축하합니다! 통과하셨습니다!

받은 학점 100% 최신 제출물 학점 100% 통과 점수: 80% 이상

다음 항목으로 이동

1. What does a neuron compute? 1 / 1점

- A neuron computes the mean of all features before applying the output to an activation function
- A neuron computes an activation function followed by a linear function $z = Wx + b$
- 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)

더 보기

맞습니다
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. Which of these is the "Logistic Loss"? 1 / 1점

- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = max(0, y^{(i)} - \hat{y}^{(i)})$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = -(y^{(i)} \log(\hat{y}^{(i)}) + (1 - y^{(i)}) \log(1 - \hat{y}^{(i)}))$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = \mid y^{(i)} - \hat{y}^{(i)} \mid$
- $\mathcal{L}^{(i)}(\hat{y}^{(i)}, y^{(i)}) = \mid y^{(i)} - \hat{y}^{(i)} \mid^2$

더 보기

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

3. Consider the Numpy array x: 1 / 1점

$x = np.array([[[1], [2]], [[3], [4]]])$

What is the shape of x?

- (4,)
- (1, 2, 2)
- (2, 2)
- (2,2,1)

더 보기

맞습니다
Yes. This array has two rows and in each row it has 2 arrays of 1x1.

4. Consider the following random arrays a and b, and c: 1 / 1점

$a = np.random.randn(2, 3) \# a.shape = (2, 3)$

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

$c = a + b$

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 = (2, 3)
- c.shape = (3, 2)

더 보기

맞습니다
Yes! This is broadcasting. b (column vector) is copied 3 times so that it can be summed to each column of a.

5. Consider the two following random arrays a and b: 1 / 1점

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

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

$c = a * b$

What will be the shape of c?

- The computation cannot happen because the sizes don't match.
- c.shape = (3, 3)
- c.shape = (1, 3)
- The computation cannot happen because it is not possible to broadcast more than one dimension.

더 보기

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

6. 1 / 1점

Suppose you have n_x input features per example. If we decide to use row vectors $\mathbf{x}_j$ for the features and $X = \begin{bmatrix} \mathbf{x}_1 \\ \mathbf{x}_2 \\ \vdots \\ \mathbf{x}_m \end{bmatrix}$.

What is the dimension of X?

- (n_x, n_x)
- $$(1, n_x)$$
- $$(m, n_x)$$
- $$(n_x, m)$$

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더 보기

맞습니다
Yes. Each $\mathbf{x}_j$ has dimension $1 \times n_x$, X is built stacking all rows together into a $m \times n_x$ array.

7. Consider the following array: 1 / 1점

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

What is the result of $a * a$?

- $\begin{pmatrix} 2 & 6 \end{pmatrix}$
- $\begin{pmatrix} 5 & 5 \\ 5 & 10 \end{pmatrix}$
- The computation cannot happen because the sizes don't match. It's going to be an "Error"!
- $\begin{pmatrix} 4 & 1 \end{pmatrix}$

더 보기

맞습니다
Yes, recall that * indicates element-wise multiplication.

8. Consider the following code snippet: 1 / 1점

$a.shape = (3, 4)$

$b.shape = (4, 1)$

for i in range(3):

for j in range(4):

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

How do you vectorize this?

- c = a*b
- c = np.dot(a,b)
- c = a.T*b
- c = a*b.T

더 보기

맞습니다

Yes. b.T gives a column vector with shape (1, 4). The result of c is equivalent to broadcasting a*b.T.

9. Consider the following code: 1 / 1점

$a = np.random.randn(3, 3)$

$b = np.random.randn(3, 1)$

$c = a * b$

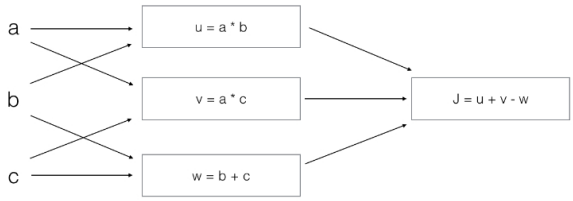
What will be c? (If you're not sure, feel free to run this in python to find out).

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

더 보기

맞습니다

10. Consider the following computation graph. 1 / 1점



What is the output J?

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

더 보기

맞습니다
Yes. $J = u + v - w = a * b + a * c - (b + c) = a * (b + c) - (b + c) = (a - 1) * (b + c)$.