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Time taken 5 mins 15 secs

Marks 11.00/11.00

Grade 100.00 out of 100.00

Question

1

Complete

Mark 1.00 out of 1.00

Which scenario is least suitable for using decision trees?

Select one:

- ☐ a. When the dataset is very small
- ☐ b. When you have a mix of continuous and categorical variables
- ☐ c. When interpretability is crucial
- ☒ d. When the dataset includes many outliers

Question

2

Complete

Mark 1.00 out of 1.00

What is the stopping condition for building the tree in this implementation?

Select one:

- ☒ a. Maximum depth is reached or no split reduces impurity
- ☐ b. Minimum impurity reaches zero
- ☐ c. All features are used
- ☐ d. Tree depth reaches 10

Question

3

Complete

Mark 1.00 out of 1.00

In a multi-class classification problem, how does Gini impurity behave in terms of gaining information?

Select one:

- ☐ a. It only measures binary classifications effectively.
- ☐ b. It shows no correlation with class distribution.
- ☒ c. It tends to prefer splits that result in a balanced class distribution.
- ☐ d. It penalizes too many classes.

Question

4

Complete

Mark 1.00 out of 1.00

What would happen if the max_depth parameter is set to None?

Select one:

- ☒ a. The tree will grow until all leaves are pure or the data is exhausted.
- ☐ b. The tree will stop growing at a depth of 10 by default.
- ☐ c. The tree will raise an error.
- ☐ d. The tree will split on all features once.

Question

5

Complete

Mark 1.00 out of 1.00

What does a decision tree primarily aim to minimize at each split?

Select one:

- ☐ a. Number of leaves
- ☐ b. Tree width
- ☐ c. Maximum depth
- ☒ d. Gini impurity

Question

6

Complete

Mark 1.00 out of 1.00

What is the range of Gini impurity?

Select one:

- ☐ a. $[-\infty, 0]$
- ☒ b. $[0, 1]$
- ☐ c. $[0, \infty]$
- ☐ d. $[-1, 1]$

Question

7

Complete

Mark 1.00 out of 1.00

Which data characteristic can lead to overfitting in decision trees?

Select one:

- ☐ a. High Gini impurity at all nodes
- ☒ b. Small dataset with noisy labels
- ☐ c. Balanced dataset
- ☐ d. Dataset with no outliers

Question

8

Complete

Mark 1.00 out of 1.00

What does the leaf node in a decision tree represent?

Select one:

- ☐ a. A subset of the training data
- ☐ b. A Gini impurity score
- ☒ c. A prediction or decision
- ☐ d. The best feature for splitting

Question

9

Complete

Mark 1.00 out of 1.00

How can overfitting in decision trees be reduced?

Select one:

- ☒ a. Pruning the tree
- ☐ b. Increasing tree depth
- ☐ c. Ignoring categorical variables
- ☐ d. Adding more leaf nodes

Question

10

Complete

Mark 1.00 out of 1.00

What is a common issue when a decision tree has too many levels?

Select one:

- ☐ a. Low bias
- ☒ b. Overfitting
- ☐ c. Underfitting
- ☐ d. Low variance

Question

11

Complete

Mark 1.00 out of 1.00

Which splitting criterion is used in this implementation?

Select one:

- ☐ a. Mean squared error
- ☒ b. Gini impurity
- ☐ c. Entropy
- ☐ d. Information gain