Artificial Intelligence & Machine Learning With Python

Duration 4 weeks

Artificial intelligence (AI) is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in machine learning and deep learning are creating a paradigm shift in virtually every sector of the tech industry. Machine learning feeds a computer data and uses statistical techniques to help it "learn" how to get progressively better at a task, without having been specifically programmed for that task, eliminating the need for millions of lines of written code

Software: Anaconda Navigator Latest (IDE) version

- Web-based interactive computing note book environment – **Jupyter Notebook** 6.4.5 or higher
- Scientific Python Development Environment **Spyder** 5.0.5 or higher

1st Week

Python Environment Concepts

1. Jupyter Note Book – Spyder Overview
2. JYNB Working Environment
3. Structure of jpynb
4. Saving/Loading Notebook
5. Edit Cells /View Cells /Insert Cells
6. Keyboard Shortcuts /Magic Commands
7. Execute Cells /Kernel Cells /Widgets / Markdown

Core Python Programming

8. Elementary Programming with simple examples
9. Mathematical Functions, Strings, and Objects
10. Loops with programming
11. Functions & Class functions generation
12. Import functions & generate user define import functions

2nd Week

Advanced Python Programming

13. Data structures [List, Tuple, Set, Frozen set, and Dictionary]
14. Build in Functions & Lambda Functions
15. Packages, Modules
16. Math, OS, Random, Statistics, Sys, other Modules
17. Create UDM (User Defined Modules)

Data Analysis with

18. Numpy
19. Scipy
20. Pandas
21. Seaborn
22. Bokeh

3rd Week

Overview of Artificial Intelligence & Machine learning

23. Introduction to types of Machine Learning
24. Introductions to Supervised Learning

25. Introductions to Unsupervised Learning
26. Introduction to Reinforcement learning
27. Introductions to ML with Pipelines – Automatic Workflows
28. Introductions to Improving Performance of ML Models
29. Performance Improvements with Algorithm Tuning_1
30. Performance Improvements with Algorithm Tuning_2
31. Introduction to types of Artificial Intelligence
32. Introductions to Reactive Machines
33. Introductions to Limited Memory
34. Introductions to Theory of Mind
35. Search Techniques.
36 . Knowledge Representations
37. Neural networks and Deep learning.
38. Natural language processing
39 . Fuzzy logic and its applications
40. Introductions to AI with Python – Speech Recognition

Types of Data Analysis

39. Descriptive Analyses
40. Exploratory Data Analysis
41. Predictive Analysis
44. Inferential Analysis

4th Week

Data Visualization with Matplotlib

45. Working with Pyplot
46. Lines, Bar, Pie, Scatter, Histogram, Box, Violin Plots

Algorithms Implementation

47. Introduction to Algorithm and how it is implement
48 . Algorithm_1 Linear regressions.
49. Algorithm_2 logistic regressions.
50. Algorithm_3 Decision tree.
51 . Algorithm_4 Support Vector Machine (SVM)
52 . Algorithm_5 Naive Bayes
53. Algorithm_6 KNN algorithm.
54. Algorithm_7 K-means
55. Algorithm_8 Random forest algorithms.

Industry Based Project &Machine learning and Artificial Intelligence libraries in python

56. My first project in AI & ML
57 . Case study Industry Project and Implementation with analysis