

NATIONAL AVIATION UNIVERSITY
EDUCATIONAL & RESEARCH INSTITUTE
OF AERONAVIGATION, ELECTRONICS AND TELECOMMUNICATIONS
Department of Electronics

“Approved”

Head of the department

_____ Dr. of Sci., prof. Yanovsky F.J.

“_____” _____ 2018

Discipline: “Neurocomputer systems of diagnostics”

Test questions on the module №1

1. Physiology bases of functioning of brain.
2. Biological neuron as basis of brain, property of neuron.
3. Human brain as device of treatment and maintenance of information.
4. Philosophical problems of creation of artificial intelligence.
5. Artificial neuron.
6. Mathematical models of neuron.
7. Neuron networks - basic concepts.
8. Cell automats as simplest discrete systems for the design of properties of neurons without acsons.
9. Concept about neurocomputers and neuroemulators.
10. Areas of the use of neuronetworks.
11. The use of neuronetwork programmatic tools for the decision of problems of processing of images.
12. General principles of work and studies of neurocomputers : connectionism, locality, parallelism, studies on the basis of data, universality of teaching algorithms.
13. Classification of base neuroarchitectures for as algorithms of studies and architecture of connections.
14. One-layered perceptrons.
15. Task of classification of input stream of data.
16. Choice of function of activating.
17. Possibilities of multi-layered perceptrons.
18. Rosenblatt’s perceptron.
19. Problem of function OR (XOR).
20. Overcoming of limitation of linear separateness.
21. Gradient studies of multi-layered neurons.
22. Method of reverse (back - propagation) distribution of error.
23. Examples of algorithms of calculation of changes weights network on the basis of gradients of error.
24. Efficiency of algorithm of back - propagation.
25. Method of the most rapid lowering.
26. Optimization of sizes of neuronetworks.
27. Problem of reteaching of network.
28. Adaptive optimization of architecture of network.
29. Validation of neural network.
30. Concept of connectionism.
31. Structural algorithms.
32. Stochastic methods of studies of neuronetworks.
33. Boltzmann studies.

34. Studies of Cauchi.
35. Method of artificial heat capacity.
36. Combined methods of studies.
37. Packages for creation of multi-layered neuronetworks.
38. Research of properties of the various systems of built is on the basis of cell automats.
39. Programmatic realization of generator of pseudocasual numbers with the set properties (with set first (mathematical hope) and second (dispersion) now and then multidimensional vector, and by the set type of distribution (even, Gausse Student and other).
40. Realization of boolean functions one and two variables at the help of one-layer perceptron with one neuron.
41. Emulation of one-layer perceptron classificator work and prospect dependences of quality of division of input stream of data on the set amount of classes from preset parameter .
42. Development and research of work two (three) perceptron for the decision of tasks of approximation.
43. Work with the program for creation of multi-layered neuronetworks.
44. Steepest Descent Backpropagation.
45. Development and research of Hopfield network.
46. A design of neuronetworks is in Matlab.
47. Realization of boolean functions.
48. Emulation of work of one-layer perceptron classificator.
49. Multi-layered neuronetworks.
50. Design of neuronetworks.

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Developed by
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