Course Code: W7140GS

Course Title: Machine Learning Specialist - Unsupervised Machine Learning, Time Series and Survival Analysis

Description:

This course introduces you to one of the main types of Machine Learning: Unsupervised Learning as well as additional topics in Machine Learning that complement essential tasks, including forecasting and analyzing censored data. You will learn how to find insights from data sets that do not have a target or labeled variable. You will learn several clustering and dimension reduction algorithms for unsupervised learning as well as how to select the algorithm that best suits your data. You will learn how to find and analyze data with a time component and censored data that needs outcome inference. You will learn a few techniques for Time Series Analysis and Survival Analysis. The hands-on section of this course focuses on using best practices for unsupervised learning and verifying assumptions derived from Statistical learning.

IBM Customers and Sellers: If you are interested in this course, consider purchasing it as part of one of these Individual or Enterprise Subscriptions:

- IBM Learning for Data and AI Individual Subscription (SUBR022G)
- IBM Learning for Data and AI Enterprise Subscription (SUBR004G)
- IBM Learning Individual Subscription with Red Hat Learning Services (SUBR023G)

Objectives:

By the end of this course you should be able to:

Explain the kinds of problems suitable for Unsupervised Learning approaches. Explain the curse of dimensionality, and how it makes clustering difficult with many features. Describe and use common clustering and dimensionality-reduction algorithms. Try clustering points where appropriate, compare the performance of per-cluster models. Understand metrics relevant for characterizing clusters. Identify common modeling challenges with time series data. Explain how to decompose Time Series data: trend, seasonality, and residuals. Explain how autoregressive, moving average, and ARIMA models work. Understand how to select and implement various Time Series models. Describe hazard and survival modeling approaches. Identify types of problems suitable for survival analysis.

Prerequisites:

In order to be successful, you should have knowledge of:

To make the most out of this course, you should have familiarity with programming on a Python development environment, as well as fundamental understanding of Data Cleaning, Exploratory Data Analysis, Calculus, Linear Algebra, Probability, and Statistics.

Duration:

19.2 Hrs

Topics:

1. Introduction to Unsupervised Learning and K Means

2. Selecting a clustering algorithm

3. Dimensionality Reduction

4. Introduction to Time Series Analysis

5. Stationarity and Time Series Smoothing

6. ARMA and ARIMA Models

7. Deep Learning and Survival Analysis Forecasts

Audience:

This course targets aspiring data scientists interested in acquiring hands-on experience with Unsupervised Machine Learning techniques in a business setting and those interested in acquiring hands-on experience with Time Series Analysis and Survival Analysis.