

Data Science with Python



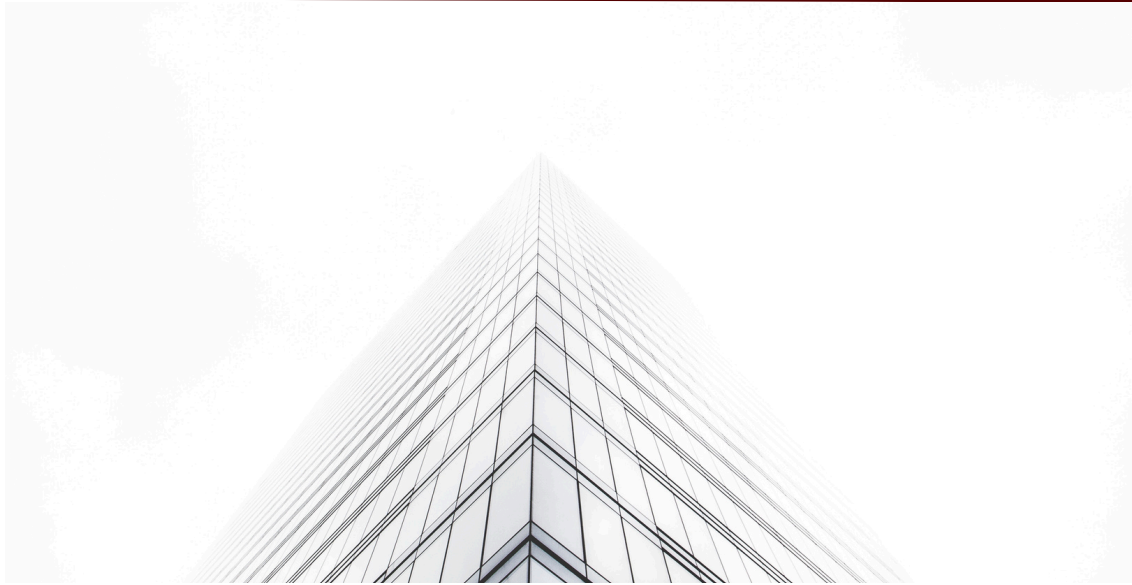
PROGRAM

Data Science with Python

Essential Tools for Working with Data

By

Er. Rupesh Kumar Nidhi



Jobs Sniper, established in the year 2020 AD with an aim to be a platform that provides one stop solution for your needs to get the right recruitment solutions and management consultation services (Training & Development, Consulting and Outsourcing). We believe people are the ultimate jewels for any company so, we understand our client's different needs to get services with much convenience and ease. For that, our team of professionals from various background, work collaboratively to provide innovative and customized services for our clients



Overview

The "**Data Science with Python**" program is designed for **IT/Non-IT students** to equip them with the knowledge and skills needed to navigate the evolving landscape of **Data Science** in the business world. The program **spans 30 hours**, providing a comprehensive understanding of the foundations of Data, its components, and practical applications in solving complex business problems.

About Certificate Module in Data Science with Python

The module delves into the broader implications of Data on businesses, discussing responsible Data practices, the evolving job market.

Subsequent modules guide participants through a comprehensive journey, providing hands-on experience and practical tools essential for leveraging Data in real-world business scenarios.

The program highlights industry relevance, bringing in experienced instructors from both academia and industry, state-of-the-art pedagogical tools for an enriched hands-on learning experience, and concludes with the tangible recognition of participants' accomplishments through a certificate from the institution and network collaborator upon completion.

PROGRAM

OBJECTIVE

The "**Data Science with Python**" program for **IT/Non-IT students** aims to instill a strategic understanding of data to derive meaningful insights. Participants will delve into the components of Python basics, data manipulation with NumPy and Pandas, preprocessing, machine learning fundamentals, supervised and unsupervised learning, neural networks, and model deployment with interpretability.

At the end of the module the participants will be able to:

- Proficiently utilize Python for data manipulation and analysis
- Apply various machine learning algorithms for classification and regression tasks
- Implement neural networks for deep learning applications
- Perform effective data preprocessing and visualization
- Deploy machine learning models with interpretability for real-world applications

List of Module & Program Duration:

Detailed Course Module.

