

Industrial nerve network (Artificial Neural Networks ANN) It is a system to deal with evidence In simulates and resembles the method used by neural networks Natural To humans or the organism (ie the human nervous system).. Neural network (Neural Network) contains a large number of (small systems to process information) called cell Neural Neuron. It is a proposal And Theory Sports Describe How Are Labor In Cell Nerve Natural Human... and here Are Exchange References Nerve FromHives To Hives Other In Device Nervous Natural. Any In Network Nerve Natural...

Types of neural networks

Alberspetron
Front nutrition neural networks Feedforward Neural networks

Including:

Front neural networks nutrition transportation background Backpropagation Feedforward Neural networks.
Kohnan self-organizing networks
Education neuronal networks
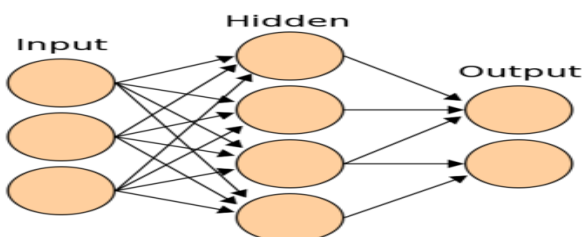Neural networks are not programmed but they are learning.

Neuron to man:
Neuron is the basic and essential element in all psychological operations, so are all the behaviors and reactions produced by the human being as a result of information processing, which is done by the network of nerve cells in the brain And can through the following form can be half the nerve cell of the human person...
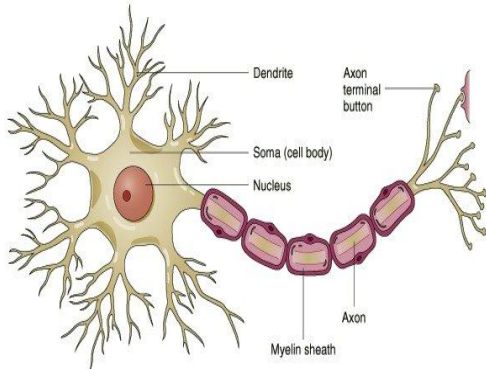
Fig. No. (3-1) illustrates Half Cell Nerve For man

Here we can see that the cell Nerve Natural Consists From Parts Main They

Part I: Dendrites

Which it is about the sensors pick up References Nerve From Cells Nervous Other.It can be here to imagine that cell Nerve Natural I picked up Heat High Or cold Here are a total of skin cells for a person to transfer operation Chemical To Signals Nervous Are Captured From Through The Dendrites.

Part II: Soma
It represents the cell body And She The To Aggregation References Receiving Through which the Dendrites Used In Comparison In Part Axon of the cell..

Part III: Axon:
It is the part that decides that the signal is sent To Cells Which Followed by Cell Here are the current... Happen Work (if Imagine That Number Shipments Consolidated From Through Soma has become enough of a certain degree Equivalent degree shipments in the Axon Here is sent signals To Dendrites Cells that Followed by Cell... Here, in the example of the heat-sensing High We find that the heat Turned To Number From Shipments Nerve In Cells Skin And skin cells pass Signal To Cells Neural.. And Al-Khalifa Nerve Under Zone Exposed Heat , Felt Number Great From Shipments Nerve And Been Aggregation These References In Cell.. But the number of received signals Great More That he Equivalent Class Burned The cell Sent Signal Cell Which Followed by In order to Move Information To Mind And There Are Understanding That he There are Burn In Area Exposed To the extent that Heat High. And here's Scientists Computer Science and engineering... The proposal to build a system that simulates the operation In In Cell Nerve Natural Neuron. If we look to the next form..
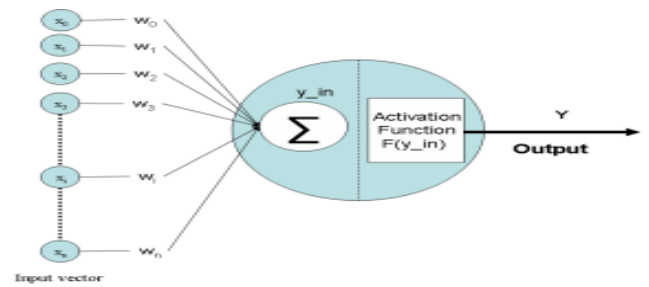

Figure 4-1 illustrates the system simulates the process In In Cell Nerve Natural Neuron

Here, if we look at the structure of the building in the former figure.. We find that it consists of Input (input vector).. And here is a pal X.. (X1, X2, X3,....... Xn).. Here you can imagine it Represent the Dendrites of the cell (somehow).. A total of any input signals of the cell... Here are either no signal Which one) Or there is no signal (zero) Weight (Weights).. It represents the degree of weight signal input.... And can imagine that the weight of the heat High For example, the heat and the weight of 50 Low B 3 And temperature The usual 27..The Activation Function Coupling Activation... and here Lies Labor Real Cell Nerve For example, here is a collection of weights of the input signals and compare them to reduce the value of certain threshold or (Threshold).If the sum of the weights signals Over the Threshold be noted Director It is (one) and The It was Less Be Output (zero)...

