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Python & AI

Connecting the Dots in a day

FA-0374

Software Development · Data & Analytics

Introduction

In today's digital age, the importance of programming skills cannot be overstated. Among the myriad programming languages available, Python has emerged as a leading language, particularly in the fields of Artificial Intelligence (AI) and Machine Learning (ML). Python's ease of use, combined with its extensive libraries and frameworks, makes it an ideal choice for developing sophisticated AI applications.

This course is designed to provide non-technical participants with a foundational awareness of Python programming and its critical role in AI and ML. Through engaging demonstrations and practical examples, participants will gain insights into the fundamentals of Python and its application in solving real-world problems.

Learning outcomes

By the end of this training, participants will be able to:

- Grasp the basic concepts and terminologies of Python programming.
- Understand the significance of Python in AI and ML development.
- Recognize key Python libraries and frameworks used in AI.
- Comprehend the basics of data structures and algorithms and their relevance to programming.
- Appreciate how Python is utilized in various AI applications through practical demonstrations.
- Engage in discussions about the potential and challenges of AI technologies.

Prerequisites

- No prior programming knowledge is required.
- A curious mind and a willingness to learn.
- Basic understanding of how technology impacts daily life.

Training outline

1. Introduction to Programming

1. Importance of Programming in Today's World
2. Overview of Popular Programming Languages

2. Introduction to Python

1. History and Evolution of Python
2. Why Python is Popular
3. Key Features of Python

3. Setting Up Python Environment

1. Installing Python
2. Introduction to Integrated Development Environments (IDEs)
3. Writing Your First Python Program

4. Basic Syntax and Structure of Python

Variables and Data Types

1. Basic Data Types in Python: Integers, Floats, Strings, Booleans
2. Working with Variables
3. Performing Basic Operations

Control Flow in Python

1. Conditional Statements: if, elif, else
2. Looping Constructs: for, while
3. Using Control Flow to Make Decisions and Repeat Tasks

5. Data Structures and Algorithms

Introduction to Data Structures

1. Arrays, Stacks, Queues, Trees

Introduction to Algorithms

1. Sorting and Searching

Relevance of Data Structures and Algorithms in AI

1. How efficient data handling and algorithmic processing power AI applications

6. Python Libraries for AI

1. Overview of Popular Python Libraries: NumPy, Pandas, Matplotlib
2. Introduction to AI-Specific Libraries: TensorFlow, Keras, PyTorch
3. Writing and Running Simple Programs Using These Libraries

7. Applications of Python in AI

Data Analysis and Visualization

1. Demonstration: Building a Movie Recommendation Engine Using Pandas

Building Machine Learning Models

1. Demonstration: Basic Image Recognition

Developing Neural Networks

1. Introduction to Neural Networks with TensorFlow/Keras

4. Automating Tasks with Python

Real-World Examples of Python in AI

1. Demonstration: YOLO (You Only Look Once) for Object Detection

8. Ethical Considerations in AI Development

1. Understanding Bias and Fairness in AI
2. Ensuring Privacy and Security in AI Applications

9. Future Trends in Python and AI

1. Staying Updated with the Latest Developments
2. Resources for Further Learning

10. Conclusion and Q&A

1. Recap of Key Learnings
2. Open Floor for Questions and Discussions
3. Providing Additional Resources and References for Continued Learning

This course aims to provide a comprehensive introduction to Python programming and its pivotal role in AI and ML. Through a series of interactive demonstrations and discussions, participants will leave with a foundational understanding of Python, empowering them to explore further and appreciate the

transformative potential of AI technologies.

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