12th April quiz

5 out of 5 correct

1. What is the primary purpose of bagging in Random Forest?

- [x] To reduce overfitting.
- [ ] To increase the model's complexity.
- [ ] To increase the model's bias.
- [ ] To reduce the model's variance.

Explanation: The primary purpose of bagging (Bootstrap Aggregating) in Random Forest is to reduce overfitting. Bagging involves training multiple decision trees on bootstrapped samples from the original dataset, which helps to reduce the model's tendency to overfit by averaging the predictions of the individual trees.

2. What is the main advantage of using Random Forest over a single decision tree?

- [ ] Random Forest is faster in training.
- [ ] Random Forest has lower complexity.
- [x] Random Forest is less prone to overfitting.
- [ ] Random Forest is a simpler algorithm.

3. How are feature subsets selected in Random Forest?

- [ ] All features are considered for each tree.
- [x] Random features are selected for each tree.

- ◯ Features are selected based on their importance.
- ◯ Features are selected based on their order in the dataset.

Explanation: Random Forest selects a random subset of features for each tree in the ensemble. This helps to introduce diversity in the individual trees and reduce the chance of overfitting, as each tree is trained on a different set of features.

4. What is the purpose of using bootstrapped samples in Random Forest?

- ◯ To reduce computational time.
- ◯ To increase the model's bias.
- ◯ To increase the model's variance.
- ◉ To introduce diversity among the trees.

Explanation: Bootstrapped samples are used in Random Forest to introduce diversity among the trees in the ensemble. Each tree is trained on a random subset of samples with replacement from the original dataset, which helps to reduce the chance of overfitting and improve the model's accuracy.

5. What is the criterion used for splitting nodes in a Random Forest?

- ◯ Gini impurity.
- ◯ Information gain.
- ◯ Mean squared error.
- ◉ Both A and B.

Explanation: Random Forest can use either Gini impurity or information gain as the criterion for splitting nodes in the decision trees. Both are common measures used to evaluate the impurity or purity of a node in a decision tree and help to make optimal splits during tree construction.

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