- Introduction to Python and Basic Programming Concepts
- Fundamentals of NumPy and Pandas
- Data Preprocessing and Visualization
- Introduction to Machine Learning
- Supervised Learning - Regression
- Supervised Learning - Classification
- Unsupervised Learning - Clustering
- Introduction to Neural Networks
- Deep Learning with TensorFlow/Keras
- Deployment and Model Interpretability



PROGRAM

DURATION

Embark on a **30-hours** transformative journey with our '**Data Science with Python**' program. Unveil the foundations of Python basics, data manipulation, and machine learning in a comprehensive curriculum, blending theory and hands-on experience.

| Module Name | Credits |
|--|---------|
| Detailed Course Module | - |
| 1. Introduction to Python and Basic Programming Concepts | 3.5 Hrs |
| 2. Fundamentals of NumPy and Pandas | 3.5 Hrs |
| 3. Data Preprocessing and Visualization | 3.5 Hrs |
| 4. Introduction to Machine Learning | 3.5 Hrs |
| 5. Supervised Learning - Regression | 2 Hrs |
| 6. Supervised Learning - Classification | 2 Hrs |
| 7. Unsupervised Learning - Clustering | 2 Hrs |
| 8. Introduction to Neural Networks | 3 Hrs |
| 9. Deep Learning with TensorFlow/Keras | 4 Hrs |
| 10. Deployment and Model Interpretability | 3 Hrs |

Program Highlights:

- Industry - relevant Curriculum
- Experienced Instructors from industry & Academia
- State - of - the - art pedagogical Tools
- Hands - on - Learning Experience
- Certificate from Institution & Network Collaborator



Detailed Course Module

1. Introduction to Python and Basic Programming Concepts

Topic Description

- Introduction to Python, including its importance in AI/ML, installation of Anaconda and Jupyter Notebooks, and basic Python syntax and structures.

Action to be Taken

- Install Python and Anaconda, set up Jupyter Notebooks, cover Python syntax, and basic programming concepts

2. Fundamentals of NumPy and Pandas

Topic Description

- Introduction to NumPy for numerical operations and Pandas for data manipulation, covering array/matrix operations and DataFrame manipulation.

Action to be Taken

- Explain key features of NumPy and Pandas, demonstrate array/matrix operations, and data manipulation using DataFrames

3. Data Preprocessing and Visualization

Topic Description

- Techniques for handling missing data, normalization and scaling, feature engineering, and creating visualizations using Matplotlib and Seaborn.

Action to be Taken

- Cover handling missing data, normalization and scaling techniques, feature engineering, and creating plots

Detailed Course Module

4. Introduction to Machine Learning

Topic Description

- Basics of machine learning, including its definition, types (supervised, unsupervised, reinforcement learning), model training, and evaluation metrics

Action to be Taken

- Define machine learning, cover supervised/unsupervised learning, training/testing models, and evaluation metrics

5. Supervised Learning - Regression

Topic Description

- Understanding regression analysis, different types of regression (linear, polynomial), building and evaluating regression models using scikit-learn.

Action to be Taken

- Explain regression concepts, implement linear regression models, and evaluate their performance using metrics like MAE, MSE, and R-squared

6. Supervised Learning - Classification

Topic Description

- Overview of classification problems and algorithms (logistic regression, decision trees), building and evaluating classification models.

Action to be Taken

- Cover classification concepts, implement logistic regression and decision tree models, and evaluate using metrics like accuracy, precision, recall, and F1 score

Detailed Course Module

7. Unsupervised Learning - Clustering

Topic Description

- Introduction to unsupervised learning and clustering algorithms (K-Means, hierarchical clustering), implementing clustering to discover data patterns.

Action to be Taken

- Explain clustering concepts, implement K-Means clustering, and analyze results to interpret clusters

8. Introduction to Neural Networks

Topic Description

- Basics of artificial neural networks (ANNs), including their structure, function of neurons and layers, and building simple neural networks using TensorFlow/Keras

Action to be Taken

- Explain neural network concepts, build simple neural networks using TensorFlow/Keras, and discuss activation functions and loss functions

9. Deep Learning with TensorFlow/Keras

Topic Description

- Building and training deep neural networks, including convolutional neural networks (CNNs) for image classification and recurrent neural networks (RNNs) for sequence data.

Action to be Taken

- Build deep networks with TensorFlow/Keras, implement CNNs for image classification, and RNNs for handling sequential data

Detailed Course Module

10. Deployment and Model Interpretability

Topic Description

- Techniques for deploying machine learning models, ensuring model interpretability and explainability, using tools like Flask or FastAPI for deployment.

