CC 5.3.1: Tree-Based Methods for Regression and Classification

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CC 5.3.1: Tree-Based Methods for Regression and Classification

Tree-Based Methods for Regression and Classification, Question 1

1/1 point (graded)

The goal of a tree-based method is typically to split up the predictor or feature space such that:

each region contains only one observation.

data from neighboring regions are as different as possible.

data within each region are as similar as possible.

correct

each region has the same number of observations.

Tree-Based Methods for Regression and Classification, Question 2

1/2 points (graded)

Part 1. For classification, how does a decision tree make a prediction for a new data point?

It returns the mean of the outcomes of the training data points in the predictor space where the new data point falls.

It returns the median of the outcomes of the training data points in the predictor space where the new data point falls.

It returns the mode of the outcomes of the training data points in the predictor space where the new data point falls.
correct

It returns the maximum of the outcomes of the training data points in the predictor space where the new data point falls.
incorrect

Part 2. For regression, how does a decision tree make a prediction for a new data point?

It returns the mean of the outcomes of the training data points in the predictor space where the new data point falls.
correct

It returns the median of the outcomes of the training data points in the predictor space where the new data point falls.

It returns the mode of the outcomes of the training data points in the predictor space where the new data point falls.

It returns the maximum of the outcomes of the training data points in the predictor space where the new data point falls.

CC 5.3.2: Random Forest Predictions

Random Forest Predictions, Question 1

0/2 points (graded)

Random forests get their name by introducing randomness to decision trees in two ways, once at the data level and once at the predictor level.

Part 1. How is randomness at the data level introduced?

Random noise is added to all training data points.

Random noise is added to a random sample of training data points.

Each split gets a bootstrapped random sample of training data.

Each tree gets a bootstrapped random sample of training data.

correct

Part 2. How is randomness at the predictor level introduced?

Each tree only uses a subset of predictors.

Each split only uses a subset of predictors.

correct

The order of predictors is randomized.

Random noise is added to a subset of predictors.

Random Forest Predictions, Question 2

2/2 points (graded)

Part 1. In a classification setting, how does a random forest make predictions?

Each tree makes a prediction and the mode of these predictions is the prediction of the forest.
correct

Each tree makes a prediction and the mean of these predictions is the prediction of the forest.

A random subset of trees makes a prediction and the mean of these predictions is the prediction of the forest.

A random subset of trees makes a prediction and the mode of these predictions is the prediction of the forest.

Part 2. In a regression setting, how does a random forest make predictions?

Each tree makes a prediction and the mode of these predictions is the prediction of the forest.

Each tree makes a prediction and the mean of these predictions is the prediction of the forest.
correct

A random subset of trees makes a prediction and the mean of these predictions is the prediction of the forest.

A random subset of trees makes a prediction and the mode of these predictions is the prediction of the forest.

Comprehension Check due Jun 10, 2021 03:28 +03 Completed

Computing Predictive Probabilities Across the Grid, Question 1

0/1 point (graded)

What does the pattern of probabilities across the grid (at 7:34 in Video 5.2.4) indicate about X_1 and X_2?

- (•) The class probability is determined mostly by X_1. ✔
- ( ) The class probability is determined mostly by X_2.
- ( ) The class probability is determined equally by X_1 and X_2.
- ( ) One cannot tell from the grid which covariate is better at predicting class.