

Started on Saturday, 24 February 2024, 7:30 AM

State Finished

Completed on Saturday, 24 February 2024, 8:14 AM

Time taken 44 mins 53 secs

Grade 13.00 out of 15.00 (87%)

Question **1**

Correct

Mark 1.00 out of 1.00

Which of the following is not an example of an unsupervised neural network?

- ☐ Self-organizing feature map
- ☐ Hebb network
- ☐ Both a and b
- ☒ Back propagation network



The correct answer is: Back propagation network

Question **2**

Correct

Mark 1.00 out of 1.00

Which boolean operation on two variables can be represented by a single perceptron layer?

- A) X1 AND X2
- B) X1 OR X2
- C) X1 NOR X2
- D) X1 XOR X2

- ☐ D only
- ☐ C and D only
- ☒ A, B and C only
- ☐ A, B, C and D only



The correct answer is: A, B and C only

Question **3**

Incorrect

Mark 0.00 out of 1.00

In neural networks, what are the roles of nonlinear activation functions such as sigmoid, tanh, and ReLU? (multiple options may be correct)

☒ They speed up the gradient calculation in backpropagation, as compared to without their usage



☒ They help to learn nonlinear decision boundaries



☐ They output values between 0 and 1

☐ All of the above

Your answer is incorrect.

The correct answer is:

They help to learn nonlinear decision boundaries

Question **4**

Correct

Mark 1.00 out of 1.00

Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p_1, p_2, \dots, p_k) such that sum of p over all n equals to 1?

- ☐ Sigmoid
- ☐ Rectified Linear Unit (ReLU)
- ☐ Tanh
- ☒ Softmax



(d) Softmax

The Softmax activation function is commonly used as an activation function in the case of multi-class classification problems in machine learning. The output of the Softmax is interpreted as the probability of getting each class.

Softmax is a mathematical function that converts a vector of numbers into a vector of probabilities, where the probabilities of each value are proportional to the relative scale of each value in the vector.

The most common use of the softmax function in applied machine learning is in its use as an activation function in a neural network model. Specifically, the network is configured to output N values, one for each class in the classification task, and the softmax function is used to normalize the outputs, converting them from weighted sum values into probabilities that sum to one. Each value in the output of the softmax function is interpreted as the probability of membership for each class. [Please refer here for more on Softmax activation function]

The correct answer is: Softmax

Question **5**

Correct

Mark 1.00 out of 1.00

What is back propagation?

- ☐ It is another name given to the curvy function in the perceptron
- ☐ It is the transmission of error back through the network to adjust the inputs
- ☒ It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn
- ☐ None of the mentioned



Explanation:

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

The correct answer is: It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn

Question **6**

Correct

Mark 1.00 out of 1.00

Identify the following activation function:

$\phi(V) = \frac{Z}{1 + \exp(-X * V + Y)}$, Z, X, Y are parameters?

- ☐ Step function
- ☐ Ramp function
- ☒ Sigmoid
- ☐ Gaussian function



The correct answer is: Sigmoid

Question **7**

Correct

Mark 1.00 out of 1.00

The data is fed into the model and output from each layer is obtained this step is called _____.

- ☒ Feedforward
- ☐ Feed backward
- ☐ input layer
- ☐ Output layer



The correct answer is: Feedforward

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following is well suited for perceptual tasks?

- ☐ Reinforcement Learning
- ☐ Recurrent Neural Networks
- ☒ Convolutional Neural Networks
- ☐ Feed-forward Neural Networks



The correct answer is: Convolutional Neural Networks

Question **9**

Incorrect

Mark 0.00 out of 1.00

In CNN, after adding (2x2) sized 16 max pooling layers, the network total parameters will get increased by how much amount (number of parameters increased)?

