

AI Neural Networks Interview Questions And Answers Guide.



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AI Neural Networks Job Interview Preparation Guide.

Question # 1

Explain Artificial Neural Networks (ANNs)?

Answer:-

A computing system made up of a number of simple, highly interconnected processing elements, which process information by their dynamic state response to external inputs.

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Question # 2

Why is the XOR problem exceptionally interesting to neural network researchers?

- a) Because it can be expressed in a way that allows you to use a neural network
- b) Because it is complex binary operation that cannot be solved using neural networks
- c) Because it can be solved by a single layer perceptron
- d) Because it is the simplest linearly inseparable problem that exists.

Answer:-

- d) Because it is the simplest linearly inseparable problem that exists.

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Question # 3

What is back propagation?

- a) It is another name given to the curvy function in the perceptron
- b) It is the transmission of error back through the network to adjust the inputs
- c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.
- d) None of the mentioned

Answer:-

- c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.

Explanation:

Back propagation is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.

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Question # 4

Which of the following is not the promise of artificial neural network?

- a) It can explain result
- b) It can survive the failure of some nodes
- c) It has inherent parallelism
- d) It can handle noise

Answer:-

- a) It can explain result

Explanation:

The artificial Neural Network (ANN) cannot explain result.

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Question # 5

Why are linearly separable problems of interest of neural network researchers?

- a) Because they are the only class of problem that network can solve successfully
- b) Because they are the only class of problem that Perceptron can solve successfully
- c) Because they are the only mathematical functions that are continue
- d) Because they are the only mathematical functions you can draw

Answer:-

- b) Because they are the only class of problem that Perceptron can solve successfully



Explanation:

Linearly separable problems of interest of neural network researchers because they are the only class of problem that Perceptron can solve successfully

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Question # 6

A perceptron adds up all the weighted inputs it receives, and if it exceeds a certain value, it outputs a 1, otherwise it just outputs a 0.

- a) True
- b) False
- c) Sometimes - it can also output intermediate values as well
- d) Can't say

Answer:-

- a) True

Explanation:

Yes the perceptron works like that.

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Question # 7

Having multiple perceptrons can actually solve the XOR problem satisfactorily: this is because each perceptron can partition off a linear part of the space itself, and they can then combine their results.

- a) True - this works always, and these multiple perceptrons learn to classify even complex problems.
- b) False - perceptrons are mathematically incapable of solving linearly inseparable functions, no matter what you do
- c) True - perceptrons can do this but are unable to learn to do it - they have to be explicitly hand-coded
- d) False - just having a single perceptron is enough

Answer:-

- c) True - perceptrons can do this but are unable to learn to do it - they have to be explicitly hand-coded

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Question # 8

The network that involves backward links from output to the input and hidden layers is called as ____.

- a) Self organizing maps
- b) Perceptrons
- c) Recurrent neural network
- d) Multi layered perceptron

Answer:-

- c) Recurrent neural network

Explanation:

RNN (Recurrent neural network) topology involves backward links from output to the input and hidden layers.

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Question # 9

The name for the function in question 16 is

- a) Step function
- b) Heaviside function
- c) Logistic function
- d) Perceptron function

Answer:-

- b) Heaviside function

Explanation:

Also known as the step function - so answer 1 is also right. It is a hard thresholding function, either on or off with no in-between.

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Question # 10

A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is:

- a) 000 or 110 or 011 or 101
- b) 010 or 100 or 110 or 101
- c) 000 or 010 or 110 or 100
- d) 100 or 111 or 101 or 001

Answer:-

- c) 000 or 010 or 110 or 100

Explanation:

The truth table before generalization is:

Inputs Output

000 0
001 0
010 0
011 0
100 0
101 0
110 0
111 1



where \$ represents don't know cases and the output is random.

After generalization, the truth table becomes:

Inputs Output

000 0

001 1

010 0

011 1

100 0

101 1

110 0

111 1

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Question # 11

A perceptron is:

- a) a single layer feed-forward neural network with pre-processing
- b) an auto-associative neural network
- c) a double layer auto-associative neural network
- d) a neural network that contains feedback

Answer:-

- a) a single layer feed-forward neural network with pre-processing

Explanation:

The perceptron is a single layer feed-forward neural network. It is not an auto-associative network because it has no feedback and is not a multiple layer neural network because the pre-processing stage is not made of neurons.

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Question # 12

An auto-associative network is:

- a) a neural network that contains no loops
- b) a neural network that contains feedback
- c) a neural network that has only one loop
- d) a single layer feed-forward neural network with pre-processing

Answer:-

- b) a neural network that contains feedback

Explanation:

An auto-associative network is equivalent to a neural network that contains feedback. The number of feedback paths(loops) does not have to be one.

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Question # 13

A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be:

- a) 238
- b) 76
- c) 119
- d) 123

Answer:-

- a) 238

Explanation:

The output is found by multiplying the weights with their respective inputs, summing the results and multiplying with the transfer function. Therefore:

Output = $2 * (1*4 + 2*10 + 3*5 + 4*20) = 238$.

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Question # 14

Which of the following is an application of NN (Neural Network)?

