Hands-On Predictive Analytics with Python - TTPS4879

Explore the Python Data Analytics Ecosystem for a Complete Solution, Advanced Algorithms, SciKit Learn, Keras and Much More

Duration: 3 Days
Skill Level: Intermediate
Available Format: Instructor-Led Online; Instructor-Led, Onsite In Person ; Blended; On Public Schedule

Predictive analytics is an applied field that employs a variety of quantitative methods using data to make predictions. It involves much more than just throwing data onto a computer to build a model. This course provides practical coverage to help you understand the most important concepts of predictive analytics. Using practical, step-by-step examples, we build predictive analytics solutions while using cutting-edge Python tools and packages.

What You'll Learn

Overview

Predictive analytics is an applied field that employs a variety of quantitative methods using data to make predictions. It involves much more than just throwing data onto a computer to build a model. This course provides practical coverage to help you understand the most important concepts of predictive analytics. Using practical, step-by-step examples, we build predictive analytics solutions while using cutting-edge Python tools and packages.

Hands-on Predictive Analytics with Python is a three-day, hands-on course that guides students through a step-by-step approach to defining problems and identifying relevant data. Students will learn how to perform data preparation, explore and visualize

relationships, as well as build models, tune, evaluate, and deploy models. Each stage has relevant practical examples and efficient Python code. You will work with models such as KNN, Random Forests, and neural networks using the most important libraries in Python's data science stack: NumPy, Pandas, Matplotlib, Seaborn, Keras, Dash, and so on. In addition to hands-on code examples, you will find intuitive explanations of the inner workings of the main techniques and algorithms used in predictive analytics.

Objectives

This course combines engaging instructor-led presentations and useful demonstrations with valuable hands-on labs and engaging group activities. Throughout the course you'll learn how to:

- Understand the main concepts and principles of predictive analytics
- Use the Python data analytics ecosystem to implement end-to-end predictive analytics projects
- Explore advanced predictive modeling algorithms w with an emphasis on theory with intuitive explanations
- Learn to deploy a predictive model's results as an interactive application
- Learn about the stages involved in producing complete predictive analytics solutions
- Understand how to define a problem, propose a solution, and prepare a dataset
- Use visualizations to explore relationships and gain insights into the dataset
- Learn to build regression and classification models using scikit-learn
- Use Keras to build powerful neural network models that produce accurate predictions
- Serve a model's predictions as a web application

If your team requires different topics, additional skills or a custom approach, our team will collaborate with you to adjust the course to focus on your specific learning objectives and goals.

Audience

This course is ideally suited for Python developers, data analysts, and aspiring data scientists looking to expand their skills into AI and Machine Learning. It is also highly

beneficial for product managers and business leaders aiming to acquire a hands-on understanding of AI's impact on product development and business strategy.

To ensure a smooth learning experience and maximize the benefits of attending this course, you should have the following prerequisite skills:

- Basic Understanding of Python as well as familiarity with Python Libraries (Pandas and Numpy, etc.)
- Basic Math and Problem-Solving Skills
- Understanding of Basic Data Structures

Pre-Requisites

Take Before: Students should have skills at least equivalent to the following course(s) or should have attended as a pre-requisite:

- **TTPS4800** Introduction to Python Programming Basics (3 days)

TTPS4800	Introduction to Python Programming Basics
TTPS4820	Mastering Python Programming Boot Camp
TTPS4824	Python Essentials for Networking & Systems Administration
TTPS4872	Quick Start to Python for Data Science Primer: A Hands-on Technical Overview
TTPS4873	Fast Track to Python for Data Science and/or Machine Learning
TTPS4874	Applied Python for Data Science and Engineering
TTPS4876	Next-Level (Intermediate) 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'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience skill level, interests and participation.

The Predictive Analytics Process

- Technical requirements
- What is predictive analytics?
- Reviewing important concepts of predictive analytics
- The predictive analytics process
- A quick tour of Python's data science stack

Problem Understanding and Data Preparation

- Technical requirements
- Understanding the business problem and proposing a solution
- Practical project - diamond prices
- Practical project - credit card default

Dataset Understanding – Exploratory Data Analysis

- Technical requirements
- What is EDA?
- Univariate EDA
- Bivariate EDA
- Introduction to graphical multivariate EDA

Predicting Numerical Values with Machine Learning

- Technical requirements
- Introduction to ML
- Practical considerations before modeling
- MLR
- Lasso regression
- KNN
- Training versus testing error

Predicting Categories with Machine Learning

- Technical requirements
- Classification tasks
- Credit card default dataset
- Logistic regression
- Classification trees
- Random forests
- Training versus testing error
- Multiclass classification
- Naive Bayes classifiers

Introducing Neural Nets for Predictive Analytics

- Technical requirements
- Introducing neural network models
- Introducing TensorFlow and Keras
- Regressing with neural networks
- Classification with neural networks
- The dark art of training neural networks

Model Evaluation

- Technical requirements
- Evaluation of regression models
- Evaluation for classification models
- The k-fold cross-validation

Model Tuning and Improving Performance

- Technical requirements
- Hyperparameter tuning
- Improving performance

Implementing a Model with Dash

- Technical requirements

- Model communication and/or deployment phase
- Introducing Dash
- Implementing a predictive model as a web application

Related Courses

TTAI2361	Applied AI : Quick Start to Building AI-Driven, Intelligent Web Applications
TTPS4878	Hands-On Data Analysis with Panda
TTPS4879	Hands-On Predictive Analytics with Python
TTAI2305	Turbocharge Your Code! Generative AI Boot Camp for Developers
TTAI2360	Applied AI: Building Recommendation Systems with Python
TTML5506-P	Machine Learning Essentials with Python
TTPS4873	Fast Track to Python for Data Science and/or Machine Learning
TTPS4874	Applied Python for Data Science and Engineering
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.