**Machine Learning Using Python ( 5 Days )**

**Prerequisite:**

This course is for the intermediate to Advance level participants. The participants need not have any prior exposure to Python programming language. Prior familiarity with some other programming language (such as Java or C++) would be useful, but it is not mandatory for audience.

The course coverage and pace would vary slightly, depending on the composition of the batch. If the training is for participants who are already familiar with some other object-oriented programming language, such as C++ or Java, the initial parts covering the basic language constructs as well as introduction to the OO concepts could be completed faster, and more time could be spent on some of the advanced aspects of the course.

If the training is for a batch of participants who are new to any programming language, then even the basic language constructs would require more detailed explanation and practice work, and coverage of some of the later, advanced topics would be curtailed.

**Lab Setup:-**
Computer with the following **softwares:**

Operating System: Window8/10 or Ubuntu16.04 or MacOs 10.10.X

Anaconda ( Latest )
Python 2.7.13 with Anaconda
or Python 3.5.x with Anaconda
http://continuum.io/downloads#34
http://continuum.io/downloads#all

Numpy, Scipy, Pandas, Matplotlib etc.

Acrobat Reader / Libre Office / MSOffice etc.

**Hardware :**

RAM: Minimum 4GB / 8GB ( Recommended ).
Internet Connectivity. ( Needed to Install Packages and Run Anaconda Server ).
80 GB HDD.

| **Day** | **Module** | Session | **Topics** |
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| Day 1 | Module 1 | Morning | Introduction to Python<br>Why Python? Where? |

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| | Module 2 | Morning | Mutable and Immutable Objects |
| | Module 3 | Morning | Basic Language Construct |
| | Module 4 | Afternoon | Control Structure |
| | Module 5 | Afternoon | Functions with *arg and **kwarg<br>lambda, filter, map, reduce, set,enumerate, sorted, reversed, range, xrange,zip,sum,max,min etc. |
| | Module 6 | Morning | Data Structures<br>List Comprehension & Dictionary Comprehension |
| Day 2 | Module 7 | Morning | Modules<br>Importing Types, Creation and Accessing<br>os, sys, system, random,glob etc. |
| | Module 8 | Afternoon | Object Oriented Programming<br>self, Class Variable and Object Variables<br>Overriding, private data, Inheritance etc |
| | Module 9 | Afternoon | Files, readlines and writelines, iteration |
| | Module 10 | Afternoon | Exception Handling<br>User Defined Exception using raise |
| Day3 | Module 11 | Morning | Regular expressions |
| | Module 12 | Morning | Itertools and Collections framework |
| | Module 13 | Morning | Threading, Logging and Debugging |

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| | Module 14 | Afternoon | Anaconda, Ipython |
| | Module 15 | Afternoon | Numpy |
| | Module 16 | Afternoon | Scipy |
| Day 4 | Module 17 | Morning | Pandas Data Series and Data Frame |
| | Module 18 | Afternoon | Matplotlib |
| Day 5 | Module 19 | Morning | Introduction to Machine Learning<br>Supervised, Unsupervised and Reinforcement Learning |
| | Module 20 | Morning | Univariate Statistics<br>High level explanation of Probability distribution |
| | Module 21 | Morning | Classification, Regression Clustering Algorithms |
| | Module 22 | Afternoon | Scikit-learn API<br>Linear regression (simple, multiple)<br>Support vector machines , neutral networks, tree based methods, selection & regularisation<br>Python Sample Modules :<br>sklearn.tree<br>tree.DecisionTreeClassifier<br>sklearn.neural_network<br>MLPClassifier<br>Case studies |