Linear Regression Mini Quiz

Toplam puan 100/100

It's about 5-day-challenge ML Algorithms- Linear Regression.

For the next 2 questions: The simple linear regression equation can be written as

$$\hat{y} = b_0 + b_1 x$$

✓ Q1- In the simple linear regression equation, the symbol represents the * 10/10

- (●) average or predicted response ✓
- ( ) estimated intercept
- ( ) estimated slope
- ( ) explanatory variable

✓ Q2- In the simple linear regression equation, the symbol x represents the * 10/10

- ( ) estimated or predicted response

- estimated intercept
- estimated slope
- explanatory variable ✓

✓ Q3- Correlation and regression are concerned with * 10/10

- the relationship between two categorical variables.
- the relationship between two quantitative variables. ✓
- the relationship between a quantitative explanatory variable and a categorical response variable.
- the relationship between a categorical explanatory variable and a quantitative response variable.

✓ Q4- Suppose that we have N independent variables (X1, X2... Xn) and the dependent variable is Y. Now imagine that you are applying linear regression by fitting the best fit line using least square error on this data. You found that the correlation coefficient for one of its variables (Say X1) with Y is -0.95. Which of the following is true for X1? * 10/10

- Relation between the X1 and Y is weak
- Relation between the X1 and Y is strong ✓
- Relation between the X1 and Y is neutral
- Correlation can't judge the relationship

✓ Q5- In a multiple regression model, where the x's are predictors and y is the response, multicollinearity occurs when: * 10/10

- (●) the x's provide redundant information about y ✓
- ( ) the x's provide redundant complementary information about y
- ( ) the x's are used to construct multiple lines, all of which are good predictors of y
- ( ) the x's are used to construct multiple lines, all of which are bad predictors of y

✓ Q6- In a linear regression problem, we are using “R-squared” to measure goodness-of-fit. We add a feature in the linear regression model and retrain the same model. Which of the following option is true? * 10/10

- ( ) If R Squared increases, this variable is significant.
- ( ) If R Squared decreases, this variable is not significant.
- (●) Individually R squared cannot tell about variable importance. We can’t say anything about it right now ✓
- ( ) None of these.

✓ Q7- Which of the following is true about Residuals? * 10/10

- (●) Lower is better ✓

- Higher is better
- A or B depend on the situation
- None of these

✓ Q8- Which of the following statement is true about outliers in Linear regression? * 10/10

- (●) Linear regression is sensitive to outliers ✓
- Linear regression is not sensitive to outliers
- Can't say
- None of these

Q9-Suppose you have been given the following scenario for training and validation error for Linear Regression.

Scenario	Learning Rate	Number of iterations	Training Error	Validation Error
1	0.1	1000	100	110
2	0.2	600	90	105
3	0.3	400	110	110
4	0.4	300	120	130
5	0.4	250	130	150

✓ Which of the above scenario would give you the right hyperparameter? * 10/10

- 1

- (●) 2 ✓
- ( ) 3
- ( ) 4

✓ Q10- Which of the following is NOT True about gradient descent? * 10/10

- ( ) Needs hyper-parameter tuning for alpha (learning parameter)
- (●) It is a non-iterative process ✓
- ( ) Gradient descent is an optimization algorithm.
- ( ) Gradient Descent starts with a random solution that is updated to the new value where the cost function has a lower value.