Forecasting, Behavioral Analysis, and What-If Scenarios with Python - TTPS4883

Explore Modern Forecasting Methods: Analyze historical data, Identify behavioral patterns, Forecast future trends, and conduct what-if scenario analysis to evaluate potential outcomes

Duration: 3 Days
Skill Level: Intermediate
Available Format: Instructor-Led Online ; On Public Schedule

Forecasting, Behavioral Analysis, and What-If Scenarios with Python is an advanced three-day course that combines the power of forecasting, behavioral analysis, and what-if scenario analysis using Python. The course equips data analysts, data scientists, and business professionals with the skills and techniques required to analyze historical data, identify behavioral patterns, forecast future trends, and conduct what-if scenario analysis to evaluate potential outcomes.

What You'll Learn

Overview

Forecasting, Behavioral Analysis, and What-If Scenarios with Python is an advanced three-day course that combines the power of forecasting, behavioral analysis, and what-if scenario analysis using Python. The course equips data analysts, data scientists, and business professionals with the skills and techniques required to analyze historical data, identify behavioral patterns, forecast future trends, and conduct what-if scenario analysis to evaluate potential outcomes.

Working in a hands-on learning environment led by our expert practitioner, you'll explore advanced Python libraries and techniques for forecasting, behavioral analysis, and what-if scenario modeling. The course covers advanced forecasting methods such as

time series analysis, regression-based forecasting, and machine learning-based forecasting. Participants will also learn how to analyze behavioral patterns through clustering, segmentation, and sentiment analysis. In addition, the course introduces what-if scenarios, enabling participants to simulate and evaluate different scenarios to make informed decisions.

Objectives

This course is approximately **50% hands-on**, combining expert lecture with real-world demonstrations and group discussions with machine-based practical labs and exercises.

Working in a hands-on learning environment, guided by our expert team, attendees will learn to:

- Understand advanced concepts and techniques in forecasting, behavioral analysis, and what-if scenarios.
- Gain proficiency in applying Python libraries and tools for forecasting, behavioral analysis, and what-if scenario modeling.
- Develop forecasting models using time series analysis, regression, and machine learning algorithms.
- Analyze and interpret behavioral patterns through clustering, segmentation, and sentiment analysis.
- Conduct what-if scenario analysis to evaluate potential outcomes and make informed decisions.
- Gain practical experience through hands-on labs and exercises using real-world datasets.

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional python, data science, AI / machine learning and other related topics that may be blended with this course for a track that best suits your needs. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience

This course is intended for data analysts, data scientists, business analysts, and professionals who want to leverage Python for forecasting, behavioral analysis, and what-if scenario analysis tasks. Participants should have a solid understanding of Python programming and basic data manipulation skills.

Pre-Requisites

In order to be successful in the course you should have:

- Basic understanding of any programming language: Familiarity with concepts like variables, loops, and functions would be beneficial, even if not in Python.
- Fundamental knowledge of Data Science: A general understanding of what data science is and why it's valuable would help provide context for the Python and data wrangling skills taught in this course.
- Comfort with basic Mathematical Concepts: As Python is heavily used in data analysis, a comfort level with basic math and statistics would be beneficial, though advanced mathematical skills are not necessary.

Take Before:

- TTPS4873 Fast Track to Python in Data Science (3 days)

TTPS4873	Fast Track to Python for Data Science and/or Machine Learning

Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We can work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.

Day 1: Introduction to Forecasting

Overview of Forecasting

- Importance and applications of forecasting

- Types of forecasting problems

Time Series Analysis

- Introduction to time series data
- Handling time series data in Python
- Exploratory data analysis for time series

Forecasting Methods

- Moving averages
- Exponential smoothing methods
- ARIMA models
- Seasonal decomposition of time series

Regression-Based Forecasting

- Introduction to regression analysis
- Building regression models for forecasting
- Evaluating regression models

Day 2: Machine Learning-Based Forecasting

Machine Learning for Forecasting

- Introduction to machine learning algorithms for forecasting
- Feature engineering for forecasting
- Training and evaluating machine learning models

Ensemble Methods for Forecasting

- Bagging and random forests
- Boosting methods

- Stacking models

Neural Networks for Time Series Forecasting

- Introduction to neural networks
- Building and training neural network models for forecasting
- Time series forecasting with recurrent neural networks (RNNs) and LSTM networks

Evaluating and Improving Forecasting Models

- Performance metrics for forecasting
- Cross-validation and model evaluation techniques
- Techniques for model improvement and optimization

Day 3: Behavioral Analysis and What-If Scenarios

Introduction to Behavioral Analysis

- Understanding behavioral data
- Applications of behavioral analysis

Clustering and Segmentation

- Clustering techniques for behavioral analysis
- Segmentation of customers or users based on behavior
- Practical examples and case studies

Sentiment Analysis

- Introduction to sentiment analysis
- Text preprocessing techniques
- Sentiment analysis using Python libraries

Behavioral Pattern Recognition

- Analyzing sequential behavioral data
- Hidden Markov Models (HMMs) for behavior recognition
- Application of behavior recognition models

Introduction to What-If Scenarios

- Understanding what-if scenario analysis
- Identifying key variables and factors
- Creating scenarios and defining assumptions

Modeling What-If Scenarios in Python

- Implementing what-if scenarios using Python libraries
- Simulating different scenarios and outcomes
- Analyzing and evaluating scenario results

Follow On Courses

TTML5506-P	Machine Learning Essentials with Python
TTPS4876	Next-Level (Intermediate) Python for Data Science and /or Machine Learning

All applicable course software, digital courseware files or course notes, labs, data sets and solutions, live coaching support channels and rich extended learning and post training resources are provided for you in our “easy access, no install required” online **Learning Experience Platform (LXP),** remote lab and content environment. Access periods vary by course. We’ll collaborate with you to ensure your team is set up and ready to go well in advance of the class. Please inquire about set up details and options for your specific course of interest.

For More Information

Please contact us or call 844-475-4559 toll free for more information about our training services (instructor-led, self-paced or blended), coaching and mentoring services, public

course enrollment or questions, partner programs, courseware licensing options and more.