Intermediate Python for Data Analysis

Course Overview – 1-day course

Following on from our *Data Analysis in Python* course, *Intermediate Python for Data Analysis* will build on your knowledge of Python and pandas. The focus of this course is learning to work more efficiently in Python. You will learn to use control flow structures and loops and write your own custom functions and classes to automate analyses and improve efficiency.

In this course, you will learn to:

- create user-defined functions and classes
- use loops and other control structures, plus alternatives
- use method chaining and pipes to perform multiple operations on DataFrames
- create interactive visualisations with Bokeh and
- write code to automate these processes.

Detailed Content

Introduction

Working more efficiently in Python
Automating frequent data analysis operations
Principles of working more efficiently with code

User-Defined Functions

When to create your own functions
Function basics
Parameters
Positional vs keyword arguments
Defining a function
Side effects vs return values
Indentation
Scope
*args and **kwargs
Unpacking operators
Order of arguments in a function
Adding a docstring
Assertions
Loading functions for reuse
lambda expressions

Loops and Other Control Structures

if…elif…else
for loops
Loop over sequences
Loop over ranges
Enumerate
Loop over pandas groups
Loop over multiple lists
while loops
else, break and continue
Saving results from a loop
Combining loops and functions

Loop and if-else alternatives

np.where() and np.select()
Conditional expressions
List comprehensions
Python built-in map() function
Evaluating performance efficiency
IPython and magic commands
pandas map()
pandas apply() and applymap()

User-Defined Classes

When to create your own class
Defining classes
Docstrings

The __init__() method
The self parameter
Class objects – attribute references and instantiation
Data attributes
Methods
Scope
Dunder methods

Performing multiple operations on DataFrames

Method chaining
Using pandas pipes with custom functions

Interactive Visualisations with Bokeh

Bokeh basics
Working with Bokeh in Jupyter
Glyphs
Providing data
Using the Bokeh toolbar
Customising the Bokeh toolbar
Creating links between plots
Using interactive legends
Adding tooltips
Plotting from a grouped pandas DataFrame
Save your Bokeh chart