**Key Concepts on Deep Neural Networks**

**Latest Submission Grade 90%**

**1.**

**Question 1**

What is stored in the 'cache' during forward propagation for latter use in backward propagation?

**1 / 1 point**

Expand

**Correct**

Yes. This value is useful in the calculation of dW[l] in the backward propagation.

**2.**

**Question 2**

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

**0 / 1 point**

Expand

**Incorrect**

You didn't select all the correct answers

**3.**

**Question 3**

Which of the following is more likely related to the early layers of a deep neural network?

**1 / 1 point**

Expand

**Correct**

Yes. The early layer of a neural network usually computes simple features such as edges and lines.

**4.**

**Question 4**

Vectorization allows you to compute forward propagation in an L*L*-layer neural network without an explicit for-loop (or any other explicit iterative loop) over the layers l=1, 2, …,L. True/False?

**1 / 1 point**

Expand

**Correct**

Forward propagation propagates the input through the layers, although for shallow networks we may just write all the lines (a[2]=g[2](z[2]), z[2]=W[2]a[1]+b[2], ...) in a deeper network, we cannot avoid a for loop iterating over the layers: (a[l]=g[l](z[l]), z[l]=W[l]a[l−1]+b[l], ...).

**5.**

**Question 5**

Suppose W[i] is the array with the weights of the i-th layer, b[i] is the vector of biases of the i-th layer, and g is the activation layer used in all layers. Which of the following calculates the forward propagation for the neural network with L layers.

**1 / 1 point**

Expand

**Correct**

Yes. Remember that the range omits the last number thus the range from 1 to L+1 gives the L necessary values.

**6.**

**Question 6**

Consider the following neural network:

Diagram

Description automatically generated

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

**1 / 1 point**

Expand

**Correct**

Yes. The n[l] are the number of units in each layer, notice that n[0]=nx.

**7.**

**Question 7**

During forward propagation, in the forward function for a layer l*l* you need to know what is the activation function in a layer (sigmoid, tanh, ReLU, etc.). During backpropagation, the corresponding backward function also needs to know what is the activation function for layer l*l*, since the gradient depends on it. True/False?

**1 / 1 point**

Expand

**Correct**

Yes, as you've seen in week 3 each activation has a different derivative. Thus, during backpropagation you need to know which activation was used in the forward propagation to be able to compute the correct derivative.

**8.**

**Question 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 / 1 point**

Expand

**Correct**

Correct. As seen during the lectures there are functions you can compute with a "small" L-layer deep neural network that shallower networks require exponentially more hidden units to compute.

**9.**

**Question 9**

Consider the following 2 hidden layers neural network:

Diagram

Description automatically generated

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

**1 / 1 point**

Expand

**Correct**

Great, you got all the right answers.

**10.**

**Question 10**

In the general case if we are training with m*m* examples what is the shape of A^{[l]}*A*[*l*]?

**1 / 1 point**

Expand

**Correct**

Yes. The number of rows in A[1] corresponds to the number of units in the l-th layer.