



Curriculum Of Artificial Intelligence With Python

CORE PYTHON

MODULE 1: GETTING STARTED

- History & need of Python
- Application of Python
- Advantages of Python
- Disadvantages of Python
- Installing Python
- Program structure
- Interactive Shell
- Executable or script files.
- User Interface or IDE

MODULE 2: PYTHON FUNDAMENTALS

- Working with Interactive mode
- Working with Script mode
- Python Character Set
- Python Tokens, Keywords, Identifiers, Literals, Operators
- Variables and Assignments
- Input and Output in Python

MODULE 3: DATA HANDLING

- Data Types
- Numbers
- Strings
- Lists
- Tuples
- Dictionary
- Set
- Frozen set
- Bool
- Mutable and Immutable

MODULE 4: OPERATORS

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Membership Operators
- Identity Operators
- Bitwise Operators
- Assignment Operators



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- Operators Precedence
- Evaluating Expression
- Type Casting

MODULE 5: PROGRAM CONTROL FLOW

- Conditional Statements
- The if Statement
- The if-else Statement
- The if-elif Statement
- Nested if Statements
- Python Indentation
- Looping and Iteration
- The For Loop
- The While Loop
- Loop else Statement
- Nested Loops
- Break and Continue
- The Range Function
- Introduction to range()
- Types of range() function Use of range() function

MODULE 6: STRING MANIPULATION

- Introduction to Python String
- Accessing Individual Elements
- String Operators
- String Slices
- String Functions and Methods

MODULE 7: LIST MANIPULATION

- Introduction to Python List
- Creating List
- Accessing List
- Joining List
- Replicating List
- List Slicing

MODULE 8: TUPLES

- Introduction to Tuple
- Creating Tuples



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- Accessing Tuples
- Joining Tuples
- Replication Tuples
- Tuple Slicing

MODULE 9: DICTIONARIES

- Introduction to Dictionary
- Accessing values in dictionaries
- Working with dictionaries
- Properties

MODULE 10: SET AND FROZENSET

- Introduction to Set and Frozen set
- Creating Set and Frozen set
- Accessing and Joining
- Replicating and Slicing
- The Range Function
- Introduction to range()
- Types of range() function Use of range() function

MODULE 11: INTRODUCTION TO FUNCTIONS

BUILT-IN FUNCTIONS

- Introduction to Functions
- Using a Functions
- Python Function Types
- Structure of Python Functions
- E.g. - map, zip, reduce, filter, any, chr, ord, sorted, globals, locals, all, etc.

USER DEFINED FUNCTIONS

- Structure of a Python Program w.r.t. UDF
- Types of Functions
- Invoking UDF
- Flow of Execution
- Arguments and Parameters
- Default Arguments, Named Arguments
- Scope of Variables
- Lambda function

MODULE 12: RECURSION FUNCTION

- Use of recursion function



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MODULE 13: MODULES AND PACKAGES

BUILT-IN MODULES

- Importing Modules in Python Programs
- Working with Random Modules
- E.g. built ins, OS, time, datetime, calendar, Twilio, smtp, pillow

ARTIFICIAL INTELLIGENCE

MODULE 1: INTRODUCTION TO ARTIFICIAL INTELLIGENCE AI

- Why do we need to study AI?
- Applications of AI
- Branches of AI
- Defining intelligence using Turing Test
- Making machines think like humans
- Building rational agents
- General Problem Solver
- Building an intelligent agent
- Understanding deep learning
- Understanding neural networks with TensorFlow
- Deep dive understanding neural network with TensorFlow
- Master deep networks
- Convolutional neural network
- Recurrent neural networks
- RBM and autoencoder

MODULE 2: REVISION OF MACHINE LEARNING

- Regression
- Decision Trees
- Support Vector Machines
- Supervised Learning
- Clustering
- Principal Component Analysis
- Unsupervised Learning
- Reinforcement Learning
- Convolutional Neural Networks

MODULE 3: TENSORFLOW LEARN

- Define TF Learn
- Composing Models in TF Learn
- Sequential Composition



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- Functional Composition
- Tensor Board
- Hands-On Practice

MODULE 4: INTRODUCTION TO SIXTH SENSE TECHNOLOGY

- What is sixth sense?
- Why choose sixth sense technology?

MODULE 5: KERAS

- Define Keras
- Sequential Composition
- Functional Composition
- Predefined Neural Network Layers
- What is Batch Normalization
- Customizing the Training Process
- Using Tensor Board with Keras

PROJECTS

- Real time Applications

NOTE: PREREQUISITES

- Students are required to have the following prerequisites:
- Python programming
- Statistics
- Calculus
- Linear algebra
- Data Analytics
- Machine Learning