Machine Learning Worksheet

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: B) 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: C) SMOTE

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

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

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) We don't have to choose the learning rate.

B) It becomes slow when number of features is very large.

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

13. Explain the term regularization?

Answer) Regularization refers to techniques that are used to calibrate machine learning models in order to minimize the adjusted loss function and prevent overfitting or under fitting. Using regularization, we can fit our machine learning model appropriately on a given test set and hence reduce the errors in it.

14. Which particular algorithms are used for regularization?

Answer) The algorithms used for regularization are Ridge Regression (L2 Norm), Lasso (L1 Norm) and Dropout. Ridge and Lasso can be used for any algorithms involving weight parameters, including neural nets.

Ridge Regression (L2 Regularization):- When using this technique, we add the sum of weight's square to a loss function and thus create a new loss function.

Lasso Regression (L1 Regularization):- it uses absolute weight values for normalization.

Dropout:- Dropout is a regularization technique used in neural networks. It prevents complex co-adaptations from other neurons.

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

Answer) Error is the difference between the actual value and predicted value.
Error is also known as the residual disturbance, or remainder term.