Neural Network Basics | Coursera

coursera.org (https://www.coursera.org/learn/neural-networks-deep-learning/exam/mLgvR/shallow-neural-networks)

1.

Question 1

What does a neuron compute?

1 / 1 point
Correct

Correct, we generally say that the output of a neuron is a = g(Wx + b) where g is the activation function (sigmoid, tanh, ReLU, ...).

2.

Question 2

Which of these is the "Logistic Loss"?

1 / 1 point
Correct

Correct, this is the logistic loss you've seen in lecture!

3.

Question 3

Suppose img is a (32,32,3) array, representing a 32x32 image with 3 color channels red, green and blue. How do you reshape this into a column vector xx?

1 / 1 point
Correct

4.

Question 4

Consider the following random arrays aa and bb, and cc:

$a = np.random.randn\ (\ 3, 3\ )$ a=np.random.randn(3,3) # $a.shape = \ (\ 3, 3\ )$
a.shape=(3,3)

$b = np.random.randn\ (\ 2, 1\ )$ b=np.random.randn(2,1) # $b.shape = \ (\ 2, 1\ )$
b.shape=(2,1)

$c = a + b$c=a+b

What will be the shape of cc?
1 / 1 point
Correct

Yes. It is not possible to broadcast together a and b. In this case there is no way to generate copies of one of the arrays to match the size of the other.

5.

Question 5

Consider the two following random arrays aa and bb:

$a = np.random.randn\ (\ 1, 3\ )$ a=np.random.randn(1,3) # $a.shape = \ (\ 1, 3\ )$
a.shape=(1,3)

$b = np.random.randn\ (\ 3, 3\ )$ b=np.random.randn(3,3) # $b.shape = \ (\ 3, 3\ )$
b.shape=(3,3)

$c = a * b$c=a∗b

What will be the shape of cc?

1 / 1 point
Correct

Yes. Broadcasting allows row a to be multiplied element-wise with each row of b to from c.

6.

Question 6

Suppose you have $n_x$nx input features per example. Recall that
$X = \ \begin{bmatrix} x^{(1)} x^{(2)} ... x^{(m)} \end{bmatrix}$ X=[x(1)x(2)...x(m)]. What is the dimension of X?

1 / 1 point

Correct

7.

Question 7

Consider the following array:

$a = np.array\ (\ [\ [\ 2, 1\ ]\ ,\ [\ 1, 3\ ]\ ]\ )$ a=np.array([[2,1],[1,3]])

What is the result of $a * a$a∗a?

1 / 1 point

Correct

Yes, recall that * indicates element-wise multiplication.

8.

Question 8

Consider the following code snippet:

$a.shape =\ (\ 3, 4\ )$ a.shape=(3,4)

$b.shape =\ (\ 4, 1\ )$ b.shape=(4,1)

for i in range(3):

for j in range(4):

c[i][j] = a[i][j] + b[j]

How do you vectorize this?

1 / 1 point

Correct

9.

Question 9

Consider the code snippet:

$a.shape = (3,3)$ a.shape=(3,3)

$b.shape = (3,3)$ b.shape=(3,3)

$c = a**2 + b.T**2$ c=a∗∗2+b.T∗∗2

Which of the following gives an equivalent output for cc?

1 / 1 point

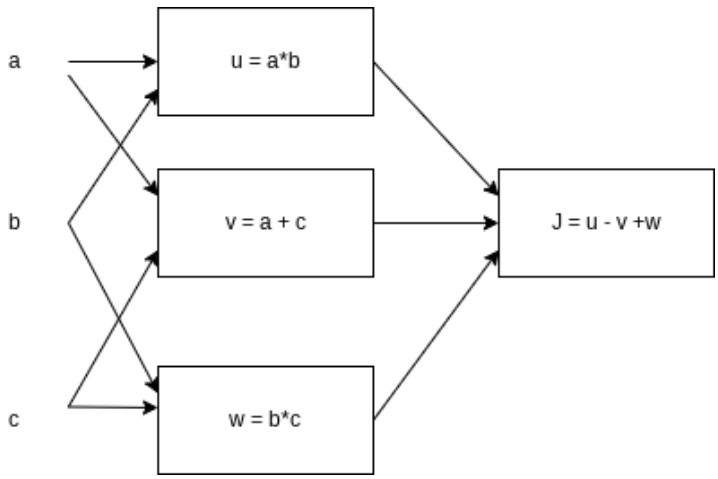
Correct

Yes. This code squares each entry of a and adds it to the transpose of b square.

10.

Question 10

Consider the following computational graph.



What is the output of J?

1 / 1 point

Correct

Yes.

$J = u - v + w = ab - (a + c) + bc = ab - a + bc - c = a(b - 1) + c(b - 1) = (a + c)(b$

J=u−v+w=ab−(a+c)+bc=ab−a+bc−c=a(b−1)+c(b−1)=(a+c)(b−1)

coursera.org (https://www.coursera.org/learn/neural-networks-deep-learning/exam/mLgvR/shallow-neural-networks)