YData: An Introduction to Data Science

Lecture 36: Classifiers

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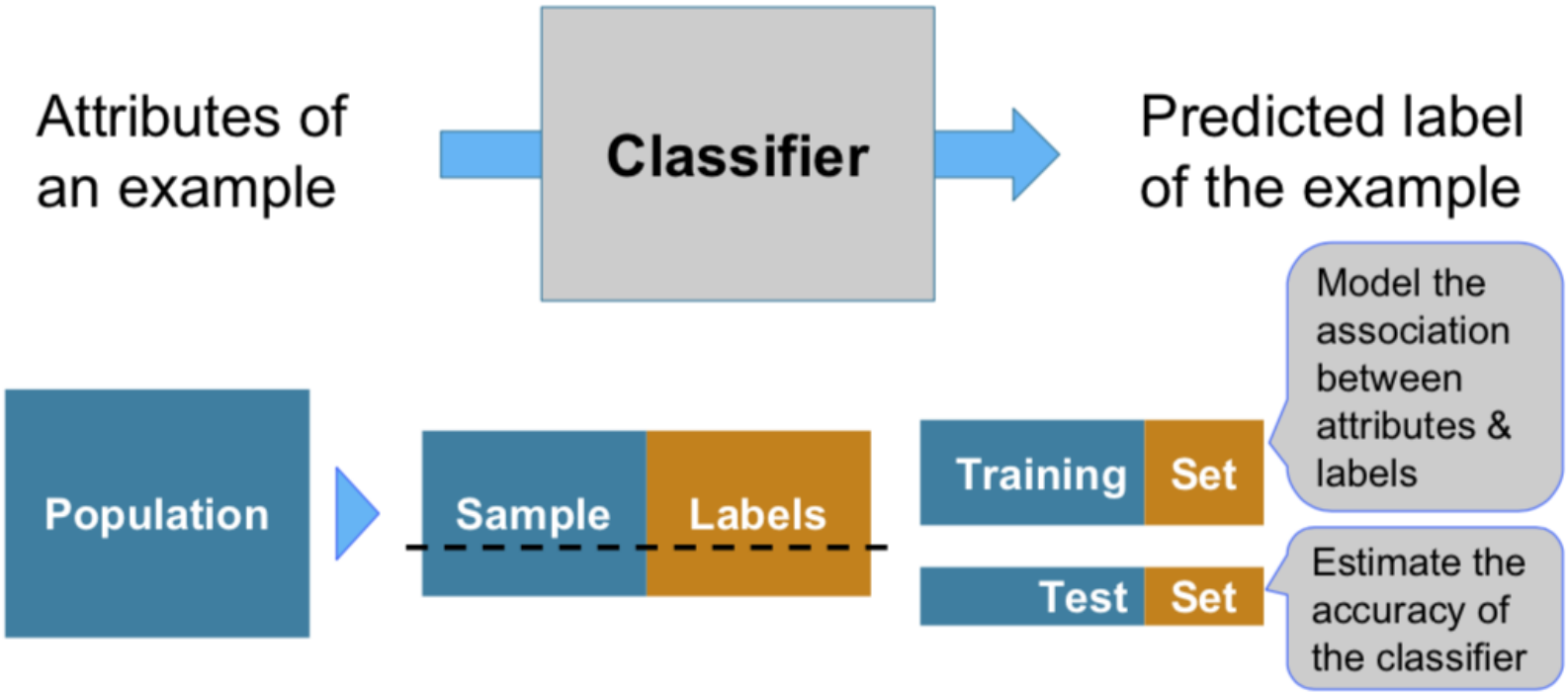
Announcements

Classifiers

Training a Classifier



Nearest Neighbors

Finding the k Nearest Neighbors

To find the k nearest neighbors of an example:

- Find the distance between the example and each example in the training set
- Augment the training data table with a column containing all the distances
- Sort the augmented table in increasing order of the distances
- Take the top k rows of the sorted table

The Classifier

To classify a point:

- Find its k nearest neighbors
- Take a majority vote of the k nearest neighbors to see which of the two classes appears more often
- Assign the point the class that wins the majority vote

(DEMO)

Evaluation

Accuracy of a Classifier

The accuracy of a classifier on a labeled data set is the proportion of examples that are labeled correctly

Need to compare classifier predictions to true labels

If the labeled data set is sampled at random from a population, then we can infer accuracy on that population

(DEMO)