

Python for Data Science

Introduction, Features of Python. The Basics- Literal ,Constants Numbers ,Strings, Identifier, Naming ,Data Types ,Objects, Output . Operators and Expressions - Operators ,Operator Precedence ,Order of Evaluation, Associativity, Using Expressions. Control Flow- Decision making –if, if ...else ,if...elif else. Loops- while, for, break, continue statements .

Functions – Defenition,parameters,local and global variables,default arguments,keyword arguments,return statement,Recursive functions,Lamda functions.Modules-built in modules,creating modules,import statement,Namespaces and scope, dir(),reload() functions.File Handling-opening a file,writing to a file,closing a file,file renaming,deleting a file.Directories of Python-methods mkdir(),chdir(),getcwd(),rmdir().

Data structures- Introduction,List, storing many different data points under a single name.create, subset and manipulate Lists in all sorts of ways.Tuple, Dictionary, Sequences. Quick introduction to Objects and Classes-creating objects, init() method,Oops principles- encapsulation,data hiding,,Inheritance,method overriding,polymorphism. Exception Handling-try....except, try...finally,raising an exception,user defined exception.

Numpy –Introduction, *NumPy Essentials*-The NumPy array,Indexing,functions and operators,typecodes,scalors,vectors,slices,N-dimensional array operations and manipulations,Memory mapped files, writing superfast code with Numerical Python, using NumPy to store and do calculations with huge amounts of data. Randomization,Gnuplot,Curve Fitting,Structured Grids,Tools.

Control flow and Pandas – Pandas Data Frame , Exploring Data with Pandas, data cleaning and processing -Data manipulation with Pandas, reading data into DataFrame structures, querying these structures, merge DataFrames, generate summary tables, group data into logical pieces, and manipulate dates. Scaling of data, issues related with creating metrics for data analysis. Statistical analysis with Pandas, Time series analysis with Pandas.

Matplotlib

Create different types of visualizations for conveying various type of messages, building complex and customized plots based on real data.PyLab,Embedding in GUIs.