Artificial Neural Network: Introduction

- An artificial neural network (ANN) may be defined as an information-processing model that is inspired by the way biological nervous systems, such as the brain, process information.

- This model tries to replicate only the most basic functions of the brain.

- An ANN is composed of a large number of highly interconnected processing units (neurons) working in unison to solve specific problems.

- Like human being, Artificial neural networks learn by example.

- An ANN is configured for a specific application, such as spam classification, Face Recognition, pattern recognition through a learning process.

Artificial Neural Network: Introduction

- Each neuron is connected with the other by a connection link.

- Each connection link is associated with weights which contain information about the input signal.

- This information is used by the neuron network to solve a particular problem.

- ANNs' collective behavior is characterized by their ability to learn, recall and generalize training patterns or data similar to that of a human brain.

- They have the capability to model networks of original neurons as found in the brain.

- Thus, the ANN processing elements are called neurons or artificial neurons.

Artificial Neural Network: Introduction

- Each neuron has an internal state of its own.

- This internal state is called the activation level of neuron

- The activation signal of a neuron is transmitted to other neurons.

- Remember, a neuron can send only one signal at a time, which can be transmitted to several other neurons.

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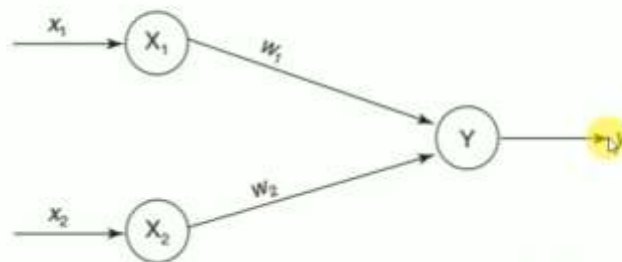
- Input neurons X1 and X2 are connected to the output neuron Y, over a weighted interconnection links (W1 and W2).

- For the above simple neuron net architecture, the net input has to be calculated in the following way:

$$y_{in} = x_1 w_1 + x_2 w_2 \qquad\qquad y = f(y_{in})$$