Data AI: Azure Machine Learning

WorkshopPLUS

Target Audience

This workshop is targeted at Business Intelligence Engineers,

Data Scientists, SQL Server Architects, Database Administrators, IT professionals, SQL Server support staff and DevOps Engineers.

To ensure the high-quality knowledge transfer expected by students of this WorkshopPLUS, it is highly recommended to meet the following criteria:

- *General experience with data.*
- *Some basic knowledge on Statistics,*

Overview

The **Data AI: Azure Machine Learning** is a three day WorkshopPLUS course that provides you the knowledge and tools necessary to understand the capabilities and usage of Azure Machine Learning. This workshop will help you to get familiar with the Azure Machine Learning concepts. It will also help you to learn how create a Machine Learning solution utilizing Azure Machine Learning.

Key Features and Benefits

This workshop combines presentations with hands-on labs to build your Azure Machine Learning environment. You will learn the difference between the Azure SQL Database (PaaS), the SQL Server on-premises database and the benefits Azure SQL Database can have for your applications and SQL environment.

Technical Highlights

After attending this workshop, students will be able to:

- Understand how Azure Machine Learning Studio works
- Understand Azure Machine Learning Capabilities
- Acquire additional R and Python Packages for consumption in Azure Machine Learning
- Load data from multiple sources for utilization in Azure Machine Learning.
- Be familiar with all of the pre loaded algorithms available in Azure Machine Learning
- Understand the full lifecycle of Azure Machine Learning.

Syllabus

Participants will require a computer with the following configuration:
- *Operating system: Windows 7 SP1 or later*
- *Processor: Intel Core-i5*
- *Memory: 4 GB*
- *Disk: 128 GB*
- *Peripherals: USB port*
- *Network: 10 Mbps or faster network adapter*
- *Application Software: Office 2013 Professional Plus and a PDF reader.*

Participants also need a Microsoft account to connect to the virtual environment. The classroom must be networked with access to the Internet with at least Internet bandwidth of 10 Mbps. TCP port 443 must be open. We highly recommend a wired network in the classroom.

This workshop runs for **three** full days.

Module 1: Introduction to Azure Machine Learning
This module provides an overview of the Azure Machine Learning lifecycle it covers:
- Basic Azure Machine Learning Workflow
- Create a deploy an experiment in Azure Machine Learning
- Difference between Supervised vs Unsupervised Learning

Module 2: Data Preparation and Loading Data into Azure Machine Learning
This module covers Azure Machine Learning tasks for acquiring and preparing the data.
- Import data into Azure Machine Learning
- Export data from Azure Machine Learning
- Scrubbing data in Azure Machine Learning

Module 3: Azure Machine Learning and R
This module how to integrate R code to perform various tasks in Azure Machine Learning:
- Create basic R code that is executed in Azure Machine Learning
- Learn about adding external R Packages into Azure Machine Learning
- Debugging R in Azure Machine Learning
- Set the version of R in Azure Machine Learning

Module 4: Azure Machine Learning and Python
This module how to integrate Python code to perform various tasks in Azure Machine Learning:
- Create basic R code that is executed in Azure Machine Learning
- Debugging R in Azure Machine Learning
- Set the version of R in Azure Machine Learning

Module 5: Create and deploy a Regression Model
This module covers the Regression algorithms:
- Linear Regression
- Boosted Decision Tree Regression
- Neural Network Regression
- Bayesian Linear Regression
- Ordinal Regression
- Deploy a regression model as a web service.

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Syllabus

Module 6: Create and deploy a Classification Model

This module covers both the Two-Class and Multi-class Classification Models listed below:
- Two-class SVM
- Two-class averaged perception
- Two-class Bayes point machine
- Two-class decision forest
- Two-class decision jungle
- Two-class logistic regression
- Two-class Bayes point machine
- Two-class boosted decision tress
- Two-class neural network
- Multiclass decision forest
- Multiclass logistic regression
- Multiclass decision jungle
- Multiclass neural network
- Multiclass decision forest
- One-v-all multiclass
- Create multiple Classification Models

Module 7: Create and deploy a Cluster Model

This module covers the Cluster Model listed below:
- K-Means Algorithm
- Deploy a Cluster Algorithm

Module 8: Create and deploy a Anomaly Detection Model

This module covers the Anomaly Detection Models below:
- One Class SVM
- PCA-Based Anomaly Detection
- Deploy an Anomaly Detection Model

Module 9: Introduction to Azure Machine Learning Services

This module covers Azure Machine Learning Services which include:
- Introduction to Workbench and Experimentation Service
- Create an experimentation service
- Configuring Workbench and creating a simple project
- Data Loading and transformations in Azure Machine Learning Workbench
- Configuring project files for local, docker and HDInsight environment executions.
- Executing projects in Local, Local Docker, Remote Docker and HDInsight Spark environments.

Module 10: Model Management Service

This module covers Model Management service and will cover:
- Deploying an ML to Azure Container Services
- Understanding Model Management service
- Deploy a webservice in local environment.
- Deploy a webservice to ACS and Kubernetes clusters.

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