Try again once you are ready

Grade received 70% | Latest Submission Grade 70% | To pass 80% or higher

Retake the assignment in **23h 44m**

1. In logistic regression given the input $\mathbf{x}$, and parameters $w \in \mathbb{R}^{n_x}, b \in \mathbb{R}$, how do we generate the output $\hat{y}$? **1 / 1 point**

- $\sigma(W\mathbf{x})$
- $\tanh(W\mathbf{x}+b)$
- $W\mathbf{x}+b$
- $\sigma(W\mathbf{x}+b)$. (selected)

Expand

Correct
Right, in logistic regression we use a linear function $W\mathbf{x}+b$ followed by the sigmoid function σ, to get an output y, referred to as ŷ, such that $0 < \hat{y} < 1$.

2. Suppose that $\hat{y} = 0.9$ and $y = 1$. What is the value of the "Logistic Loss"? Choose the best option. **0 / 1 point**

- 0.105
- 0.005
- $\mathcal{L}(\hat{y}, y) = -(\hat{y}\ \log y + (1-\hat{y})\ \log(1-y))$
- $+\infty$ (selected)

Expand

Incorrect
No. The "Logistic Loss" function is defined by $\mathcal{L}(\hat{y}, y) = -(y\ \log \hat{y} + (1-y)\ \log(1-\hat{y}))$, to evaluate we must use $\hat{y} = 0.9$ and $y = 1$.

3. Consider the Numpy array x: **1 / 1 point**

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

What is the shape of x?

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

Expand

Correct
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 / 1 point**

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

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

$c = a + b$

What will be the shape of c?

- c.shape = (2, 1)
- c.shape = (2, 3, 3)
- The computation cannot happen because it is not possible to broadcast more than one dimension (selected)
- c.shape = (3,3)

Expand

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. Consider the two following random arrays a and b: **0 / 1 point**

$a = np.random.randn(4, 3)$ # $a.shape = (4, 3)$

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

$c = a * b$

What will be the shape of c?

- (●) c.shape = (4, 3)
- ( ) The computation cannot happen because the sizes don't match. It's going to be "Error"!
- ( ) c.shape = (3, 3)
- ( ) c.shape = (4,2)

Expand

Incorrect
No! In numpy the "*" operator indicates element-wise multiplication. The broadcasting cannot happen because of the shape of b. b should have been something like (4, 1) or (1, 3) to broadcast properly.

6. Suppose you have n_x input features per example. Recall that $X = [x^{(1)}x^{(2)}...x^{(m)}]$. What is the dimension of X? **1 / 1 point**

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

Expand

Correct

7. Recall that $np.dot(a, b)$ performs a matrix multiplication on a and b, whereas $a * b$ performs an element-wise multiplication. **1 / 1 point**

Consider the two following random arrays a and b:

$a = np.random.randn(12288, 150)$

$a.shape = (12288, 150)$

$b = np.random.randn(150, 45)$

$b.shape = (150, 45)$

$c = np.dot(a, b)$

What is the shape of c?

- ( ) The computation cannot happen because the sizes don't match. It's going to be "Error"!
- ( ) c.shape = (12288, 150)
- ( ) c.shape = (150,150)
- (●) c.shape = (12288, 45)

Expand

Correct
Correct, remember that a np.dot(a, b) has shape (number of rows of a, number of columns of b). The sizes match because: "number of columns of a = 150 = number of rows of b"

8. Consider the following code snippet: **1 / 1 point**

$a.shape = (3, 4)$

$b.shape = (4, 1)$

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.T + b
- ( ) c = a.T + b.T
- ( ) c = a + b
- (●) c = a + b.T

Expand

Correct

9. Consider the code snippet: **0 / 1 point**

$a.shape = (3, 3)$

$b.shape = (3, 3)$

$c = a**2 + b.T**2$

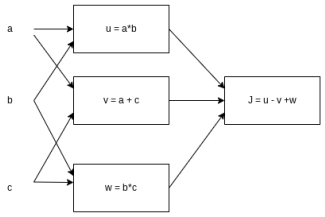
Which of the following gives an equivalent output for c?

- for i in range(3):
  for j in range(3):
  c[i][j] = a[i][j]**2 + b[j][i]**2
- for i in range(3):
  c[i] = a[i]**2 + b[i]**2
- for i in range(3):
  for j in range(3):
  c[i][j] = a[i][j]**2 + b[i][j]**2
- The computation cannot happen because the sizes don't match. It's going to be an "Error"!

Expand

Incorrect
No. Notice that to operate with b.T we need to use b[j][i].

10. Consider the following computational graph. **1 / 1 point**



What is the output of J?

- $(c - 1), (a + c)$
- $(a + c), (b - 1)$
- $(a - 1), (b + c)$
- $ab + bc + ac$

Expand

Correct
Yes.
$J = u - v + w = ab - (a + c) + bc = ab - a + bc - c = a\,(b - 1) + c\,(b - 1) = (a + c)\,(b - 1)$