Linear Regression Questions (Make Sure to watch the videos 1st)

Quiz Question

Which of the following are related to bias in machine learning

☐ Images, text, video, and speech are all types of data that can contain bias

☐ Since the data we used to train the model can contain bias, that could be reflected in the model.

☐ Statistical validation can offset the bias reflected in the real-world validation of your models.

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Write A, B, or C here (you can choose more than one answer if there is): _ _ _B_ _ _ _

Let's say that we have a line whose equation is **y = -0.6x + 4**. For the point **(x,y) = (-5, 3)**, apply the **absolute trick** to get the new equation for the line, using a learning rate of $alpha = 0.1$.

Report your answer in the form **y = w_1x + w_2**, substituting appropriate values for **w_1** and **w_2**.

Enter your response here: _ _ _ _y = -0.1x + 3.9_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Let's say that we have a line whose equation is **y = -0.6x + 4**. For the point **(x,y) = (-5, 3)**, apply the **square trick** to get the new equation for the line, using a learning rate of $alpha = 0.01$.

Report your answer in the form **y = w_1x + w_2**, substituting appropriate values for **w_1** and **w_2**.

Enter your response here: _ _ _ _ _y = -0.4x + 3.96_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Quiz Question

Which of the following are true about gradient descent?

- ☐ Gradient descent is a strategy that helps minimize the error between points of the actual data and the "best-fit line"

- ☐ Gradient descent is a strategy that helps isolate outliers in the data.

- ☐ We use gradient descent to update the parameters of our model as we train

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Write A, B, or C here (you can choose more than one answer if there is): _ A , C _ _ _

Quiz Question

Which of the following are accurate statements about 'mean absolute error'?

- ☐ It is the sum of all the errors divided by m

- ☐ It is the average of all points above the line

- ☐ It is the average error of all points

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Write A, B, or C here (you can choose more than one answer if there is): _ _ _ _ _ A ,C _ _

Compute the **mean absolute error** for the following line and points:

- line: y = 1.2x + 2
- points: (2, -2), (5, 6), (-4, -4), (-7, 1), (8, 14)

Enter your response here: _(6.4 + 2 + 1.2 + 7.4 + 2.4)/5 = 3.88 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Quiz for Mean Squared Error

Compute the **mean squared error** for the following line and points:

- line: y = 1.2x + 2
- points: (2, -2), (5, 6), (-4, -4), (-7, 1), (8, 14)

Enter your response here: _ _(40.96 + 4 + 1.44 + 54.76 +5.76) / 5 = 21.384 _ _ _   _ _ _ _ _ _ _

Quiz Question

There are 2 major ways to fit a line in machine learning. Which of the following are ways to fit a line?

☐ Minimize the error function using mean-squared or mean-absolute

☐ Try every possible position and slope of the line by hand until you get it right

☐ Using any of the tricks such as the absolute and the square trick

Write A, B, or C here (you can choose more than one answer if there is): _ A ,C _ _ _

Quiz Question

Which of the following could be possible new dimensions for the house price dataset

☐ Number of bedrooms

☐ Age of house

☐ Opinions of neighbors

☐ Distance to shopping

☐ Types of restaurants nearby

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Write A, B, C, D, or E here (you can choose more than one answer if there is): _A,B,C,D,E_