Machine Learning Assignment

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

Answer :- a] Least Square Error

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

Answer :- ? A) Linear regression is sensitive to outliers

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

Answer :- B) Negative

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

Answer :- B) Correlation

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

Answer :- C) Low bias and high variance

6] If output involves label then that model is called as: A) Descriptive model

Answer :- B) Predictive modal

7] Lasso and Ridge regression techniques belong to _____?

Answer :- D) Regularization

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

Answer :- D) SMOTE

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

Answer :- A) TPR and FPR

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

Answer :- B) False

11] Pick the feature extraction from below:

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?

Answer :- A), B) & C)

13] Regularization is the technique of reducing errors by fitting the function appropriately on the training data and avoiding overfitting. The commonly used regularization techniques are as follows :-

- L1 Regularization (also called LASSO which stands for Least Absolute Shrinkage and Selection Operator)
- L2 Regularization (also called Ridge Regression)
- Elastic net Regression (Combination of Ridge & LASSO).

L1 Regularization

Consider we have some huge dataset containing multiple columns & rows. How do we determine which features are contributing to the label and which have no connection with the label? For this purpose, we can use LASSO Regularization. Internally, LASSO checks if there is relation between feature and label/target or not. If there is no relation between a particular feature and the label then it will ignore that feature. Thus we can also think of L1 Regularization/LASSO Regression as Feature Selection Tool.

Ridge Regression
In this case, this technique does not act like Feature Selection Tool. It gives maximum importance to relevant features and minimum/negligible importance to irrelevant ones. In this technique, a small amount of bias is added so that we can get better long term predictions.

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15] The difference between the model's prediction and the actual values for the label/target is called residual. If the collection of residuals is small then it means that the model is very accurate and vice versa. To judge the accuracy of a model we have the following metrics.

- Mean Absolute Error (MAE)
- Mean Squared Error (MSE)
- Root Mean Squared Error (RMSE)

Mean Absolute Error

Mean Absolute Error is calculated by adding the Absolute values of all residuals and then taking their mean. This is the mean absolute value of residuals. The formula is

Mean Squared Error

In this case, we square the individual values, then add them all and take the average. In this case, the consequence of the squared term is that the error will be more prominent as the difference between the actual and predicted values are magnified due to squaring.

Root Mean Squared Error

It is one of the most commonly used methods of evaluating the accuracy of the model's prediction. In this case, we first compute the norm of each individual residuals, then we take the mean and then we take the square root.