

Q1: Benefits of Random Forest (5 Points)

Grading comment: What are the main advantages of using a random forest versus a single decision tree?

1. The bootstrapping and aggregation components of random forests lead to a lower variance model when compared to a single decision tree.
2. Random forests are easier to interpret than single decision trees.
3. An ensemble of decision trees will always have lower bias than a single decision tree.
4. Random forests tend to generalize better, whereas single trees are more prone to overfitting.
5. All of the above.

Answer: Choices 1 and 4 are correct. Random forests reduce variance through bagging and aggregation, and they generalize better than single decision trees, which are prone to overfitting.