Day-11 Quiz-DataScience-Training

Welcome to the Python Programming Quiz! This quiz tests your knowledge of daily learnings. Please read the instructions carefully before starting the quiz.

Instructions and Rules

- **Time Limit:** You have 20 minutes to complete the quiz.
- **Number of Questions:** The quiz consists of 20 multiple-choice questions.
- **Scoring:** Each correct answer is worth 1 point. There is no negative marking for incorrect answers.
- **Single Attempt:** You are allowed only one attempt to complete the quiz.
- **Required Fields:** All questions are mandatory. You must answer each question to submit the quiz.
- **Resources:** This is a closed-book quiz. Do not use any external resources, including books, notes, or the internet.
- **Honesty:** Please answer the questions honestly and to the best of your ability. Cheating or dishonesty will result in disqualification.
- **Environment:** Ensure you are in a quiet environment where you can concentrate without interruptions.
- **Technical Issues:** In case of technical issues, please contact the quiz administrator immediately.
- **Retakes:** There are no retake opportunities for this quiz. Ensure you are prepared before starting.

Good luck, and do your best!

* Indicates required question

1. Email *

2. **1. How does a Random Forest model improve performance compared to a single decision tree?** *

Mark only one oval.

- a) By increasing the depth of trees
- b) By averaging multiple trees to reduce overfitting
- c) By reducing the number of features
- d) By using only one tree

3. **2. What is one of the key hyperparameters to tune in a Random Forest model?** *

Mark only one oval.

- a) Learning rate
- b) Number of estimators (trees)
- c) Number of epochs
- d) Dropout rate

4. **3. Which of the following is NOT an advantage of Random Forests?** *

Mark only one oval.

- a) Handles missing values well
- b) Less prone to overfitting compared to decision trees
- c) Easy to interpret and visualize
- d) Can handle large datasets

5. **4. What does the Random Forest Regressor output?** *

Mark only one oval.

- a) Predicted class labels
- b) Probability distributions
- c) Predicted continuous values
- d) Confusion matrix

6. **5. What is the main difference between Random Forest Classifier and Random Forest Regressor?** *

Mark only one oval.

- a) The type of output they produce
- b) The type of data they handle
- c) The algorithm used
- d) The way they split nodes

7. **6. Which metric is commonly used to evaluate the performance of a Random Forest Regressor?** *

Mark only one oval.

- a) Accuracy
- b) Mean Squared Error (MSE)
- c) Confusion Matrix
- d) F1-Score

8. **7. Before training a Random Forest model, what is a crucial data preparation step?** *

Mark only one oval.

- a) Normalizing the data
- b) Encoding categorical variables
- c) Applying PCA
- d) Removing all missing values

9. **8. What is one method to handle missing values before training a Random Forest model?** *

Mark only one oval.

- a) Deleting the rows with missing values
- b) Ignoring the missing values
- c) Duplicating the rows with missing values
- d) Imputing missing values with the mean or median

10. **9. Which feature scaling method is typically unnecessary for Random Forest models?** *

Mark only one oval.

- a) Standardization
- b) Normalization
- c) Min-Max Scaling
- d) Feature scaling is generally unnecessary

11. **10. What is the purpose of cross-validation in Random Forest?** *

Mark only one oval.

- a) To train the model multiple times
- b) To test the model's performance on different subsets of the data
- c) To increase the model's depth
- d) To prune the trees

12. **11. How does the Random Forest algorithm aggregate the predictions from individual trees?** *

Mark only one oval.

- a) By averaging the predictions
- b) By taking the mode of the predictions
- c) By selecting the prediction of the deepest tree
- d) By summing the predictions

13. **12. Which of the following is NOT a common step in the Random Forest workflow?** *

Mark only one oval.

- a) Data preprocessing
- b) Hyperparameter tuning
- c) Model training
- d) Gradient boosting

14. **13. What parameter would you adjust to control the number of trees in a Random Forest model?** *

Mark only one oval.

- a) max_depth
- b) min_samples_split
- c) n_estimators
- d) max_features

15. **14. How do you evaluate the performance of a Random Forest model in scikit-learn?** *

Mark only one oval.

- a) Using the score() method
- b) Using the predict() method
- c) Using the fit() method
- d) Using the transform() method

16. **15. What is a common use case for Random Forest Regressor?** *

Mark only one oval.

- a) Sentiment analysis
- b) Image classification
- c) Predicting house prices
- d) Spam detection

17. **16. Which metric would you use to evaluate the Taxi Fare Price Prediction model?** *

Mark only one oval.

- a) Accuracy
- b) F1-score
- c) Mean Squared Error (MSE)
- d) Precision

18. **17. What does a confusion matrix visualize?** *

Mark only one oval.

- a) The correlation between features
- b) The accuracy of a regression model
- c) The performance of a classification model
- d) The importance of features

19. **18. In a confusion matrix, what does the term 'True Positive' (TP) refer to?** *

Mark only one oval.

- a) Instances correctly predicted as negative
- b) Instances correctly predicted as positive
- c) Instances incorrectly predicted as negative
- d) Instances incorrectly predicted as positive

20. **19. What does the term 'False Negative' (FN) indicate in a confusion matrix?** *

Mark only one oval.

- a) The model predicted positive, but the actual class was negative
- b) The model predicted negative, but the actual class was positive
- c) The model correctly predicted negative
- d) The model correctly predicted positive

21. **20. Which of the following best describes the F1-score?** *

Mark only one oval.

- a) It measures the accuracy of the model
- b) It combines precision and recall into a single metric
- c) It measures the error rate of the model
- d) It visualizes the model's performance