



## MACHINE LEARNING with PYTHON

### **Introduction to Python**

- Introduction and History of Python
- Installing Python and setting Environment
- IDLE
- How to execute Python program

### **Python basics**

- Python Tokens
  - o Keywords
  - o Literals
  - o Identifiers
  - o Operators
- Python statements
- Getting user input

### **Variables and Data Types**

- Variables
- Numbers
- Strings
- Lists
- Tuple
- Dictionary

### **Decision Control Structure**

- Control flow statements
- The **IF** statement
- Python Relational and Logical Operators
- The **WHILE** loop
- Break and Continue statement
- The **FOR** loop
- Pass statement

### **Functions**

- Creating a function
- Calling a function
- Function with default values
- Calling function named arguments
- Built-in functions

## **Module**

- Modules introduction
- Creating modules
- Importing Modules
- Standard Modules

## **Files and Directories**

- Introduction to File handling
- Writing and reading files
- Working with directories

## **Object Oriented Programming**

- Introduction to OOPs
- Classes and Objects
- Instance methods
- Special class method
- Inheritance
- Method overriding
- Data Hiding
- Many more concepts...

## **Exception Handling**

- What is Exception
- Try, except, finally and raise statements
- Handling Exception

## **Multi-Threading**

- The Threading module
- Creating and executing new Thread
- Synchronizing Threads

## **GUI Programming**

- Introduction to Tkinter
- Making window Object
- Working with widgets
  - o Label
  - o Button
  - o Entry
  - o RadioButton
  - o Checkbox
  - o Message
  - o Combobox
  - o Spin box
  - o Menu
  - o Scrollbar

- Canvas
- Many more
- Validating inputs
- Event handling

### **Database programming in Python**

- Introduction to databases
- Creating database
- Making table
- Inserting, updating, removing and retrieving data from tables
- Intro to Python DB-API
- List of Supported DBMSs
- Connecting to database
- Executing queries
- Fetching data from database table
- Handling Transactions

### **Module 2 - Introduction to Machine Learning**

- Applications of Machine Learning
- Supervised vs Unsupervised Learning
- Python libraries suitable for Machine Learning

### **Module 3 - Regression**

- Linear Regression
- Non-linear Regression
- Model evaluation methods

### **Module 4 - Classification**

- K-Nearest Neighbour
- Decision Trees
- Logistic Regression
- Model Evaluation

### **Module 5 - Unsupervised Learning**

- K-Means Clustering
- Hierarchical Clustering
- Density-Based Clustering

### **Module 6 - Recommender Systems**

- Content-based recommender systems
- Collaborative Filtering