Tutorial Unit 3: ANN

M C A III / V Semester

PS03CMCA33/ PS05CMCA53: Artificial Intelligence

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Short Questions/Objective Questions

1 An Artificial Neural Network documents its knowledge in _____.

(a) Cell body (c) Processing function

(b) Nuclease (d) Connections

2 _____ is not an artificial neural network model.

(a) Perceptron model (c) Kohonen model

(b) Hopfield model (d) Smart model

3 Hopfield model of neural network learns by _____.

(a) Back propagation (c) Parallel relaxation

(b) Clustering (d) Vertical relaxation

4 ANN uses _____ representation of knowledge.

(a) Connectionist (c) Temporary

(b) Symbolic (d) Rule based

5 A function in the nucleus of an artificial neuron is called _____ function.

(a) Processing function (c) Transfer function

(b) Activation function (d) All of these

6 _____ is an example of a popular activation function of neural network.

(a) Sigmoid (c) Subtraction

(b) Addition (d) Multiplication

7 Artificial neural network are intelligent systems that can be used for _____.

(a) Explanation (c) Reasoning

(b) Pattern matching (d) User interface

8 _____ is a computer program that simulates the working of natural nervous system.

(a) Control system (c) Memory management

(b) Artificial neural network (d) Device drivers

9. Learning with the help of labeled training data is known as _____ learning.

(a) Supervised (c) Re-inforcement

(b)Unsupervised (d) Controlled

10 Learning in ANN is _____.
(a) Bio-inspired (c) Temporal
(b) Random (d) Not needed

11 The objective of _____ models and techniques to take inspiration from Mother Nature and solve problems in more effective and intelligent way. (bio-inspired)

12 _____ takes inspiration from the collective behavior of social insect colonies and other animal societies such as ants, fish, birds and honey bees.

13 State True or False: An artificial neural network (ANN) is a simulation of biological neural network in a narrow domain.

14 State True or False: Hopfield model of ANN works on parallel relaxation.

15 State True or False: Machine Learning (ML) is defined as an ability to learn without being explicitly programmed.

16 _____ learning uses a pre-defined set of training examples with proper labels.

17 _____ is a learning paradigm for ANN with unlabeled training data.

18 Typical ANN for shallow learning requires _____ hidden layers.

19 _____ learning approach supports automatic feature extraction form the data/images unlike shallow learning.

20 State True or False: Machine learning is a subset of AI.

21. What is artificial neuron?
22. Draw an artificial neuron.
23. Draw a biological neuron.
24. List characteristic of an artificial neural network.
25. What is an activation/transfer/ processing function?
26. Give an example of activation function. (weighted sum, weighted avg, sigmod, etc.)
27. Name model/architectures of artificial neural network.
28. What is parallel relaxation?
29. Give structure of multiplayer perceptron.
30. List only two main phases of learning in a typical multiplayer perceptron.
31. What is forward pass?
32. What is backward pass?
33. Name learning algorithm of multiplayer perceptron.

34. State true or false: Creditability of a multiplayer perceptron depends on its training data set.
35. State true or false: Learning from labeled training data sets in presence of a control mechanism is called supervised learning.
36. State true or false: ANN is used for classification.
37. What is the advantage of an ANN?
38. Give a limitation of ANN.
39. Write an application of single perceptron.
40. Write an application of multiplayer perceptron.
41. Explain supervised learning.
42. Explain un-supervised learning.

Big Questions/ Assignment Questions

43. Draw biological neuron and artificial neuron with proper labels. Also explain working of an artificial neuron.
44. Give an example of single perceptron of your choice by giving its diagram.
45. Explain Hopfield model in detail by giving its diagram and learning algorithm.
46. Design a multi layer perceptron for sales prediction. Also give its sample training data set.
47. Design a multi layer perceptron for selection of a job. Also give its sample training data set.
48. Design a multi layer perceptron for selection of a course. Also give its sample training data set.
49. Explain design heuristic in a multi layer neural network.
50. Explain learning in a multi layer neural network.