

Neural Networks Questions

TA. Ahmed Almohammed

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Question 1: Which of the following are the reasons behind the transition to deep learning?

- Machine learning algorithms are out-dated
- *More computation power*
- Deep learning uses neural networks which are always better than machine learning algorithms
- *More data*

Question 2: What is the main reason behind using activation functions?

- To add dependencies
- *To break linearity*
- To add linearity
- To break dependencies

Question 3: Which of the following represents a batch of size 32 of 16 pixels by 16 pixels grayscale images?

- *(32, 1, 16, 16)*
- (1, 32, 16, 16)
- (1, 16, 32, 16)
- (1, 16, 16, 32)

Question 4: What does a neuron compute in neural networks?

- A neuron computes a linear function ($z = Wx + b$)
- A neuron computes an activation function followed by a linear function ($z = Wx + b$)
- ***A neuron computes a linear function ($z = Wx + b$) followed by an activation function***
- A neuron computes a linear function ($z = Wx + b$) followed by averaging the result

Question 5: Consider the following variables a and b, with a.shape = (256, 64) and b.shape = (64, 128). What is the shape of a @ b, np.dot(a, b) and a * b?

- a @ b = (256, 128), np.dot(a, b) = ERROR, a * b = ERROR
- a @ b = (256, 128), np.dot(a, b) = (256, 128), a * b = ERROR
- a @ b = (256, 128), np.dot(a, b) = (256, 128), a * b = (256, 128)
- a @ b = ERROR, np.dot(a, b) = (256, 128), a * b = ERROR

Question 6: Suppose the value of z is a negative number. What will be the output of the relu activation function? i.e what will be the value of $relu(z)$?

- The absolute value of z
- The same value of z
- ***Zero***
- Error as relu activation function does not take negative input

Question 7: The following are hyperparameters EXCEPT:

- Epochs
- Hidden Units
- Learning Rate
- ***Loss Function***

Question 8: Assume a neural network architecture with 2 nodes in the inputs layer, 3 nodes in the hidden layer and 2 nodes in the output layer. What is the total number of learnable parameters in this network?

- 12
- 10
- ***17***
- 16

Question 9: Assume a neural network architecture with 784 nodes in the inputs layer, 16 nodes in 2 hidden layers and 10 nodes in the output layer. What is the total number of learnable parameters in this network?

- 12990
- 13000
- 12988
- *13002*

Question 10: Why is Pytorch library the go to library for deep learning?

- *Support of dynamic computational graphs*
- *Flexible utilizaiton of GPUs*
- Scalibility
- Stability