← Back **Key Concepts on Deep Neural Networks**
Graded Assignment • 50 min

Due Nov 24, 11:59 PM IST

1. Which of the following is stored in the 'cache' during forward propagation for latter use in backward propagation? **1 point**

● $Z^{[l]}$

○ $b^{[l]}$

○ $W^{[l]}$

2. Among the following, which ones are "hyperparameters"? (Check all that apply.) **1 point**

☑ number of iterations

☑ size of the hidden layers $n^{[l]}$

□ bias vectors $b^{[l]}$

☑ learning rate α

☑ number of layers L in the neural network

□ weight matrices $W^{[l]}$

□ activation values $a^{[l]}$

3. Which of the following statements is true? **1 point**

● The deeper layers of a neural network are typically computing more complex features of the input than the earlier layers.

○ The earlier layers of a neural network are typically computing more complex features of the input than the deeper layers.

4. We can not use vectorization to calculate $da^{[l]}$ in backpropagation, we must use a for loop over all the examples. True/False? **1 point**

● False

○ True

5. Assume we store the values for $n^{[l]}$ in an array called layer_dims, as follows: layer_dims = $[n_x$, 4,3,2,1]. So layer 1 has four hidden units, layer 2 has 3 hidden units, and so on. Which of the following for-loops will allow you to initialize the parameters for the model? **1 point**

○

for i in range(1, len(layer_dims)/2):

parameter['W' + str(i)] = np.random.randn(layer_dims[i], layer_dims[i-1]) * 0.01

parameter['b' + str(i)] = np.random.randn(layer_dims[i], 1) * 0.01

○

for i in range(len(layer_dims)-1):

parameter['W' + str(i+1)] = np.random.randn(layer_dims[i+1], layer_dims[i]) * 0.01

parameter['b' + str(i+1)] = np.random.randn(layer_dims[i+1], 1) * 0.01

○

for i in range(len(layer_dims)):

parameter['W' + str(i+1)] = np.random.randn(layer_dims[i+1], layer_dims[i]) * 0.01

parameter['b' + str(i+1)] = np.random.randn(layer_dims[i+1], 1) * 0.01

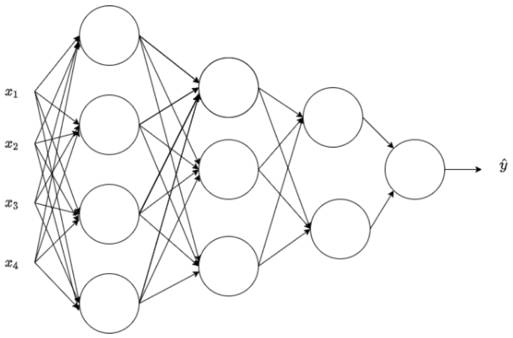
●

for i in range(len(layer_dims)-1):

parameter['W' + str(i+1)] = np.random.randn(layer_dims[i], layer_dims[i+1]) * 0.01

parameter['b' + str(i+1)] = np.random.randn(layer_dims[i+1], 1) * 0.01

6. Consider the following neural network: **1 point**



What are all the values of $n^{[0]}, n^{[1]}, n^{[2]}, n^{[3]}$ and $n^{[4]}$?

○ 4, 3, 2, 1

○ 4, 4, 3, 2

○ 4, 3, 2

● 4, 4, 3, 2, 1

7. During forward propagation, to calculate $A^{[l]}$, you use the activation function $g^{[l]}$ with the values of $Z^{[l]}$. 1 point

True/False: During backward propagation, you calculate $dA^{[l]}$ from $Z^{[l]}$.

● False

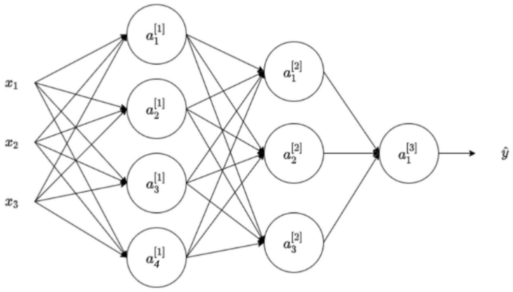
○ True

8. A shallow neural network with a single hidden layer and 6 hidden units can compute any function that a neural network with 2 hidden layers and 6 hidden units can compute. True/False? 1 point

● False

○ True

9. Consider the following 2 hidden layers neural network: 1 point



Which of the following statements is true? (Check all that apply).

□ $W^{[2]}$ will have shape (4, 3)

□ $b^{[1]}$ will have shape (1, 4)

□ $W^{[2]}$ will have shape (1, 3)

□ $b^{[1]}$ will have shape (3, 1)

☑ $W^{[1]}$ will have shape (4, 3)

☑ $W^{[2]}$ will have shape (3, 4)

☑ $b^{[1]}$ will have shape (4, 1)

□ $W^{[1]}$ will have shape (3, 4)

□ $W^{[2]}$ will have shape (3, 1)

10. Whereas the previous question used a specific network, in the general case what is the dimension of W^{[l]}, the weight matrix associated with layer l? 1 point

○ $W^{[l]}$ has shape $(n^{[l]}, n^{[l+1]})$

○ $W^{[l]}$ has shape $(n^{[l-1]}, n^{[l]})$

● $W^{[l]}$ has shape $(n^{[l]}, n^{[l-1]})$

○ $W^{[l]}$ has shape $(n^{[l+1]}, n^{[l]})$