

MACHINE LEARNING

In Q1 to Q11, only one option is correct, choose the correct option:

1. Which of the following methods do we use to find the best fit line for data in Linear Regression?

- A) Least Square Error
- B) Maximum Likelihood
- C) Logarithmic Loss
- D) Both A and B

Ans: A) Least Square Error

2. Which of the following statement is true about outliers in linear regression?

- A) Linear regression is sensitive to outliers
- B) linear regression is not sensitive to outliers
- C) Can't say
- D) none of these

Ans: A) Linear regression is sensitive to outliers

3. A line falls from left to right if a slope is _____?

- A) Positive
- B) Negative
- C) Zero
- D) Undefined

Ans: B) Negative

4. Which of the following will have symmetric relation between dependent variable and independent variable?

- A) Regression
- B) Correlation
- C) Both of them
- D) None of these

Ans: B) Correlation

5. Which of the following is the reason for over fitting condition?

- A) High bias and high variance
- B) Low bias and low variance
- C) Low bias and high variance
- D) none of these

Ans: C) Low bias and high variance

6. If output involves label then that model is called as:

- A) Descriptive model
- B) Predictive modal
- C) Reinforcement learning
- D) All of the above

Ans: B) Predictive modal

7. Lasso and Ridge regression techniques belong to _____?

- A) Cross validation
- B) Removing outliers
- C) SMOTE
- D) Regularization

Ans: D) Regularization

8. To overcome with imbalance dataset which technique can be used?

- A) Cross validation
- B) Regularization
- C) Kernel
- D) SMOTE

Ans: D) SMOTE

9. The AUC Receiver Operator Characteristic (AUCROC) curve is an evaluation metric for binary classification problems. It uses _____ to make graph?

- A) TPR and FPR
- B) Sensitivity and precision
- C) Sensitivity and Specificity
- D) Recall and precision

Ans: A) TPR and FPR

10. In AUC Receiver Operator Characteristic (AUCROC) curve for the better model area under the curve should be less.

- A) True
- B) False

Ans: B) False

11. Pick the feature extraction from below:

- A) Construction bag of words from a email
- B) Apply PCA to project high dimensional data
- C) Removing stop words
- D) Forward selection

Ans: B) Apply PCA to project high dimensional data

In Q12, more than one options are correct, choose all the correct options:

12. Which of the following is true about Normal Equation used to compute the coefficient of the Linear Regression?

- A) We don't have to choose the learning rate.
- B) It becomes slow when number of features is very large.
- C) We need to iterate.
- D) It does not make use of dependent variable.

Ans: A) We don't have to choose the learning rate. **and**
B) It becomes slow when number of features is very large.

13. Explain the term regularization?

Ans: Regularization is one of the most important concepts of machine learning. It is a technique to prevent the model from overfitting by adding extra information to it.

Sometimes the **Machine Learning** model performs well with the training data but does not perform well with the test data. It means the model is not able to predict the output when deals with unseen data by introducing noise in the output, and hence the model is called overfitted. This problem can be deal with the help of a regularization technique.

This technique can be used in such a way that it will allow to maintain all variables or features in the model by reducing the magnitude of the variables. Hence, it maintains accuracy as well as a generalization of the model.

It mainly regularizes or reduces the coefficient of features toward zero. In simple words, "*In regularization technique, we reduce the magnitude of the features by keeping the same number of features.*"

14. Which particular algorithms are used for regularization?

Ans: *Ridge Regularization Algorithm* - it modifies the over-fitted or under fitted models by adding the penalty equivalent to the sum of the squares of the magnitude of coefficients.

This means that the mathematical function representing our machine learning model is minimized and coefficients are calculated. The magnitude of coefficients is squared and added. Ridge Regression performs regularization by shrinking the coefficients present.

Lasso Regularization Algorithm - It modifies the over-fitted or under-fitted models by adding the penalty equivalent to the sum of the absolute values of coefficients.

Lasso regression also performs coefficient minimization, but instead of squaring the magnitudes of the coefficients, it takes the true values of coefficients. This means that the coefficient sum can also be 0, because of the presence of negative coefficients.

15. Explain the term error present in linear regression equation?

Ans: An error term in statistics is a value which represents how observed data differs from actual population data. It can also be a variable which represents how a given statistical model differs from reality. The error term is often written ϵ .

In the context of linear regression, the term "error" refers to the difference between the actual observed values of the dependent variable and the values predicted by the linear regression model. It represents the discrepancy between the model's predictions and the true values in the dataset.