Congratulations! You passed!

Grade received 90% | Latest Submission Grade 80% | To pass 80% or higher | Retake the assignment in **20h 26m** | Go to next item

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**

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

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. Which of these is the "Logistic Loss"? **1 / 1 point**

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

Expand

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

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 x? **0 / 1 point**

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

Expand

Incorrect

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

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

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

$c = a + b$

What will be the shape of c?

- The computation cannot happen because the sizes don't match. It's going to be "Error"!
- c.shape = (2, 1)
- c.shape = (3, 2)
- c.shape = (2, 3)

Expand

Correct
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 / 1 point**

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

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

$c = a * b$

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.

Expand

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

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

Expand

Correct

7. Consider the following array: **1 / 1 point**

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

What is the result of $a * a$?

- $\begin{pmatrix} 4 & 2 \\ 2 & 6 \end{pmatrix}$
- $\begin{pmatrix} 5 & 5 \\ 5 & 10 \end{pmatrix}$
- $\begin{pmatrix} 4 & 1 \\ 1 & 9 \end{pmatrix}$
- The computation cannot happen because the sizes don't match. It's going to be an

Expand

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

8. Consider the following code snippet: **0 / 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 + b.T
- c = a + b
- c = a.T + b
- c = a.T + b.T

Expand

Incorrect

9. Consider the following code: 1 / 1 point

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

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

$c = a * b$

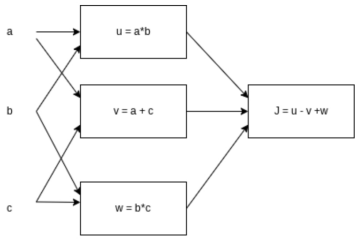
What will be *c*? (If you're not sure, feel free to run this in python to find out).

- 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 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).
- 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)

Expand

Correct

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



What is the output of J?

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

Expand

Correct

Yes.

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