

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

Answer – 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

Answer – 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

Answer – 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

Answer – 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

Answer – 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

Answer – B) Predictive model

7. Lasso and Ridge regression techniques belong to _____?

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

Answer – D) Regularization

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

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

Answer – 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

Answer – 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

Answer – B) False (It should be more)

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

Answer – D) Forward Selection

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.

Answer – A), B) – Both A and B are true.

13. Explain the term regularization?

Answer – When we use regression models to train some data, there is a good chance that the model will overfit the given training data set. Regularization helps sort this overfitting problem by restricting the degrees of freedom of a given equation that is simply reducing the number of degrees of a polynomial function by reducing their corresponding weights.

In regularization, we normally keep the same number of features, but reduce the magnitude of the coefficients. Main Objective of regularization is to scale down the coefficient value.

Regularization helps to reduce the variance of the model, without a substantial increase in the bias.

14. Which particular algorithms are used for regularization?

Answer – The different types of regularizations techniques in regression are:

1. LASSO (Least Absolute Shrinkage and Selection Operator) Regression (L1 Form) - LASSO regression penalizes the model based on the sum of magnitude of the coefficients.
2. Ridge Regression (L2 Form)- LASSO regression penalizes the model based on the sum of magnitude of the coefficients.

Difference between LASSO and Ridge

Ridge regression shrinks the coefficients for those predictors which contribute very less in the model but have huge weights, very close to zero. But it never makes them exactly zero. Thus, the final model will still contain all those predictors, though with less weights. This doesn't help in interpreting the model very well. This is where Lasso regression differs with Ridge regression. In Lasso, the L1 penalty does reduce some coefficients exactly to zero when we use a sufficiently large tuning parameter. So, in addition to regularizing, lasso also performs feature selection.

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

Answer – Error or residuals is the distance between the observed values and the least square line(best fit line). The popularly used metrics are R-square and adjusted R-square.