Perform Cloud Data Science with Azure Machine Learning - MOC On Demand (MS-20774)

Modality: On Demand

Duration: 2 Days

SATV Value: 2

If the course purchase individually, or you have annual subscription this Microsoft Official On-Demand course available for ninety days after the date when it request. Course access will terminate following ninety days of course enlistment.

About course:

This course helps you to learn the advanced methods and theory widely used in data science. You will study about usual applications of specialized data types and will concentrate on unstructured data.

In this course, you will learn how to utilize MS Azure HDInsight for data mining, predictive modeling, big data processing, and real-time analytics. The primary objective behind this course is to enable the candidate to present and analyze data by utilizing MS Azure Machine Learning, and to give an introduction to the utilization of machine learning with big data tools, for example, R Services and HDInsight. Additionally, this course also assists the candidates for the Microsoft 70-774 (Perform Cloud Data Science with MS Azure Machine Learning) certification test.

Salary Estimate:

The machine learning proffesional with MS Azure expertise can make an average salary of $128,000 per annum.

Course Objective:

After successful completion of this course, candidates can:

- Use and learn selection techniques and feature engineering on datasets which are to be utilized with MS Azure Machine Learning
- Utilization of Python and R with MS Azure Machine Learning, and decide when to use a certain language
- Describe machine learning, and how languages and algorithms are used
- Use and learn neural networks and regression algorithms with MS Azure Machine Learning

- Explain the objective of MS Azure Machine Learning and enumerate the essential characteristics of MS Azure Machine Learning Studio
- Use and learn models, multiple algorithms and hyperparameters, and ability to evaluate and score models
- Use and learn HDInsight with MS Azure Machine Learning
- Use and learn clustering algorithms and classification with MS Azure Machine Learning
- Learn and upload different kinds of data to MS Azure Machine Learning
- Use and learn the Cognitive Services APIs for image and text processing, explain the application of neural networks, and to develop a recommendation application with MS Azure Machine Learning
- Use and learn methods to make datasets ready for use with MS Azure Machine Learning
- Use and explain R Server and R with MS Azure Machine Learning, and describe guidelines to configure and deploy SQL Server to assist R services
- Describe guidelines to offer end-users with MS Azure Machine Learning services, and instruction to share data generated from MS Azure Machine Learning models

Audience:

- The course is primarily designed for those individuals who wish to present and analyze data by using MS Azure Machine Learning.
- The secondary audience for this course are information workers, developers and IT professionals who have to assist solutions based on MS Azure machine learning.

Prerequisites:

The candidates who are attempting this exam must have:

- Understanding of data analysis methods and common statistical practices
- Understanding and programing experience of R packages.
- Practical understanding of relational databases.
- Fundamental knowledge of the Microsoft Windows OS and its main functions.

Recommended prerequisites courses:

MS-20775 (Performing Data Engineering on Microsoft HD Insight)

Course Outline:

Module 1: Introduction to Machine Learning

This module introduces machine learning and discussed how algorithms and languages are used.

Lessons

- What is machine learning?

- Introduction to machine learning algorithms
- Introduction to machine learning languages

Lab : Introduction to machine Learning

- Sign up for Azure machine learning studio account
- View a simple experiment from gallery
- Evaluate an experiment

After completing this module, students will be able to:

- Describe machine learning
- Describe machine learning algorithms
- Describe machine learning languages

Module 2: Introduction to Azure Machine Learning

Describe the purpose of Azure Machine Learning, and list the main features of Azure Machine Learning Studio.

Lessons

- Azure machine learning overview
- Introduction to Azure machine learning studio
- Developing and hosting Azure machine learning applications

Lab : Introduction to Azure machine learning

- Explore the Azure machine learning studio workspace
- Clone and run a simple experiment
- Clone an experiment, make some simple changes, and run the experiment

After completing this module, students will be able to:

- Describe Azure machine learning.
- Use the Azure machine learning studio.
- Describe the Azure machine learning platforms and environments.

Module 3: Managing Datasets

At the end of this module the student will be able to upload and explore various types of data in Azure machine learning.

Lessons

- Categorizing your data
- Importing data to Azure machine learning
- Exploring and transforming data in Azure machine learning

Lab : Managing Datasets

- Prepare Azure SQL database
- Import data
- Visualize data
- Summarize data

After completing this module, students will be able to:

- Understand the types of data they have.
- Upload data from a number of different sources.
- Explore the data that has been uploaded.

Module 4: Preparing Data for use with Azure Machine Learning

This module provides techniques to prepare datasets for use with Azure machine learning.

