

**Introduction to AIOps**

**Course Number:** DATA-104  
**Duration:** 3 days

**Overview**

This in-person or online AIOps (Artificial Intelligence Operations) training class teaches attendees how to successfully deploy AI and Data Science systems at scale. Students learn how to break down a system or pipeline into functional components, scale different types of processes, and adjust for various types of Big Data requirements.

**Prerequisites**

All students must have an analytics and/or Python background. Familiarity with AWS or other cloud environments is strongly encouraged. Students should have a familiarity with how data science and machine learning are used, at least from a business or product perspective. A general understanding of cloud DevOps is also strongly encouraged.

**Materials**

All AIOps training students receive comprehensive courseware.

**Software Needed on Each Student PC**

Students should have Python 3 installed with the ability to install other packages or programs (i.e., Admin Access) on their laptops. Anaconda with Python 3 is strongly recommended over the [python.org](http://python.org) installation.

**Objectives**

* Understand Data Science, including the Data Science Life Cycle
* Understand the types of applications of Machine Learning
* Understand what AIOps is and how it builds on top of traditional DevOps in a cloud environment
* Understand considerations for infrastructures and topologies, including on-prem, hybrid, and micro-services variations
* Understand the need for model explainability, both from a technical and business perspective
* Use AutoML and other automation technologies (using AWS examples)
* Work with intermediate data within a pipeline

**Outline**

* Introduction
* Data Science
  + Overview
  + Machine Learning
  + Asking the Right Questions
  + Artificial Intelligence: ML + Knowledge
  + The Data Science Pipeline
  + The Data Science Life Cycle
  + Data Science and AIOps
* Machine Learning
  + ML for Analytics
  + ML for Prediction
  + ML for Regression
  + Scaling ML
* AIOps
  + The Need for AIOps
  + The IT Operations Management Cycle
* The Five Dimensions of AIOps
  + Data Set Selection
  + Pattern Discovery
  + Inference
  + Communications
  + Automation
* Infrastructure and Topologies
  + Cloud, On-Premise, and Hybrid Cloud
  + Micro Services
  + Scaling
  + Cost Projections
  + The Failure of Traditional ITOM Technologies
  + Industry Examples
* Model Explainability
  + Why are we getting these predictions?
  + Model reductions for explainability
  + Other trending techniques and solutions
* Working with the Components
  + AWS
  + Data (AWS-S3)
    - Compute (EC2, deploying an API, loading data from S3)
    - AWS ML (an ML API endpoint)
  + Working Locally
    - Data Wrangler
    - Saving Intermediate Datasets
    - Flask API’s
    - Tableau for a Front End
* Practical Exercise
  + Build a simple analytics app
  + Connect to data via API
  + Build a Data Science Pipeline as a middle layer
  + Connect to UI/front end (Tableau)
* Emerging Trends
  + Emerging Technologies
    - Micro Services
    - Auto ML
    - NLP Trends and Techniques
    - Graph Databases and Network Graph Analysis
* Conclusion