

**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