Neuron Neuron.. They Unity Basic In Building Networks Nerve Industrial.. If we look at the figure below..
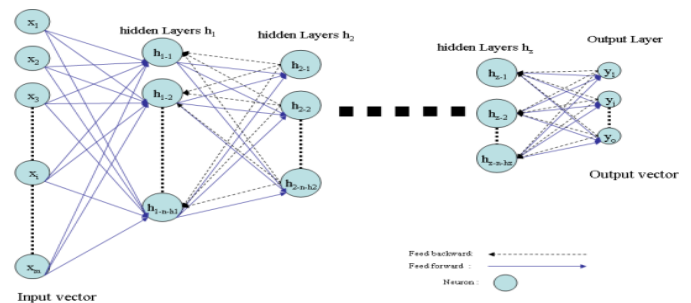

Figure (5-1) shows neurons

And given the previous form can imagine each circle In Fig., Contain artificial nerve cell Neuron Which build and use Artificial Neural Network... Which is a building structure in the device memory PC Or Mobile Or phrase based on a letter from the board Cornish circle... But what's the point of building Artificial Neural Networks... Goals are....
1. Signal Processing: Signal circuits such as aluminum Koen...
2. Control.
3. Pattern Recognition such as writing... Hand Alo images or hand imprint or signature.
4. Identification of votes..
5. In medicine..

And there are applications that increase day after day... And here, God willing, we have made it clear idea From Networks Nerve Industrial... And, God willing, in the next

lesson will be explaining some constants and symbols used In Networks Nerve

Method of information processing In neural networks:

All communication between one neuron and another characterized by being linked to the value called weight and is form over the importance of the link between these two elements, the neuron to hit all income value received from neurons in the previous layer weights contacts with these neurons, then collect all the beatings outputs, and then subjecting the result of the continued conversion It varies depending on the type of neuron, continued conversion output is the neuron that carries out the subsequent layer neurons.
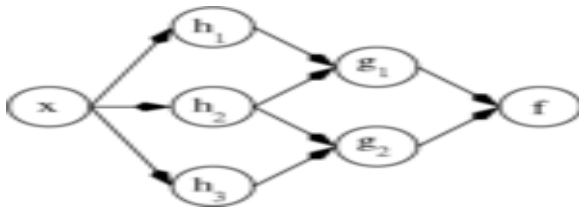

Figure 6-1 *illustrates the method of data processing*

Structure:

Recurrent ANN dependency graph

Artificial neural networks are considered, Acronym or neuronal networks, a group of parallel units small and simple treatment called contract or neurons, while two-way communications between these various units is of particular importance and play a major role in the creation of intelligent network. But on the whole, and despite the fact that the idea is mainly inspired by the work of neurons brain mechanism should not confuse a lot or Nashaba between the brain and neural networks Networks neuronal smallest and simplest of biological neurons and may be just a hypothetical units established by computer programs, and the work of neurons mechanism artificial neuron quotes some biological features and its similarity does not completely, contrast, many of the features and processing techniques were added to the artificial neurons based on mathematical or geometrical ideas, and these additions or new methods of work (some of them adapted from statistics or information theory) are not related to biological neurons Never. Conversely show neural networks of the brain was an important feature unique to only a learning and this is what gives these networks, especially in the importance of artificial intelligenc
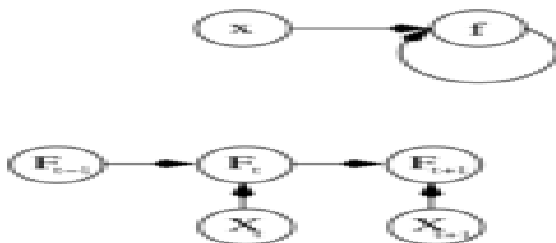

