Q11 (through Classification 2)

This is a preview of the published version of the quiz

Started: Dec 14 at 9:51am

Quiz Instructions

Question 1 — 0.1 pts

Say that lr is a LinearRegression and that we have already fit it to our training data. What will we find in lr.coef_?

- a list of numbers
- a numpy array of numbers
- a list of booleans
- a numpy array of booleans
- a list of strings

Question 2 — 0.1 pts

Say we have two vectors of unknown numbers, like this:

a = np.array([???, ???, ???, ????])
b = np.array([???, ???, ???, ????])

What expression is equal to the dot product of a.reshape(1,-1) and b.reshape(-1,1)?

- a[3]*b[3] + a[2]*b[2] + a[1]*b[1] + a[0]*b[0]
- (a[0] + b[0]) * (a[1] + b[1]) * (a[2] + b[2]) * (a[3] + b[3])

- (a[0] - b[0]) * (a[1] - b[1]) * (a[2] - b[2]) * (a[3] - b[3])
- a*b[0] + a*b[1] + a*b[2] + a*b[3]

Question 3

0.1 pts

Which vector is NOT in the column space of matrix X?

```
X = np.array([
    [7,8,9],
    [7,8,9],
])
```

- np.array([[8.5], [8.5]])
- np.array([[15], [15]])
- np.array([[8], [9]])
- np.array([[5], [5]])

Question 4

0.1 pts

What is a valid simplification of the following, assuming the code runs without error?

X @ np.linalg.solve(X, y)

- y / X
- y
- X
- X * y
- X @ y

- ○ X / y

Question 5 — 0.1 pts

What does the following compute with respect to matrix a?

```
(a > 5).astype(int).sum()
```

- ○ how many cells are greater than 5
- ○ the sum of the cells that are greater than 5
- ○ the sum of the cells that are greater than or equal to 5
- ○ the sum of the cells in a slice of the values from index 6 to the end

Question 6 — 0.1 pts

Say we plan to run the following:

y = X @ c

X is a matrix with 4 rows and 3 columns, containing only values >0. c is a vertical vector with 3 values.

If someone tells us all the values in X, and two of the values in c (that is, one value in c is a mystery), how many values in y can we compute?

- ○ 1
- ○ 7
- ○ 5
- ○ 6

- ○ 3
- ○ 4
- ○ 2
- ○ 0

Question 7 — 0.1 pts

When you have 5 variables, and 7 equations, it is SOMETIMES possible to find values for all 5 variables to satisfy the 7 equations.

- ○ True
- ○ False

Question 8 — 0.1 pts

Sometimes, we can't compute this:

c = np.linalg.solve(X, y)

So instead, we compute the following, where y2 is what we get by taking the dot product of X's projection matrix with y.

c = np.linalg.solve(X, y2)

What is special about y2?

- ☐ it usually leads to a solvable problem
- ☐ it is "close" to y, as measured by mean_squared_error
- ☐ it contains one number, repeated

Question 9 — 0.2 pts

Pair each operation on the left with the most similar linear algebra operations on the right.

predict for LinearRegression	[Choose]
predict for LogisticRegression	[Choose]
predict_proba for LogisticRegression	[Choose]
fit for LinearRegression	[Choose]

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