
Data Science with Python

Topics:

- Python Background
 - Quick Review of Python Essentials
 - Functional Programming Functions
 - List Comprehensions
 - Lambda Functions
 - map, filter, reduce
 - Iterator
 - Generator
 - Practice: Fibonacci Series with Generator
 - LAB: Random Walk with Matplotlib Visualization
- Math Background
 - Probability Essentials
 - Monty Hall and other Problems
 - Statistics Basics
 - Normal Distribution
 - Mean, Variance, Standard Deviation
 - Bayes Theorem

- LAB: COVID-19 Test Reliability
- Regular Expressions
 - Regex Module
 - Search vs. Match
 - Find and Replace
 - Option Flags
 - Special Char Classes
 - LAB: Email Extraction with REGEX
- Database Access
 - SQL vs. NoSQL Databases
 - SQLite3 Module
 - SQL Basics
 - CRUD Operations on SQLite3 Database
 - LAB: SQLite3 Movie Database Project
- Data Analysis Basics
 - Scipy Ecosystem
 - Numpy
 - Pandas
 - Sympy
 - Matplotlib
 - Seaborn

- **NUMPY: multidimensional array**
 - dtype and shape to define type and geometry
 - Element-wise computation
 - Creating Arrays
 - Using Arrays and Scalars
 - Indexing Arrays
 - Array Transposition
 - Universal Array Function
 - Array Processing
 - Array input and output
 - LAB: Matrice Operations

- **PANDAS**
 - Series
 - DataFrame
 - Index objects
 - Drop Entry
 - Selecting Entries
 - Data Alignment
 - Rank and Sort
 - Summary Statistics
 - Missing Data
 - Reading and Writing Text Files

- JSON with Python
 - HTML with Python
 - Merge
 - Merge on Index
 - Concatenate
 - Combining DataFrames
 - Reshaping
 - Mapping
 - Replace
 - Permutation
 - GroupBy on DataFrames
 - GroupBy on Dict and Series
 - Aggregation
 - Splitting and Combining
 - Pandas LABS
- MATPLOTLIB
 - Data Visualization with Matplotlib
 - Matplotlib is written in Python and makes use of NumPy
 - Matplotlib has a procedural interface named the Pylab
 - Pylab is designed to resemble MATLAB
 - Pyplot API

- imple Plot
 - PyLab module
 - Figure Class
 - Axes Class
 - Multiplots
 - Subplots Function
 - Grids
 - Formatting Axes
 - Bar Plot
 - Histogram
 - Pie Chart
 - Scatter Plot
 - Contour Plot
 - Three-dimensional Plotting
 - Matplotlib LABS
- SEABORN
 - Seaborn Introduction
 - Line Plot
 - Scatter Plot
 - Bar Plot
 - Hisplot

- Kdeplot
- Displot
- Jointplot
- Pairplot
- Rugplot
- Countplot
- Boxplot
- Violinplot
- triplot
- Heatmap
- Matrix Plots
- Grids
- Regression Plots
- tyles, Colors, and Palettes
- Seaborn LABS