**Decision trees** are popular in data mining contexts. They involve creating a set of binary splits on the predictor variables in order to create a tree that can be used to classify new observations into one of two groups. In this section, we’ll look at two types of decision trees: classical trees and conditional inference trees.

**Conditional inference trees** are similar to traditional trees, but variables and splits are selected based on significance tests rather than purity/homogeneity measures. The significance tests are permutation tests.

**A random forest** is an ensemble learning approach to supervised learning. Multiple predictive models are developed, and the results are aggregated to improve classification rates. You can find a comprehensive introduction to random forests, written by Leo Breiman and Adele Cutler, at <http://mng.bz/7Nul>

**Supportvector machines (SVMs)** are a group of supervised machine learning models that can be used for classification and regression. **SVMs** seek an optimal hyperplane for separating two classes in a multidimensional space. The hyperplane is chosen to maximize the margin between the two classes’ closest points.

In recent years, there has been a movement to understand **black box models employing methods** and techniques called Explainable Artificial Intelligence(XAI, http://ema.drwhy.ai). The goal of XAI is to better understand how black box models work in general (global understanding) and when making individual predictions (local understanding).