ARTIFICIAL NEURAL NETWORK

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The neural network is an educational system. This is the sequence of neurons connected with each other via synapsis. Unlike conventional programs it operates not only under a given algorithm and formulas, but based on the past experience. Performing the same tasks as a man it makes fewer mistakes.

The neural networks appeared on the basis of experiments in the field of artificial intelligence from the attempts to create a system which can learn and correct mistakes like any biological system. Patterson made first attempts in 1996 and found out that the process of our thinking was built on the manipulation with symbols. But all these attempts were useless because they didn‟t take into account the important aspects of human intelligence.

This failure led to the important conclusion: in order to create artificial intelligence it is necessary for it to have the structure similar to the human brain. The basic unit of the neural networks and a brain is a neuron.

The principle of operation of a neuron is: a neuron receives numerous signals (on average 10 billion) but is activated only in case the total number of signals coming into the core exceeds the certain level (the level of activation).

An artificial neuron is a computing unit which gets information, carries out simple calculation and passes a binary code further. Each neuron has two main parameters: input data and output data. In other cases, the summarizing information from all neurons from the previous layer goes to the field input; then it becomes normal via the function of activation and goes to the field “output”.

Neurons operate with numbers in the range of [0,1] or [-1,1]. Normalization is necessary when the number which doesn’t belong to this range must be processed. Thus, the number must be divided to this range divided by one.

If mentioned properties are translated into programme code, the programmes can be created which will be able to detect other objects: people, buildings or they will define letters only according to their images.

To sum up, neural networks are necessary for solution of difficult monotonous and dangerous tasks which contain a lot of analytical calculations. There is a possibility of new applications because of the development of new technologies. Nowadays the systems based on life experience are already used in autopilot of cars that can find out the type of the road and recognize objects surrounding a Vehicle. In future this technology will be widely used in robotics.

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