Machine Learning

1. Which of the following in sk-learn library is used for hyperparameter tuning?

Ans. d) all of the above

2. In which of the below ensemble techniques trees are trained in parallel?

Ans. a) Random Forest

3. In machine learning, if in the below line of code: sklearn.svm.SVC (C=1.0, kernel='rbf', degree=3) we increasing the C hyper parameter, what will happen?

Ans. b) regularization will decrease

4. Check the below line of code and answer the following questions:
sklearn.tree.DecisionTreeClassifier(*criterion='gini',splitter='best',max_depth=None, min_samples_split=2)

Ans. a)

5. Which of the following is true regarding Random Forests?

Ans. a) It is an ensemble of weak learners.

6. What can be the disadvantage if the learning rate is very high in gradient descent?

Ans. c) both of them

7. As the model complexity increases, what will happen?

Ans. b) bias will decrease, variance increase

8. Suppose I have a linear regression model which is performing as follows: Train accuracy=0.95 and Test accuracy=0.75 Which of the following is true regarding the model?

Ans. c) model is performing good

9. Suppose we have a dataset which have two classes A and B. The percentage of class A is 40% and percentage of class B is 60%. Calculate the Gini index and entropy of the dataset.

Ans.

10. What are the advantages of Random Forests over Decision Tree?

Ans. Random forest avoids and prevents overfitting by using multiple trees. The results are not accurate. This gives accurate and precise results. Decision trees require low computation, thus reducing time to implement and carrying low accuracy.

11. What is the need of scaling all numerical features in a dataset? Name any two techniques used for scaling.

Ans. Scaling can make a difference between a weak model and a better one. Scaling is required to rescale the data and it's used when we want features to be compared on the same scale for our model. And, when all features are in the same scale, it also helps model to understand relationship better.

Normalization and Standardization are common techniques for scaling.

12. Write down some advantages which scaling provides in optimization using gradient descent algorithm.

Ans. Gradient descent is an optimization algorithm which is commonly used to train machine learning models and neural networks. Training data helps these models learn over time, the cost function within gradient descent specifically acts as a

barometer, gauging its accuracy with each iteration of parameter updates.

14. What is "f-score" metric? Write its mathematical formula.

Ans. It is a measure to check the accuracy of model.

2 * (Precision * Recall) / (Precision + Recall)

15. What is the difference between fit(), transform() and fit_transform() ?

Ans. The fit() helps in fitting the data into model, transform() method helps in transforming the data into a form that is more suitable for model. Fit_transform() method, combines the functionalities of both fit() and transform() methods in one steps.