

# 01\_week2\_quiz

## Neural Network Basics

测验, 10 个问题

第 1 个问题

1

point

### 1。第 1 个问题

What does a neuron compute?

A neuron computes an activation function followed by a linear function ( $z = Wx + b$ )

A neuron computes the mean of all features before applying the output to an activation function

A neuron computes a linear function ( $z = Wx + b$ ) followed by an activation function

A neuron computes a function  $g$  that scales the input  $x$  linearly ( $Wx + b$ )

第 2 个问题

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### 2。第 2 个问题

Which of these is the "Logistic Loss"?

$L(i)(y^{(i)}, y(i)) = |y(i) - y^{(i)}|^2$

$L(i)(y^{(i)}, y(i)) = \max(0, y(i) - y^{(i)})$

$L(i)(y^{(i)}, y(i)) = |y(i) - y^{(i)}|$

$L(i)(y^{(i)}, y(i)) = -(y(i) \log(y^{(i)}) + (1 - y(i)) \log(1 - y^{(i)}))$

第 3 个问题

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### 3。第 3 个问题

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?

`x = img.reshape((32*32*3,1))`

`x = img.reshape((1,32*32,*3))`

```
x = img.reshape((3,32*32))
```

```
x = img.reshape((32*32,3))
```

第 4 个问题

1

point

## 4。第 4 个问题

Consider the two following random arrays "a" and "b":

```
1 a = np.random.randn(2, 3) # a.shape = (2, 3)
2 b = np.random.randn(2, 1) # b.shape = (2, 1)
3 c = a + b
```

What will be the shape of "c"?

c.shape = (2, 1)

The computation cannot happen because the sizes don't match. It's going to be "Error"!

c.shape = (3, 2)

c.shape = (2, 3)

第 5 个问题

1

point

## 5。第 5 个问题

Consider the two following random arrays "a" and "b":

```
1 a = np.random.randn(4, 3) # a.shape = (4, 3)
2 b = np.random.randn(3, 2) # b.shape = (3, 2)
3 c = a*b
```

What will be the shape of "c"?

c.shape = (3, 3)

c.shape = (4,2)

c.shape = (4, 3)

The computation cannot happen because the sizes don't match. It's going to be "Error"!

第 6 个问题

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point

## 6。第 6 个问题

Suppose you have  $n \times m$  input features per example. Recall that  $X = [x(1) x(2) \dots x(m)]$ . What is the dimension of  $X$ ?

- (1,m)
- (m,1)
- (n,m)
- (m,n)

第 7 个问题  
1  
point

## 7。第 7 个问题

Recall that "`np.dot(a,b)`" performs a matrix multiplication on `a` and `b`, whereas "`a*b`" performs an element-wise multiplication.

Consider the two following random arrays "`a`" and "`b`":

```
1 a = np.random.randn(12288, 150) # a.shape = (12288, 150)
2 b = np.random.randn(150, 45) # b.shape = (150, 45)
3 c = np.dot(a,b)
```

What is the shape of `c`?

- `c.shape = (150,150)`
- `c.shape = (12288, 150)`

The computation cannot happen because the sizes don't match. It's going to be "Error"!

`c.shape = (12288, 45)`

第 8 个问题  
1  
point

## 8。第 8 个问题

Consider the following code snippet:

```
1 # a.shape = (3,4)
2 # b.shape = (4,1)
3
4 for i in range(3):
5     for j in range(4):
6         c[i][j] = a[i][j] + b[j]
```

How do you vectorize this?

`c = a.T + b.T`

$c = a.T + b$

$c = a + b.T$

$c = a + b$

第 9 个问题

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point

## 9。第 9 个问题

Consider the following code:

```
1 a = np.random.randn(3, 3)
2 b = np.random.randn(3, 1)
3 c = a*b
```

What will be c? (If you’re not sure, feel free to run this in python to find out).

This will invoke broadcasting, so b is copied three times to become (3,3), and \* is an element-wise product so c.shape will be (3, 3)

This will invoke broadcasting, so b is copied three times to become (3, 3), and \* invokes a matrix multiplication operation of two 3x3 matrices so c.shape will be (3, 3)

This will multiply a 3x3 matrix a with a 3x1 vector, thus resulting in a 3x1 vector. That is, c.shape = (3,1).

It will lead to an error since you cannot use “\*” to operate on these two matrices. You need to instead use np.dot(a,b)

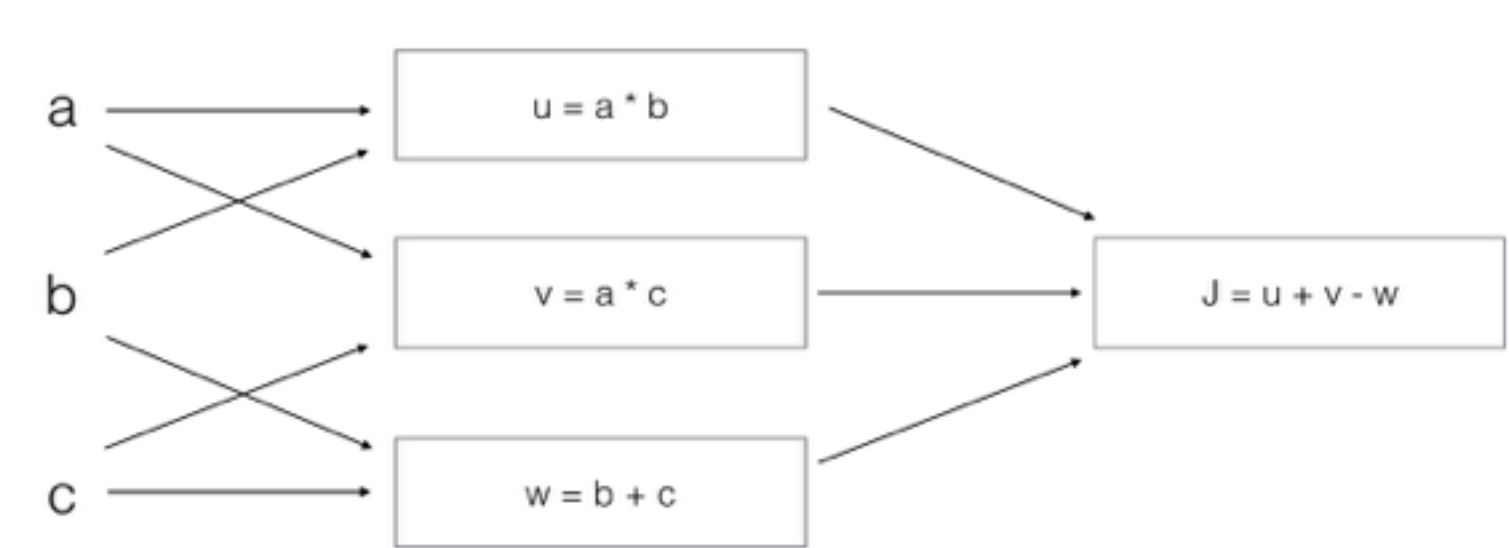
第 10 个问题

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point

## 10。第 10 个问题

Consider the following computation graph.



What is the output J?

$J = (c - 1) * (b + a)$

$J = (a - 1) * (b + c)$

$J = a * b + b * c + a * c$

$J = (b - 1) * (c + a)$

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