Congratulations! You passed!

Grade received 100% **Latest Submission Grade** 100% **To pass** 80% or higher

Go to next item

1. What is the "cache" used for in our implementation of forward propagation and backward propagation?

1 / 1 point

- ○ It is used to cache the intermediate values of the cost function during training.
- ○ It is used to keep track of the hyperparameters that we are searching over, to speed up computation.
- ○ We use it to pass variables computed during backward propagation to the corresponding forward propagation step. It contains useful values for forward propagation to compute activations.
- ◉ We use it to pass Z computed during forward propagation to the corresponding backward propagation step. It contains useful values for backward propagation to compute derivatives.

Expand

Correct
Correct, the "cache" records values from the forward propagation units and are used in backward propagation units because it is needed to compute the chain rule derivatives.

2. Which of the following are “parameters” of a neural network? (Check all that apply.)

1 / 1 point

- [x] $b^{[l]}$ the bias vector.

  Correct
  Correct. The weight matrices and the bias vectors are the parameters of the network.

- [x] $W^{[l]}$ the weight matrices.

  Correct
  Correct. The weight matrices and the bias vectors are the parameters of the network.

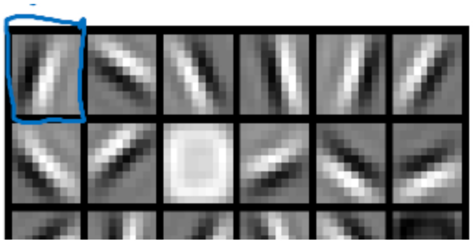
- [ ] $g^{[l]}$ the activation functions.
- [ ] L the number of layers of the neural network.

Expand

Correct
Great, you got all the right answers.

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

1 / 1 point

- True
- False

Expand

Correct

Correct. We can use vectorization in backpropagation to calculate $dA^{[l]}$ for each layer. This computation is done over all the training examples.

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 function used in all layers. Which of the following calculates the forward propagation for the neural network with L layers.

1 / 1 point

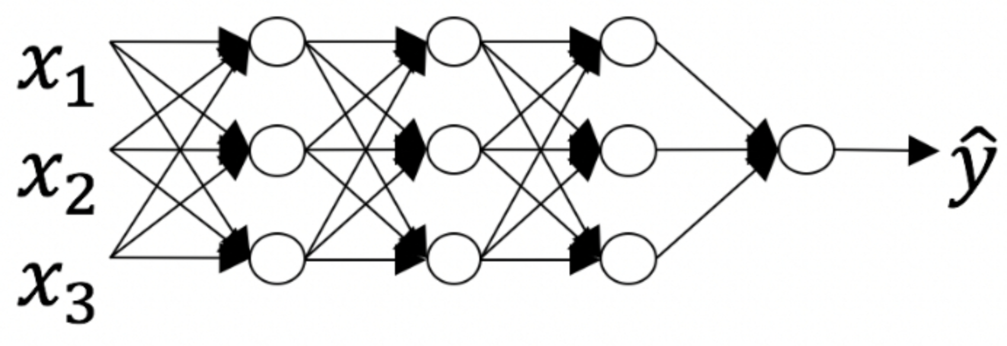
- for i in range(1, L+1):
  Z[i] = W[i]*A[i-1] + b[i]
  A[i] = g(Z[i])
- for i in range(L):
  Z[i] = W[i]*X + b[i]
  A[i] = g(Z[i])
- for i in range(L):
  Z[i+1] = W[i+1]*A[i+1] + b[i+1]
  A[i+1] = g(Z[i+1])
- for i in range(1, L):
  Z[i] = W[i]*A[i-1] + b[i]
  A[i] = g(Z[i])

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. Consider the following neural network.

1 / 1 point



How many layers does this network have?

- The number of layers L is 3. The number of hidden layers is 3.
- The number of layers L is 4. The number of hidden layers is 4.
- The number of layers L is 5. The number of hidden layers is 4.
- The number of layers L is 4. The number of hidden layers is 3.

Expand

Correct
Yes. As seen in lecture, the number of layers is counted as the number of hidden layers + 1. The input and output layers are not counted as hidden layers.

