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

Quiz Question

Which of the following are related to bias in machine learning

- [x] Images, text, video, and speech are all types of data that can contain bias
- [x] 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): _ _ _ _ _ _ _

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=-2.6x+4.4

Quiz Question

Which of the following are true about gradient descent?

- [x] 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.
- [x] 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): _ _ _ _ _ _ _

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
- [x] 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): _ _ _ _ _ _ _

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: _

m=5
y1=-2-4.4=6.4
y2=6-8=2
y3=-4-(-2.8)=1.2
y4=1-(-7.4)=8.4
y5=14-(-11.6)=2.4

mean absolute error =1/5*(6.4+2+1.2+8.4+2.4)=4.08

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: _______ _______ _______ _______

m=5
y1=(-2-4.4)=6.4=40.96
y2=(6-8)=2=4
y3=(-4-(-2.8))=1.2=1.44
y4=(1-(-7.4))=8.4=70.56
y5=(14-(-11.6))=2.4=5.76

mean=122.72/5=24.544

Quiz Question

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

- [x] 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
- [x] 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): _______

Quiz Question

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

- [x] Number of bedrooms
- [x] Age of house
- [ ] Opinions of neighbors
- [ ] Distance to shopping
- [ ] Types of restaurants nearby

Submit

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