- ☒ 4
- ☐ 16
- ☐ 64
- ☐ None of these



The correct answer is: None of these

Question **10**

Correct

Mark 1.00 out of 1.00

In a simple MLP model with 8 neurons in the input layer, 5 neurons in the hidden layer and 1 neuron in the output layer. What is the size of the weight matrices between hidden output layer and input hidden layer?

- ☐ [1 X 5] , [8 X 5]
- ☒ [5 x 1] , [8 X 5]
- ☐ [8 X 5] , [5 X 1]
- ☐ [8 X 5] , [1 X 5]



The correct answer is: [5 x 1] , [8 X 5]

Question **11**

Correct

Mark 1.00 out of 1.00

QUESTION CONTEXT:

Statement 1: It is possible to train a network well by initializing all the weights as 0

Statement 2: It is possible to train a network well by initializing biases as 0 Which of the statements given above is true?

- ☐ Statement 1 is true while Statement 2 is false
- ☒ Statement 2 is true while statement 1 is false
- ☐ Both statements are true
- ☐ Both statements are false



The correct answer is: Statement 2 is true while statement 1 is false

Question **12**

Correct

Mark 1.00 out of 1.00

The input image has been converted into a matrix of size 28 X 28 and a kernel/filter of size 7 X 7 with a stride of 1. What will be the size of the convoluted matrix when any kind of padding is not used?

- ☒ 22 X 22
- ☐ 21 X 21
- ☐ 28 X 28
- ☐ 7 X 7



The correct answer is: 22 X 22

Question **13**

Correct

Mark 1.00 out of 1.00

Given below is an input matrix of shape 7 X 7. What will be the output on applying a max pooling of size 3 X 3 with a stride of 2?

1	2	4	1	4	0	1
0	0	1	6	1	5	5
1	4	4	5	1	4	1
4	1	5	1	6	5	0
1	0	6	5	1	1	8
2	3	1	8	5	8	1
0	9	1	2	3	1	4

- ☒

4	6	5
6	6	8
9	8	8
- ☐

4	5	5
6	6	8
9	8	6
- ☐

4	5	6
3	6	8
9	9	6
- ☐

4	3	3
3	3	3
4	3	4



The correct answer is:

4	6	5
6	6	8
9	8	8

Question **14**

Correct

Mark 1.00 out of 1.00

What value would be in place of question mark? Here we see a convolutional function being applied to input.

INPUT					FILTER			CONVOLVED FEATURE		
1	1	1	0	0	1	0	1	?		
0	1	1	1	0	0	1	0			
0	0	1	1	1	1	0	1			
0	0	1	1	0						
0	1	1	0	0						

Here we see a convolutional function being applied to input.

- ☐ 3
- ☒ 4
- ☐ 5
- ☐ 6



The correct answer is: 4

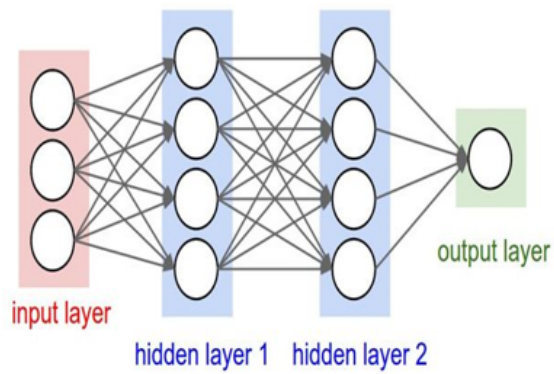
Question **15**

Correct

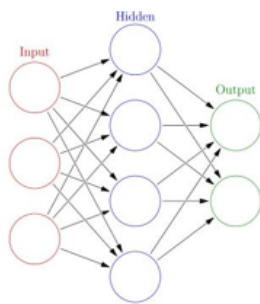
Mark 1.00 out of 1.00

For a binary classification problem, which of the following architecture would you choose?

1.



2.



- ☐ 1
- ☐ 2
- ☒ Any one of these
- ☐ None of these



The correct answer is: Any one of these