Action to be Taken

- Discuss deployment scenarios, implement simple model deployment, explore interpretability techniques like feature importance and SHAP values

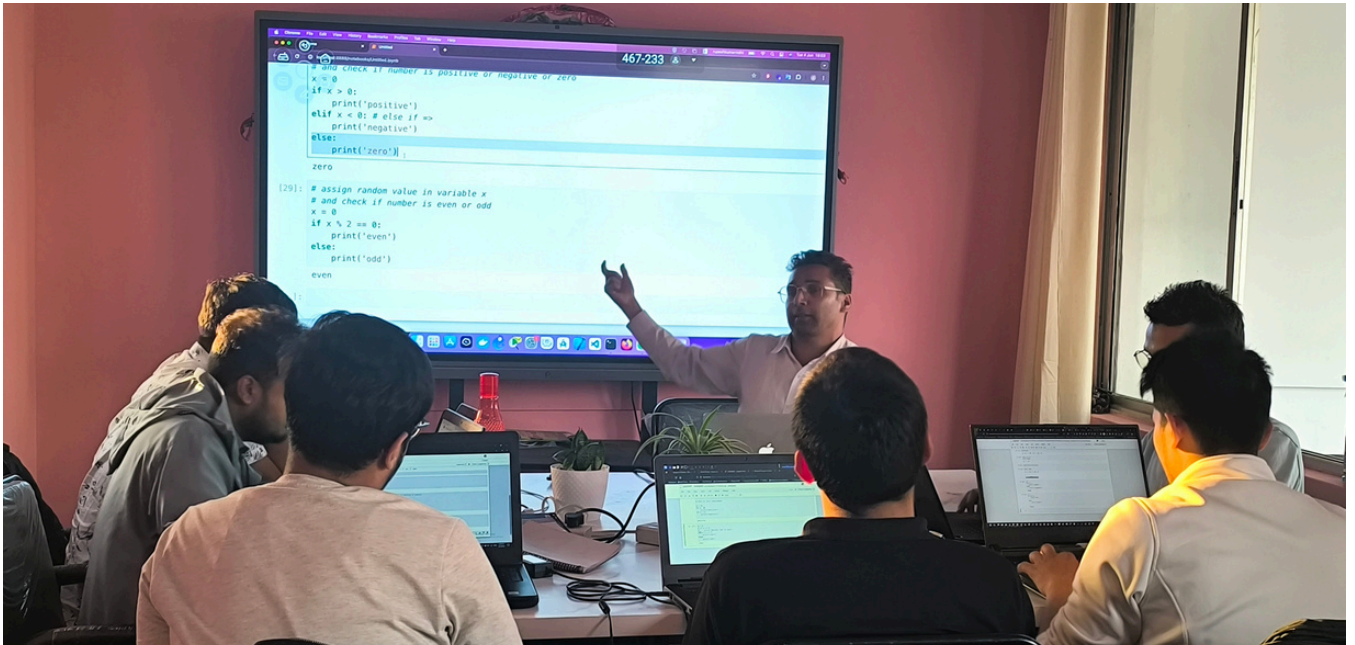
OUR TRAINER

ER. RUPESH KUMAR NIDHI



Er. Rupesh Kumar Nidhi, a computer engineer, earned his Bachelor's in Electronic and Communication Engineering from Pulchok Campus and is pursuing an Masters in Computer System and Knowledge Engineering at Pulchok Campus. Boasting over 8 years in software development and 3+ years in AI and Machine Learning, he serves as a consultant in Data Science and Machine Learning. Simultaneously, he holds a pivotal role as a Computer Engineer for the Nepal Government. Rupesh's educational journey and extensive professional background underscore his commitment to the dynamic intersection of technology and data science, contributing significantly to both academia and public service.

SUCCESS STORIES





OUR TRAINER



Course Curriculum:

- Basic Python Programming
- Numpy and Pandas
- Data Preprocessing & Visualization
- Machine Learning (Basics and Advanced)
- Deep Learning (CNN & RNN)
- Model Evaluation and Hyper-parameters Tuning
- Model Deployment & Interoperability
- Career Guidance

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has successfully completed

DATA SCIENCE WITH PYTHON COURSE

The "30-Day, 45-Hour Data Science with Python Course" is designed to equip learners to engage in the development of cutting-edge AI technology and to understand the capabilities, challenges, and consequences of the rise of machine learning and deep learning.

Throughout the courses, learners develop a profound knowledge of the hottest AI algorithms, including Regression, Classification, SVM, KNN, Ensemble Learning like Random Forest & Gradient Boosting while also mastering deep learning from its foundations (neural networks) to its industry applications. These applications include Exploratory Data Analysis and Visualization, machine learning, deep learning, computer vision, and natural language processing.

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