- a) Sales forecasting
- b) Data validation
- c) Risk management
- d) All of the mentioned

Answer:-

- d) All of the mentioned

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Question # 15

Which of the following is true for neural networks?

- (i) The training time depends on the size of the network.
- (ii) Neural networks can be simulated on a conventional computer.
- (iii) Artificial neurons are identical in operation to biological ones.

- a) All of the mentioned
- b) (ii) is true
- c) (i) and (ii) are true
- d) None of the mentioned



Answer:-

c) (i) and (ii) are true

Explanation:

The training time depends on the size of the network; the number of neuron is greater and therefore the number of possible 'states' is increased. Neural networks can be simulated on a conventional computer but the main advantage of neural networks - parallel execution - is lost. Artificial neurons are not identical in operation to the biological ones.

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Question # 16

What are the advantages of neural networks over conventional computers?

(i) They have the ability to learn by example

(ii) They are more fault tolerant

(iii) They are more suited for real time operation due to their high 'computational' rates

a) (i) and (ii) are true

b) (i) and (iii) are true

c) Only (i)

d) All of the mentioned

Answer:-

d) All of the mentioned

Explanation:

Neural networks learn by example. They are more fault tolerant because they are always able to respond and small changes in input do not normally cause a change in output. Because of their parallel architecture, high computational rates are achieved.

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Question # 17

Which of the following is true?

(i) On average, neural networks have higher computational rates than conventional computers.

(ii) Neural networks learn by example.

(iii) Neural networks mimic the way the human brain works.

a) All of the mentioned are true

b) (ii) and (iii) are true

c) (i), (ii) and (iii) are true

d) None of the mentioned

Answer:-

a) All of the mentioned are true

Explanation:

Neural networks have higher computational rates than conventional computers because a lot of the operation is done in parallel. That is not the case when the neural network is simulated on a computer. The idea behind neural nets is based on the way the human brain works. Neural nets cannot be programmed, they can only learn by examples.

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Question # 18

Which is true for neural networks?

a) It has set of nodes and connections

b) Each node computes it's weighted input

c) Node could be in excited state or non-excited state

d) All of the mentioned

Answer:-

d) All of the mentioned

Explanation:

All mentioned are the characteristics of neural network.

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Question # 19

Which of the following is true?

Single layer associative neural networks do not have the ability to:

(i) perform pattern recognition

(ii) find the parity of a picture

(iii) determine whether two or more shapes in a picture are connected or not

a) (ii) and (iii) are true

b) (ii) is true

c) All of the mentioned

d) None of the mentioned

Answer:-

a) (ii) and (iii) are true

Explanation:

Pattern recognition is what single layer neural networks are best at but they don't have the ability to find the parity of a picture or to determine whether two shapes are connected or not.

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Question # 20

Neuro software is:



- a) A software used to analyze neurons
- b) It is powerful and easy neural network
- c) Designed to aid experts in real world
- d) It is software used by Neuro surgeon

Answer:-

- b) It is powerful and easy neural network

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Question # 21

Neural Networks are complex _____ with many parameters.

- a) Linear Functions
- b) Nonlinear Functions
- c) Discrete Functions
- d) Exponential Functions

Answer:-

- a) Linear Functions

Explanation:

Neural networks are complex linear functions with many parameters.

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Question # 22

Explain Basic Structure of ANNs?

Answer:-

The idea of ANNs is based on the belief that working of human brain by making the right connections, can be imitated using silicon and wires as living neurons and dendrites.

The human brain is composed of 100 billion nerve cells called neurons. They are connected to other thousand cells by Axons. Stimuli from external environment or inputs from sensory organs are accepted by dendrites. These inputs create electric impulses, which quickly travel through the neural network. A neuron can then send the message to other neuron to handle the issue or does not send it forward.

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Question # 23

Described the Composition of ANNs?

Answer:-

ANNs are composed of multiple nodes, which imitate biological neurons of human brain. The neurons are connected by links and they interact with each other. The nodes can take input data and perform simple operations on the data. The result of these operations is passed to other neurons. The output at each node is called its activation or node value.

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Question # 24

Explain Neural Networks?

Answer:-

A neural network can be defined as a model of reasoning based on the human brain.

The human brain incorporates nearly 10 billion neurons and 60 trillion connections, Synapses, between them.

By using multiple neurons simultaneously, the brain can perform its functions much faster than the faster computers.

Although a single neuron has a very simple structure, an army of such elements constitutes a tremendous processing power.

The network which represents the connections among several neurons is called a neural network.

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Question # 25

What is Artificial Intelligence Neural Networks?

Answer:-

For the sake of trying to produce intelligent behavior however really all that's being done is work with artificial neural networks where each cell is a very simple processor and the goal is to try and make them work together to solve some problem. That's all that gets covered in this book. Many people are skeptical that artificial neural networks can produce human levels of performance because they are so much simpler than the biological neural networks.

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Question # 26

Suppose we need a MATLAB source code to recognize different regular geometric shapes such as: squares, rectangles, triangles, circles and ellipses in different sizes using neural network.

All of the images containing these shapes should be in binary format with the size of 300*400 pixels.

Give us a MATLAB code to detect these geometric shapes?



Answer:-

Explain your self

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