



Training | Consulting | Developement | Outsourcing

Python + Machine Learning



Python and Machine Learning

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Python + Machine Combo Course

Course Overview:

Learn Machine Learning from scratch with Python which as combination paves way for many huge job opportunities. This is a complete beginner course, you can start with this even if you don't have any prior coding experience. Machine learning is the science of getting computers to act without being explicitly programmed. In the past decade, machine learning has given us self-driving cars, practical speech recognition, effective web search, and a vastly improved understanding of the human genome. Machine learning is so pervasive today that you probably use it dozens of times a day without knowing it. Many researchers also think it is the best way to make progress towards human-level AI. In this class, you will learn about the most effective machine learning techniques, and gain practice implementing them and getting them to work for yourself. More importantly, you'll learn about not only the theoretical underpinnings of learning, but also gain the practical know-how needed to quickly and powerfully apply these techniques to new problems.

Course Outline:

Python

1. Getting Started

- History
- A Python Q&A Session
- How Python Runs Programs
- How You Run Programs

2. Introduction to Python:

- What is Python?
- Why Python?
- Python Applications in real life
- Brief history of Python
- Versions of Python

- Installing Python
- Using IDLE
- First Python Program
- Getting help from Python Docs

3. Types and Operations

- Introducing Python Object Types
- Numeric Types
- The Dynamic Typing Interlude
- Strings
- Lists and Dictionaries
- Tuples, Files and Everything Else

4. Variables Data types

- Intro to dynamic typing
- Variables in Python
- Naming conventions
- Basic Data types (representation of strings, integer, floats)

5. Basic Syntax

- Basic syntax
- Commenting
- Indentation
- Python keywords
- Strings
- String values
- String Operations
- String slicing
- Built in string methods
- Formatted printing
- Simple Input and Output handling

6. Language Building blocks

- Control statements, the if, elif, else
- True and False
- Arithmetic Operators
- Relational Operators
- Logical Operators
- Bitwise Operators
- While loop
- Usage of pass, break and continue
- For each loop

7. Collections

- Lists
- Tuples
- Sets
- Dictionaries
- Sorting collections
- Operations on collections
- Discussion on real life application of above collections

8. Functions

- Introduction to functions
- Built in functions
- User defined functions
- Function parameters
- Variable arguments ,args and kwargs
- Positional and named arguments
- Discussion scope of variables with respect to functions and namespace
- Passing function to another function

9. Project

10. File Handling

11. Modules

- Introduction to modules
- Introduction to standard modules
- OS module
- path module
- Sys module
- sub process module
- Argument parsing using argparse module
- .csv file parsing using csv module
- .json file parsing using json module
- Xml file parsing using xml module
- Introduction to logging module

12. Project 2: Building log parser and reporting the results

13. Object Oriented Programming

- Introduction to Classes and Objects
- Principles of OOP
- Instance methods
- Special methods
- Encapsulation
- Inheritance
- Polymorphism

14. Regular Expressions

- Introduction to regular expressions
- Introduction to re module
- Simple character matches
- Match function

- Searching function
- Regular expression patterns
- Patterns in Regex
- Search And Replace

15. Optional I(for testers)

- Introduction to testing using Python
- Introduction to test automation
- Introduction to Selenium web driver
- Web testing using selenium

16. Option II(developers) Advance topics:

- Generators
- Decorators
- Iterators and iterator protocol
- Debugging using PDB

17. Options III(Web programming)

- Introduction to web programming using Python
- Introduction to Django/Flask
- Introduction to Restful API's using Python

18. Option IV(Data science)

- Introduction to data science using python
- Introduction to pandas module
- Introduction to data visualization using matplotlib
- Introduction to numpy
- Introduction to scipy

Machine Learning

Course Outline:

Python for Machine Learning

- Programming Basics
- Python Data Types
- Structures and conditional statements
- Python core packages
- Introduction to Jupyter Notebook
- Introduction to Numpy and Pandas
- Data filtering and selecting
- Find duplicates and treating missing values
- Concatenate and transform data

Setting up and installations

- Installing python
- Setting up Python environment for development
- Installation of Jupyter Notebook
- How to access our course material
- Write your first program in python

Python object and data structures operations

- Introduction to Python objects
- Number objects and operations
- Variable assignment and keywords
- String objects and operations
- Print formatting with strings

Python statements

- Introduction to Python statements
- If, else-if and else statements
- Comparison operators
- Chained comparison operators
- What are loops?
- For loops
- While loops

File and exception handling

- Process files using python
- Read/write and append file object
- File functions
- File pointer and operations
- Introduction to error handling
- Try, except and finally

Basic Statistics for Machine Learning

- Basic Statistics and Exploratory Analysis
- Descriptive summary statistics with Numpy
- Summarize continuous and categorical data
- Outlier analysis

Introduction to Machine Learning

- Overview of Supervised and Unsupervised Machine Learning
- Linear Regression
- Clustering with K-means
- Naive Bayes Classification
- Introduction to Neural Networks

Data Processing for Machine Learning

- Advanced Data Mugging
- Outlier Analysis
- Treating for missing values
- Normalization vs Standardization of data

Machine Learning Algorithms

- Supervised Machine Learning algorithms
- K-Nearest Neighbors (KNN) concept and application
- Naive Bayes concept and application
- Logistic Regression concept and application
- Classification Trees concept and application
- Unsupervised Machine Learning algorithms
- Clustering with K-means concept and application

- Hierarchical Clustering concept and application

Building and Training Machine Learning models

- Setting up the project with ML workflow.
- Data Preprocessing and statistical exploration
- Building , Training and evaluation of Machine Learning Model

Prerequisites:

- Familiarity with Python programming is also beneficial. You should understand these fundamental courses including Python for Data Science, Math Refresher, and Statistics Essential for Data Science, before getting into the Machine Learning course.

Who Can attend:

- Developers aspiring to be data scientists or machine learning engineers
- Analytics managers who are leading a team of analysts
- Business analysts who want to understand data science techniques
- Information architects who want to gain expertise in machine learning algorithms
- Analytics professionals who want to work in machine learning or artificial intelligence
- Graduates looking to build a career in data science and machine learning
- Experienced professionals who would like to harness machine learning in their fields to get more insights

Number of Hours: 70hrs

Certification: None

Key Features:

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects

- Virtual Live Experience
- Preparing for Certification

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