Try again once you are ready

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

Try again

1. In logistic regression given $\mathbf{x}$ and parameters $w \in \mathbb{R}^{n_x}, b \in \mathbb{R}$. Which of the following best expresses what we want $\hat{y}$ to tell us? **0 / 1 point**

- $\sigma(W\mathbf{x})$
- $P(y=1|\mathbf{x})$
- $P(y=\hat{y}|\mathbf{x})$
- $\sigma(W\mathbf{x}+b)$

Expand

Incorrect
No. We want the output $\hat{y}$ to tell us the probability that $y=1$ given x.

2. Suppose that $\hat{y}=0.5$ and $y=0$. What is the value of the "Logistic Loss"? Choose the best option. **0 / 1 point**

- $\mathcal{L}(\hat{y},y) = -(y\log\hat{y} + (1-y)\log(1-\hat{y}))$
- $+\infty$
- 0.693
- 0.5

Expand

Incorrect
No. This is only the definition of Logistic Loss.

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? **1 / 1 point**

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

Expand

Correct

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

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

$b = np.random.randn(1,4) \# b.shape = (1,4)$

$c = a + b$

What will be the shape of c?

- c.shape = (3, 4)
- c.shape = (3, 1)
- c.shape = (1, 4)
- The computation cannot happen because it is not possible to broadcast more than one dimension.

Expand

Correct
Yes. Broadcasting is used, so row b is copied 3 times so it can be summed to each row of a.

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

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

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

$c = a * b$

What will be the shape of c?

- c.shape = (1, 3)
- The computation cannot happen because the sizes don't match.
- The computation cannot happen because it is not possible to broadcast more than one dimension.
- c.shape = (4, 3)

Expand

Correct
Yes. Broadcasting is invoked, so row b is multiplied element-wise with each row of a to create c.

6. Suppose our input batch consists of 8 grayscale images, each of dimension 8x8. We reshape these images into feature column vectors $\mathbf{x}^j$. Remember that $X = \left[\mathbf{x}^{(1)}\mathbf{x}^{(2)} \cdots \mathbf{x}^{(8)}\right]$. What is the dimension of X? **0 / 1 point**

- (8, 8, 8)
- (512, 1)
- (8, 64)
- (64, 8)

Expand

Incorrect
No. After converting the 8x8 gray scale images to a column vector we get a vector of size 64, thus X has dimension $(64, 8)$.

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

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

What is the result of $np.dot(a, a)$?

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

Expand

Correct
Yes, recall that * indicates the element wise multiplication and that np.dot() is the matrix multiplication. Thus $\begin{pmatrix} (2)(2)+(1)(1) & (2)(1)+(1)(3) \\ (1)(2)+(3)(1) & (1)(1)+(3)(3) \end{pmatrix}$.

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 + b.T
- c = a.T + b.T
- c = a + b

Expand

Correct

9. Consider the following arrays: **1 / 1 point**

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

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

$c = a + b$

Which of the following arrays is stored in c?

$\begin{pmatrix} 5 & 2 \end{pmatrix}$

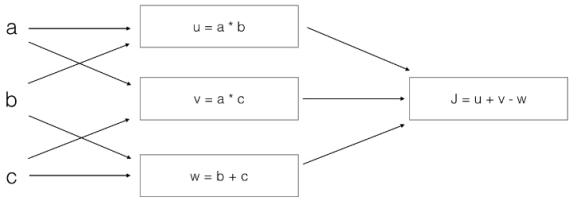
- The computation cannot happen because the sizes don't match. It's going to be an "Error"!
- $\begin{matrix} 3 & 4 \\ 3 & 2 \end{matrix}$
- $\begin{matrix} 3 & 3 \\ 4 & 2 \end{matrix}$

Expand

Correct

Yes. The array b is a column vector. This is copied two times and added to the array a to construct the array c.

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



What is the output J?

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

Expand

Correct

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