- Object-oriented programming syntax
    - procedural vs object-oriented programming
    - classes, objects, methods and attributes
    - coding a class
    - magic methods
    - inheritance
- Using object-oriented programming to make a Python package
    - making a package
    - tour of scikit-learn source code
    - putting your package on PyPi

Why Object-Oriented Programming?

Object-oriented programming has a few benefits over procedural programming, which is the programming style you most likely first learned. As you'll see in this lesson,

- object-oriented programming allows you to create large, modular programs that can easily expand over time;
- object-oriented programs hide the implementation from the end-user.

Consider Python packages like Scikit-learn, pandas, and NumPy. These are all Python packages built with object-oriented programming. Scikit-learn, for example, is a relatively large and complex package built with object-oriented programming. This package has expanded over the years with new functionality and new algorithms.

When you train a machine learning algorithm with Scikit-learn, you don't have to know anything about how the algorithms work or how they were coded. You can focus directly on the modeling.

Here's an example taken from the Scikit-learn website:

```
from sklearn import svm
X = [[0, 0], [1, 1]]
y = [0, 1]
clf = svm.SVC()
clf.fit(X, y)
```

How does Scikit-learn train the SVM model? You don't need to know because the implementation is hidden with object-oriented programming. If the implementation changes, you as a user of Scikit-learn might not ever find out. Whether or not you SHOULD understand how SVM works is a different question.

In this lesson, you'll practice the fundamentals of object-oriented programming. By the end of the lesson, you'll have built a Python package using object-oriented programming.

Lesson Files

This lesson uses classroom workspaces that contain all of the files and functionality you will need. You can also find the files in the data scientist nanodegree term 2 GitHub repo.

NEXT