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Embarking on the Data Science

A 3-day Gateway to the Future of Analysis

FA-0183 · 3-day

Software Development · Data & Analytics

Introduction

In the expansive realm of modern technology, data science has emerged as a cornerstone, transforming industries by turning vast amounts of raw data into valuable insights. As we continue to generate data at an unprecedented rate, the ability to analyze and interpret this data is not just a skill but a necessity across various sectors.

Whether it's improving business outcomes, advancing scientific research, or enhancing public policy decisions, data science lies at the heart of these efforts.

This three-day training program, "Data Science for Beginners," is designed to introduce you to the foundational concepts, techniques, and tools used in data science. Aimed at equipping you with the basic skills necessary to analyze data and derive actionable insights, this course also emphasizes the practical application of these skills in real-world scenarios using

Python, one of the most popular programming languages in the field of data science. By the end of this course, you will have a solid understanding of data science fundamentals and be prepared to take your first steps towards a career in data science or to apply these skills in your current role.

Learning outcomes

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

- Understand the role of data science in extracting knowledge and insights from data.
- Utilize Python for data manipulation, analysis, and visualization.
- Apply basic statistical methods to analyze various types of data.
- Create and interpret data visualizations that communicate findings effectively.
- Implement machine learning models to predict future trends from data.

- Approach data science problems with a methodical problem-solving perspective.

Prerequisites

- Basic proficiency with computers and a willingness to learn programming.
- No prior experience in programming or statistics is required, but familiarity with basic mathematical concepts is beneficial.

Training outline

1. Introduction to Data Science

1. What is Data Science? Definitions and domains of application.
2. Overview of the data science workflow from data collection to model deployment.
3. The importance of data science in decision making across different sectors.

2. Getting Started with Python

1. Introduction to Python programming.
2. Setting up the Python environment (Anaconda installation, Jupyter Notebook, Colab alternative).
3. Basic Python syntax and concepts: Variables, Data Types, Control Structures.

3. Data Manipulation and Cleaning

1. Libraries for data manipulation (Pandas).
2. Importing data from various sources (CSV, Excel, databases).
3. Handling missing values, duplicate data, and data types.
4. Data transformation techniques (filtering, sorting, grouping).

4. Data Analysis Techniques

1. Descriptive Statistics: Mean, Median, Mode, Standard Deviation.
2. Exploratory Data Analysis (EDA) techniques.
3. Correlation and causation in data analysis.

5. Introduction to Data Visualization

1. Principles of effective data visualization.

2. Introduction to Matplotlib and Seaborn libraries.
3. Creating plots: Histograms, Bar Charts, Line Graphs, Scatter Plots.
4. Advanced visualizations: Heatmaps, Box Plots, Pair Plots.

6. Fundamentals of Machine Learning

1. Overview of machine learning and its applications.
2. Types of machine learning: Supervised vs Unsupervised Learning.
3. Simple linear regression and logistic regression models.
4. Model evaluation metrics (accuracy, precision, recall).

7. Practical Applications and Project Work

1. Case study: Analyzing a dataset to derive insights.
2. Hands-on project: Applying the data science workflow to solve a problem.
3. Group presentations on project findings and insights.

8. Best Practices in Data Science

1. Data privacy and ethical considerations.
2. Strategies for continuous learning and improvement in data science.
3. Resources for further learning and development in data science.

9. Conclusion and Next Steps

1. Recap of key concepts and skills learned.
2. Discussion on how to continue the data science learning journey.
3. Closing remarks and feedback session.

This outline ensures that participants not only learn theoretical aspects of data science but also gain hands-on experience through practical application, setting them up for future success in the field.

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