Big Data Storage

1. Azure Storage (100 level)
2. Azure Data Lake (300 level)

Machine Learning and Advanced Analytics

3. IoT and Azure Stream Analytics (200 level)
4. Apache Spark for Azure HDInsight (200 level)
5. Azure Machine Learning (100 level)

Intelligence

6. Cognitive Services (200 level)

Azure Compute

7. Azure Web Apps (200 level)
8. High-Performance Computing (300 level)
9. Azure Container Service (200 level)

Azure Storage

Azure Storage is a set of services for storing data in the cloud. Of particular interest to researchers is Azure Blob Storage, which serves as a source of input and output for Azure data services. In this session, participants learn how to create storage accounts and storage containers, upload and download blobs using the cross-platform Azure Storage Explorer, and securely share data hosted in blob storage using shared-access signatures.

Azure Data Lake

Azure Data Lake allows researchers to aggregate of different shapes and sizes and from disparate data sources and process it in a platform-independent manner. Built on YARN, Azure Data Lake features seamless compatibility with Apache Hadoop, Apache Spark, and other popular big-data tools. In this module, participants migrate data from files and databases into a Data Lake Store, query it using U-SQL, and visualize the results with Power BI.

IoT and Azure Stream Analytics

Azure Stream Analytics is a service that enables researchers to query and analyze high-velocity data streaming from Internet-of-Things (IoT) devices and other data sources in real time. In this module, participants combine Azure Stream Analytics with Azure Event Hubs to perform real-time analytics on data emanating from simulated ATM machines.
Apache Spark for Azure HDInsight
Apache Spark is an open-source engine for analyzing large data sets extremely fast using clusters of inexpensive computers. Building and maintaining a Spark cluster is no easy task, but with Azure HDInsight, you can deploy a Spark cluster in minutes. In this session, participants deploy an HDInsight Spark cluster in the cloud. They then connect to it, use Jupyter notebooks to analyze a data set and apply structure to it, and incorporate the transformed data into a machine-learning model.

Azure Machine Learning
Azure Machine Learning is a cloud-based predictive-analytics service that offers a streamlined experience for data scientists of all skill levels. In this module, participants use the interactive Azure Machine Learning Studio to build, train, and score a machine-learning model. Then they put the model to work performing predictive analytics.

Cognitive Services
Microsoft Cognitive Services is a set of cloud-based APIs for building intelligent applications. These APIs offer a range of capabilities, from recognizing faces in photos and videos to performing sentiment analysis on data generated by social media or left in feedback forums on Web sites. In this module, participants build a Web site for uploading photos and pass each uploaded photo to the Computer Vision API to generate captions and search metadata.

Azure Web Apps
Azure Web Apps is part of Azure App Services, and it makes it easy to deploy Web sites using a range of technologies, update them using continuous integration, and scale them to meet demand. In this module, participants build a PHP + MySQL photo-sharing site and deploy it as an Azure Web App.

High-Performance Computing
Big problems require big solutions. One of the benefits of cloud computing is that with a few button clicks, you can bring the power of massive parallel processing to bear on projects that require it. In this module, students deploy a SLURM cluster of Linux servers and use a Python script to perform parallel processing on a collection of images.

Azure Container Service
Containers are all the rage these days, and the most popular container platform in the world is Docker. The Azure Container Service (ACS) lets you host Docker apps in the cloud. It supports DC/OS and Docker Swarm for scaling to tens of thousands of containers, and it provides portability between cloud platforms. In this module, participants create a Docker image containing Python code that converts color photos to grayscale. Then they deploy the image to ACS and run the code to process a collection of photos.