

# MACHINE LEARNING

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

- 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
- 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
- A line falls from left to right if a slope is \_\_\_\_\_?  
A) Positive  
B) **Negative**  
C) Zero  
D) Undefined
- 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
- 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
- If output involves label then that model is called as:  
A) Descriptive model  
B) Predictive modal  
C) Reinforcement learning  
D) **All of the above**
- Lasso and Ridge regression techniques belong to \_\_\_\_\_?  
A) Cross validation  
B) Removing outliers  
C) SMOTE  
D) **Regularization**
- To overcome with imbalance dataset which technique can be used?  
A) Cross validation  
B) Regularization  
C) Kernel  
D) **SMOTE**
- 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
- In AUC Receiver Operator Characteristic (AUCROC) curve for the better model area under the curve should be less.  
A) True  
B) **False**
- 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

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

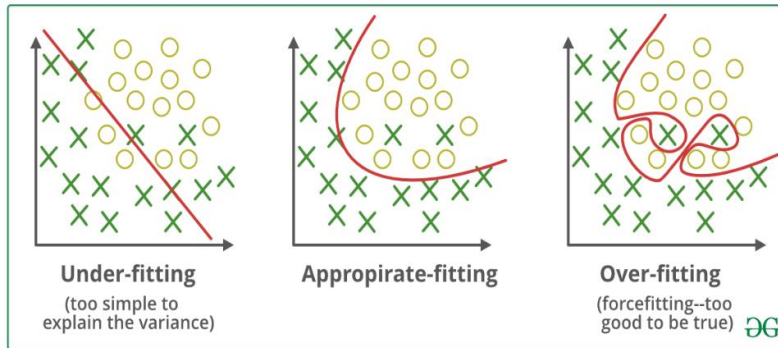
12. Which of the following is true about Normal Equation used to compute the coefficient of the Linear Regression?
- A) We don't have to choose the learning rate.
  - B) It becomes slow when number of features is very large.
  - C) We need to iterate.
  - D) It does not make use of dependent variable.

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Q13 and Q15 are subjective answer type questions, Answer them briefly.

13. Explain the term regularization?

Answer:-



Regularization is a technique used to reduce the errors by fitting the function appropriately on the given training set and avoid overfitting. The commonly used regularization techniques are :

1. L1 regularization which is Lasso Regression.
2. L2 regularization which is Ridge Regression.
3. Elastic-Net Regression

14. Which particular algorithms are used for regularization?

Answer: Regularization is the process, used for reducing the “Complexity of the Model” and also for shrink down the independent variables from the dataset. There are three main algo for these particular techniques are,

- Ridge Regression (L2 norm)
- Lasso Norm (L1 norm)
- Drop out

“Ridge and Lasso” are the techniques used for any kind of algorithms like “weighted parameters”. Drop out is used for algo like ANN, CNN etc. , mainly for moderate learning.

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

Answer:

The linear regression uses one independent variable to explain or predict the outcome of the dependent variable Y.

Linear Regression:  $Y = a + bX + e$

So, this  $e$  = regression residual error

$$e = \sum (Y - \hat{Y})^2$$

Where,  $Y$  = actual value

$\hat{Y}$  = predictive value

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