# Neuron Mesh Networks

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**Abstract :** This in the article neuron netted networks artificial of intellect important from directions one as is studied . Neuron networks a person brain and of neurons work principles based on created big in volume information again work and analysis in doing important role plays In the article neuron of networks history , structure , activation functions and study processes in detail seeing will be released . Deep deep learning approaches and neuron of networks different in the fields , including medicine , automobile industry , finance technologies and another in the fields application also information about given In the future neuron networks development directions , including hybrid models and quantum computers with depends achievements about thought maintained. This article neuron networks about wide to understanding have to be and their modern in technologies place about deep information get for important source being service does

**Keywords:** Neuron netted networks, Artificial intellect, Deep learning (Deep Learning), Activation functions, the machine learning (Machine Learning), Back spread algorithm (Backpropagation), Convolutional neuron networks (CNN), Recursive neuron networks (RNN), Optimization Algorithms of Gradient decrease (Gradient Descent), Quant computers , Hybrid models, Image Familiar, Time Sequence, Artificial neuron models .

## Introduction

Neuron laced networks is one of the important areas of artificial intelligence, they are inspired by the working principles of the human brain and neurons. This technology is important in processing and analyzing large amounts of data. Neural networks are also the main part of machine learning (Machine Learning) and allow to achieve high results in solving complex tasks.

## Neuron laced networks history

neural networks began in the middle of the 20th century. The first artificial neuron model was developed by McCulloch and Pitts in 1943. They created a mathematical model of artificial neurons that gave a simple representation of how neurons work.

After that , the Perceptron created by Rosenblatt in 1958 was an important step in the study of neural networks. Since the 1990s, many new neural network techniques have been developed, including backpropagation and deep learning approaches. Today, deep neural networks serve as the basis of many artificial intelligence systems
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### Neuron of networks structure

Neural networks mainly consist of three parts:

1. Input layer: It is the first part of the network that receives the initial data. This information is usually in the form of numbers .

2. Hidden layers: These layers perform data processing. The complexity of the network is determined by the number of hidden layers and neurons in them. 3. Output Layer: The final step in the network that provides the final decision or output based on the input data.

### Activation functions

Activation functions are important in neural networks because they determine the activity of a neuron and control the output of the network. The most common activation functions are:- Sigmoid: Keeps the output between 0 and 1 .

- ReLU (Rectified Linear Unit): Converts negative values to 0, leaving positive values unchanged.

- Softmax: Used to interpret results as probabilities.

### Study process and optimization

learn    complex    data    .    This    process    consists    of    several    steps: 1. Forward propagation: The input data moves through the network and the final result is generated.

2. Error calculation: The difference between the network output and the actual result is measured. This difference is called "error".

3. Backpropagation: Based on the error, the weights of the neurons are recalculated and the error is reduced by updating the network.

4. Optimization algorithms: To speed up and improve the learning process, various algorithms, such as Gradient Descent, are used.

### Deep study and complicated networks

Deep learning (Deep Learning) refers to neural networks consisting of many hidden layers. Deep networks show high performance in analyzing complex data sets, such as image recognition, voice command recognition, and natural language processing. Examples of deep learning models:- Convolutional Neural Networks (CNN): Mainly used in image analysis.- Recursive Neural Networks (RNN): Effective when dealing with time series and correlated data.

### Neuron networks to apply fields

Neural networks are currently used in various fields: 1. Medicine: Neural networks are used to improve disease detection and treatment processes. 2. Automotive: Self -driving cars have the ability to see their surroundings and make decisions through artificial neural networks. 3. Games : Neural networks are being used to play complex strategic games and win players. 4. Financial technologies: Provides high accuracy results in financial forecasting, investment and stock trading .

### In the future neuron networks development

Further development of neural networks is expected in the future. Currently, several directions are being developed to improve neural networks : - Hybrid models: Models combining traditional algorithms and deep learning methods. - Quantum computers: Quantum computer technologies are being developed to increase the computing power of neural networks.

### Summary

Neural networks are of great importance in the development of modern technology and artificial intelligence. Their ability to solve complex problems and process large amounts of data will enable many future technological advances. New technologies

and methods related to neural networks are being studied and their applications more expansion is showing .

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