

## MACHINE LEARNING

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: (C) Both of them

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

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 modal

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: (A) Cross validation

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

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: (B) Apply PCA to project high dimensional data

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)

13. Explain the term regularization?

Answer: Regularization is a technique used to reduce errors by fitting the function appropriately on the given training set and avoiding Overfitting.

**Overfitting** is a phenomenon that occurs when a Machine Learning model is constrained to the training set and not able to perform well on unseen data. That is when our model learns the noise in the training data as well. This is the case when our model memorizes the training data instead of learning the patterns in it.

**Underfitting** on the other hand is the case when our model is not able to learn even the basic patterns available in the dataset. In the case of the underfitting model is unable to perform well even on the training data hence we cannot expect it to perform well on the validation data. This is the case when we are supposed to increase the complexity of the model or add more features to the feature set.

14. Which particular algorithms are used for regularization?

Answer: There are three main regularization technique

1. LASSO (L1 Norm):

A regression model which uses the L1 Regularization technique is called LASSO (Least Absolute Shrinkage and Selection Operator) regression. Lasso Regression adds the "absolute value of magnitude" of the coefficient as a penalty term to the loss function (L). Lasso regression also helps us achieve feature selection by penalizing the weights to approximately equal to zero if that feature does not serve any purpose in the model.

## 2. Ridge Regression (L2 Norm):

A regression model that uses the L2 regularization technique is called Ridge regression. Ridge regression adds the “squared magnitude” of the coefficient as a penalty term to the loss function(L).

## 3. Elastic Net Regression

This model is a combination of L1 as well as L2 regularization. That implies that we add the absolute norm of the weights as well as the squared measure of the weights. With the help of an extra hyperparameter that controls the ratio of the L1 and L2 regularization

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

Answer: An error term represents the margin of error within a statistical model; it refers to the sum of the deviations within the regression line, which provides an explanation for the difference between the theoretical value of the model and the actual observed results. The regression line is used as a point of analysis when attempting to determine the correlation between one independent variable and one dependent variable.