7. During forward propagation, in the forward function for a layer 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, since the gradient depends on it. True/False?

1 / 1 point

- True
- False

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. 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

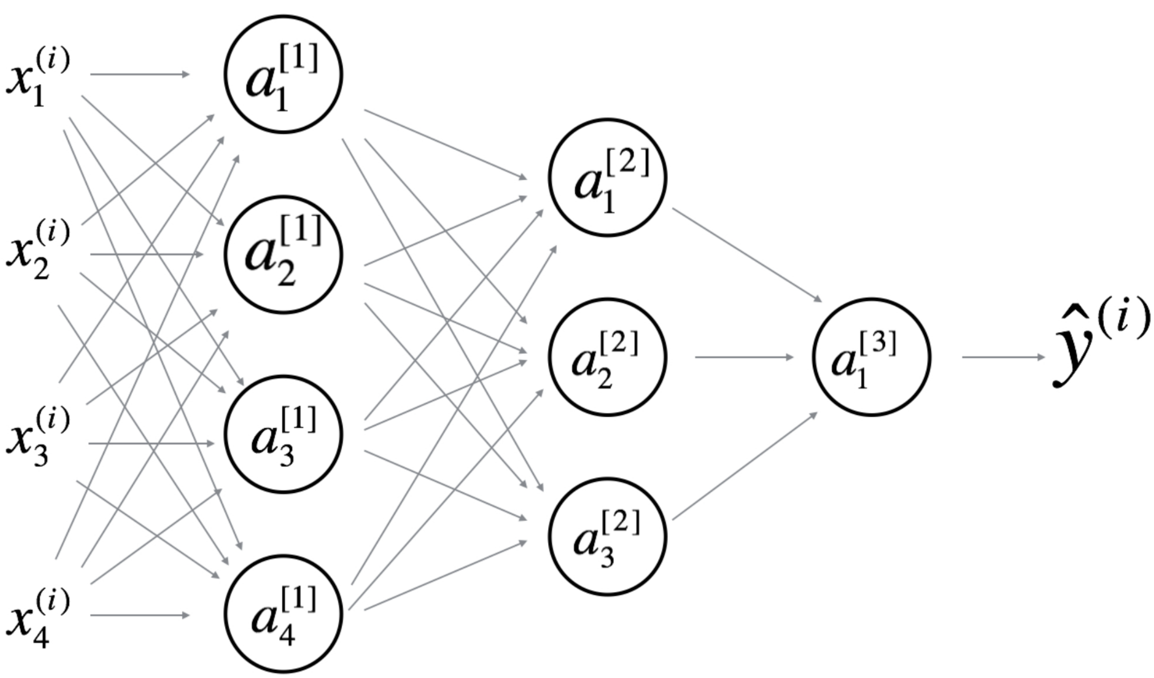
- [x] False
- [ ] True

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. Consider the following 2 hidden layer neural network:

1 / 1 point



Which of the following statements are True? (Check all that apply).

- [ ] $b^{[2]}$ will have shape (1, 1)
- [x] $b^{[2]}$ will have shape (3, 1)

Correct

Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [x] $W^{[2]}$ will have shape (3, 4)

Correct

Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [x] $W^{[1]}$ will have shape (4, 4)

Correct

Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [ ] $W^{[1]}$ will have shape (3, 4)
- [ ] $b^{[1]}$ will have shape (3, 1)
- [ ] $W^{[2]}$ will have shape (3, 1)
- [ ] $W^{[3]}$ will have shape (3, 1)
- [x] $b^{[1]}$ will have shape (4, 1)

Correct

Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [x] $W^{[3]}$ will have shape (1, 3)

Correct

Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [x] $b^{[3]}$ will have shape (1, 1)

Correct

Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [ ] $b^{[3]}$ will have shape (3, 1)

Expand

Correct

Great, you got all the right answers.

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

1 / 1 point

- (•) $(n^{[l]}, m)$
- ( ) $(n^{[l+1]}, m)$
- ( ) $(m, n^{[l]})$
- ( ) $(m, n^{[l+1]})$

Expand

Correct

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