

← Back

Module 4 Graded Quiz: Decision Trees

Graded Assignment > 30 mins

Due Oct 13, 11:59 PM PDT

Your grade: 100%

Your latest: 100% • Your highest: 100%

To pass you need at least 70%. We keep your highest score.

Next item →

1. These are all characteristics of decision trees, EXCEPT:

☐ They segment data based on features to predict results

☐ They split nodes into leaves

☐ They can be used for either classification or regression

☒ They have well rounded decision boundaries

Correct

Correct! For more information please review the Introduction to Decision Trees lesson.

1 / 1 point

2. Decision trees used as classifiers compute the value assigned to a leaf by calculating the ratio: number of observations of one class divided by the number of observations in that leaf. E.g. number of customers that are younger than 50 years old divided by the total number of customers.

How are leaf values calculated for regression decision trees?

☒ average value of the predicted variable

☐ median value of the predicted variable

☐ weighted average value of the predicted variable

☐ mode value of the predicted variable

Correct

Correct! For more information please review the Decision TreeSplit lesson.

1 / 1 point

3. These are two main advantages of decision trees:

☐ They output both parameters and significance levels

☐ They are resistant to outliers and output scaled features

☐ They do not tend to overfit and are not sensitive to changes in data

☒ They are very visual and easy to interpret

Correct

Correct! For more information please review the lesson Pros and Cons of Decision Trees.

1 / 1 point

4. How can you determine the split for each node of a decision tree?

☐ Find the split that induces the largest entropy.

☐ Randomly select the split.

☒ Find the split that minimizes the gini impurity.

☐ Use a nonlinear decision boundary to find the best split.

Correct

Correct. The split for each node is determined by the split that minimizes the gini impurity or the entropy.

1 / 1 point

5. Which of the following describes a way to regularize a decision tree to address overfitting?

☐ Reduce the information gain.

☐ Increase the number of branches.

☐ Increase the max depth.

☒ Decrease the max depth.

Correct

Correct. Decreasing the max depth can help to prune the tree. Any impure leaves can be assigned to the majority class.

1 / 1 point

6. What is a disadvantage of decision trees?

☐ Scaling is required.

☒ They tend to overfit.

☐ They can get too large.

☐ They are difficult to interpret.

Correct

Correct. Decision trees tend to add high variance; that is, they tend to overfit.

1 / 1 point

7. What method can you use to minimize overfitting of a machine learning model?

☐ Decrease the variance of your test data.

☐ Choose the hyperparameters that maximize goodness of fit on your training data.

☐ Increase the variance of your training data.

☒ Tune the hyperparameters of your model using cross-validation.

Correct

Correct. As you've done with other algorithms, you want to tune your hyperparameters using cross-validation. This means choosing the hyperparameters that maximize the estimated goodness of fit on unseen test data.

1 / 1 point

8. Concerning Classification algorithms, what is a characteristic of K-Nearest Neighbors?

☒ Training data is the model

☐ The model is just parameters

☐ Fitting can be slow

☐ Prediction is fast

Correct

Correct. For K-Nearest Neighbors the training data is the model.

1 / 1 point

9. Concerning Classification algorithms, what are the characteristics of Logistic Regression?

☒ The model is just parameters, fitting can be slow, prediction is fast, and the decision boundary is simple and less flexible

☐ The training data is the model, fitting is fast, prediction is fast, and the decision boundary is flexible

☐ The model is just parameters, fitting is fast, prediction is fast, and the decision boundary is flexible

☐ The training data is the model, fitting is fast, predicting class for new records can be slow, and the decision boundary is flexible

Correct

Correct.

1 / 1 point

10. When evaluating all possible splits of a decision tree what can be used to find the best split regardless of what happened in prior or future steps?

☐ Regularization

☒ Greedy Search

☐ Logistic regression

☐ Classification

Correct

Correct. Greedy Search is used to find the best split regardless of what happened in prior or future steps.

1 / 1 point