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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

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

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

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

Expand

Incorrect
No. This is not the definition of the Logistic Loss function.

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

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

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: 0 / 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?

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

Expand

Incorrect
No. It is possible to do broadcasting, multiplying the row a element-wise with each row of b to form 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**

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

Expand

Correct

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

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

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

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

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

Expand

Correct

9. Consider the code snippet: **1 / 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[i][j]**2

for i in range(3):
c[i] = a[i]**2 + b[i]**2

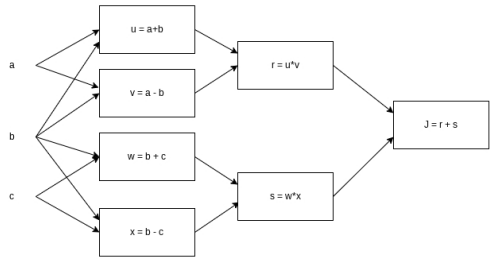
The computation cannot happen because the sizes don't match. It's going to be an "Error"!

for i in range(3):
for j in range(3):
c[i][j] = a[i][j]**2 + b[j][i]**2

Expand

Correct
Yes. This code squares each entry of a and adds it to the transpose of b square.

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



What is the output of J?

- $a^2 - c^2$
- $a^2 - b^2$
- $a^2 + b^2 - c^2$
- $(a - b) * (a - c)$

Expand

Correct
Yes.
$J = r + s = u * v + w * x = (a + b) * (a - b) + (b + c) * (b - c) = a^2 - b^2 + b^2 - c^2 = a^2 - c^2$
.