Figure (7-1) *shows the basic structure of the neural networks*

Neural network models

It was inspired by the work of artificial neuron neurons of the brain mechanism: In the vital neurons, we can attribute each clip contact coming incoming synapse (any staples forest nerve dendrite) value called weight clamp weight this value help in modeling the clamp (by specifying the value and importance) Vwazzn determines the strength of this clamp and its impact on the neuron. Hits all the weight of the next clip income, and then combines the outputs of beating each coming clamps. Usually it neurons biological belonging to the base threshold 'threshold value' value if the total weighted weighted Sum of the values of the income is greater than a certain value called the threshold threshold, burned with neuron or to transfer it activated sending an electrical signal called latency act along the axon axon and then up This reference axis through the forest to all emerging outgoing synapses clamps that connect to other Basbonat in the brain Typical neural networks are trying to mimic this behavior, each neural knot receive a set of inputs through its contacts neurons tribal and each node has continued activation activation function or continued converter transfer function, determines the node when and how it works any moment and the value of the output that you should give just as the neuron Diversity. Conversion is the simplest aftershocks continued threshold value which works on the basis of the neuron: giving a value of 1 if the total weighted internal values greater than a certain value called the threshold and 0 if your total is weighted less than the threshold. But the consequences of the conversion could potentially take other forms more complex the most important follow Alsiegmoad (the exponential), and the network is not without some nervous contract have continued conversion exponential, in general most of the aftershocks conversion shift value of total weighted values of income to a single value confined to the field [0-1]. One of the most important types of neural networks: neural network Front feeding a group holding neural arranged in layers. These neurons are connected with each other so that each neuron is usually associated with a layer of all neurons in the next layer (neurons are not linked to the same class with some of them). The standard format for these networks is three neural layers at least called (Layer income input layer, a hidden layer hidden layer, layer output layer out) Income layer does not undertake any treatment process they simply place the network data feed, the income layer then feed (the transfer of information) hidden layer and then feeding the hidden layer output layer. The actual data processing Data are in the hidden layer and output layer basis. When there is a sufficient number of neurons in each layer, the network will be able to practice training to do things with the help of algorithms useful training training algorithm, it is considered a front feeder networks are very important especially in the use of intelligent classification and discrimination intelligent data not already familiar.

Neural networks accounts

He Alsiegmoad is the most common conversion as a function of neurons because he believes in the non-linear neural network accounts by converting the value of the neutron activation within the domain [0,1]. In addition, he believes additional feature is to simply subordinate derivative, required in the back propagation algorithm back-

propagation of errors and is one of the algorithms Education observer used in the front feeder networks.

USES:
Artificial intelligence
Identify people
Recognizing situations
Voice recognition or image etc.
Understanding Lines and handwriting
Control
Simulation Systems
Modeling
Filter

Biological foundations:
Yeh nerve networks to imitate the work of the nerves of the brain depends.

The future of neural networks:
The attempt to build neural networks by programming (ie the neural network is a computer program) put an end to the number of neutrons that we want to use to solve a particular problem. Today this way can the use of a few hundred neurons only because of the difficulty teaching neuronal networks. The neural networks built on the foundations of Atade (Ie the network of Light is an all electric or Shipp links), the number of neurons used up to 30,000 For comparison, the snail has cerebral 20,000 cell or the so-called neurons. It is also some scientists have succeeded in manufacturing some cerebral cells from some of rat brain cells and then use these biological program in the conduct of flight simulations neurons and this step may allow the use of biological neurons to resolve issues

Examples Forms of Networks Neuronal:
A single-layer feedforward artificial neural network. Arrows originating from It is omitted for clarity. There are p inputs to this network and q outputs. There is no activation function (or equivalently, the activation function is).In this system, the value of the qth output, It would be calculated as A two-layer feedforward artificial neural network
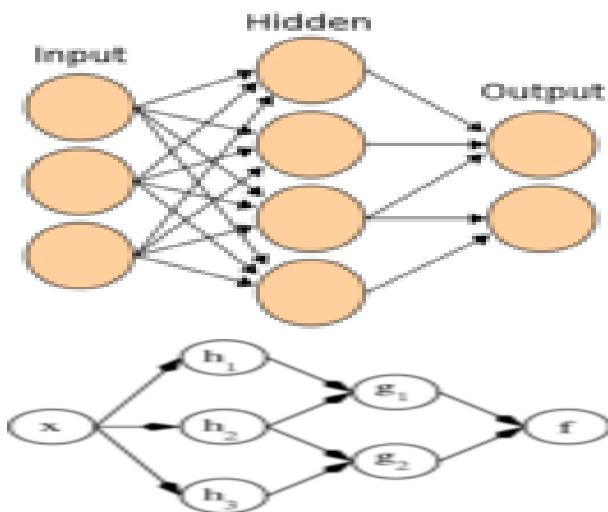

Figure (8 -1) Shows the type of forms of neuronal networks

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