Lessons

- Data pre-processing
- Handling incomplete datasets

Lab : Preparing data for use with Azure machine learning

- Explore some data using Power BI
- Clean the data

After completing this module, students will be able to:

- Pre-process data to clean and normalize it.
- Handle incomplete datasets.

Module 5: Using Feature Engineering and Selection

This module describes how to explore and use feature engineering and selection techniques on datasets that are to be used with Azure machine learning.

Lessons

- Using feature engineering
- Using feature selection

Lab : Using feature engineering and selection

- Prepare datasets
- Use Join to Merge data

After completing this module, students will be able to:

- Use feature engineering to manipulate data.
- Use feature selection.

Module 6: Building Azure Machine Learning Models

This module describes how to use regression algorithms and neural networks with Azure machine learning.

Lessons

- Azure machine learning workflows
- Scoring and evaluating models
- Using regression algorithms
- Using neural networks

Lab : Building Azure machine learning models

- Using Azure machine learning studio modules for regression
- Create and run a neural-network based application

After completing this module, students will be able to:

- Describe machine learning workflows.
- Explain scoring and evaluating models.
- Describe regression algorithms.
- Use a neural-network.

Module 7: Using Classification and Clustering with Azure machine learning models

This module describes how to use classification and clustering algorithms with Azure machine learning.

Lessons

- Using classification algorithms
- Clustering techniques
- Selecting algorithms

Lab : Using classification and clustering with Azure machine learning models

- Using Azure machine learning studio modules for classification.
- Add k-means section to an experiment
- Add PCA for anomaly detection.
- Evaluate the models

After completing this module, students will be able to:

- Use classification algorithms.

- Describe clustering techniques.
- Select appropriate algorithms.

Module 8: Using R and Python with Azure Machine Learning

This module describes how to use R and Python with azure machine learning and choose when to use a particular language.

Lessons

- Using R
- Using Python
- Incorporating R and Python into Machine Learning experiments

Lab : Using R and Python with Azure machine learning

- Exploring data using R
- Analyzing data using Python

After completing this module, students will be able to:

- Explain the key features and benefits of R.
- Explain the key features and benefits of Python.
- Use Jupyter notebooks.
- Support R and Python.

Module 9: Initializing and Optimizing Machine Learning Models

This module describes how to use hyper-parameters and multiple algorithms and models, and be able to score and evaluate models.

Lessons

- Using hyper-parameters
- Using multiple algorithms and models
- Scoring and evaluating Models

Lab : Initializing and optimizing machine learning models

- Using hyper-parameters

After completing this module, students will be able to:

- Use hyper-parameters.
- Use multiple algorithms and models to create ensembles.
- Score and evaluate ensembles.

Module 10: Using Azure Machine Learning Models

This module explores how to provide end users with Azure machine learning services, and how to share data generated from Azure machine learning models.

Lessons

- Deploying and publishing models
- Consuming Experiments

Lab : Using Azure machine learning models

- Deploy machine learning models
- Consume a published model

After completing this module, students will be able to:

- Deploy and publish models.
- Export data to a variety of targets.

Module 11: Using Cognitive Services

This module introduces the cognitive services APIs for text and image processing to create a recommendation application, and describes the use of neural networks with Azure machine learning.

Lessons

- Cognitive services overview
- Processing language
- Processing images and video
- Recommending products

Lab : Using Cognitive Services

- Build a language application
- Build a face detection application
- Build a recommendation application

After completing this module, students will be able to:

- Describe cognitive services.
- Process text through an application.
- Process images through an application.
- Create a recommendation application.

Module 12: Using Machine Learning with HDInsight

This module describes how use HDInsight with Azure machine learning.

Lessons

- Introduction to HDInsight
- HDInsight cluster types
- HDInsight and machine learning models

Lab : Machine Learning with HDInsight

- Provision an HDInsight cluster
- Use the HDInsight cluster with MapReduce and Spark

After completing this module, students will be able to:

- Describe the features and benefits of HDInsight.
- Describe the different HDInsight cluster types.
- Use HDInsight with machine learning models.

Module 13: Using R Services with Machine Learning

This module describes how to use R and R server with Azure machine learning, and explain how to deploy and configure SQL Server and support R services.

Lessons

- R and R server overview
- Using R server with machine learning
- Using R with SQL Server

Lab : Using R services with machine learning

- Deploy DSVM
- Prepare a sample SQL Server database and configure SQL Server and R
- Use a remote R session
- Execute R scripts inside T-SQL statements

After completing this module, students will be able to:

- Implement interactive queries.
- Perform exploratory data analysis.