



Zero to hero in 4 weeks with Machine Learning

A guide to achieving Machine Learning expertise on Azure

The cloud is the destination for an increasing number of machine learning projects. It's an easy, cost-effective way to experiment and scale at any level of expertise or demand.

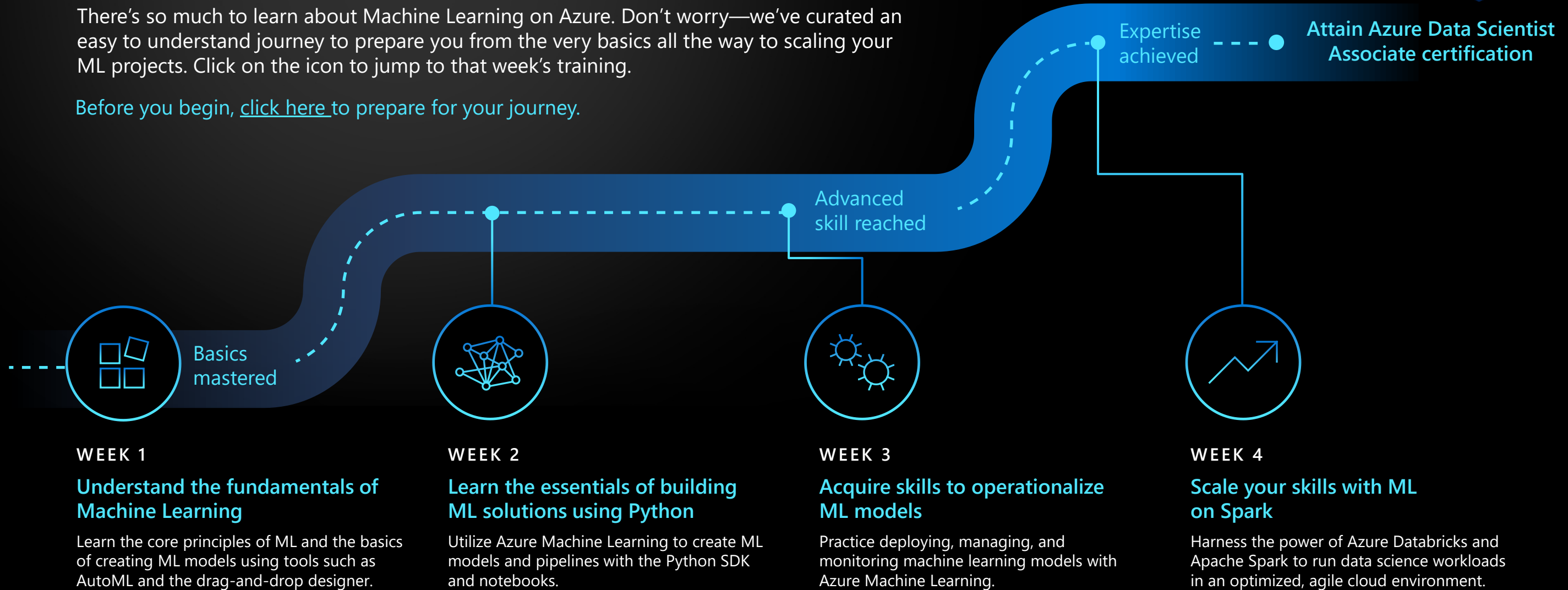
This learning journey will teach you how to create innovative solutions for complex problems with Machine Learning on Azure in 4 short weeks. With just an hour each day—think coffee-fueled morning ritual or mid-afternoon break—you'll be able to collaborate and build models faster with the latest machine learning tools and frameworks. Regardless of where you are in your journey, we can propel you to the next level and prepare you for the Azure Data Scientist Associate certification. Let's get started!



Let's learn together

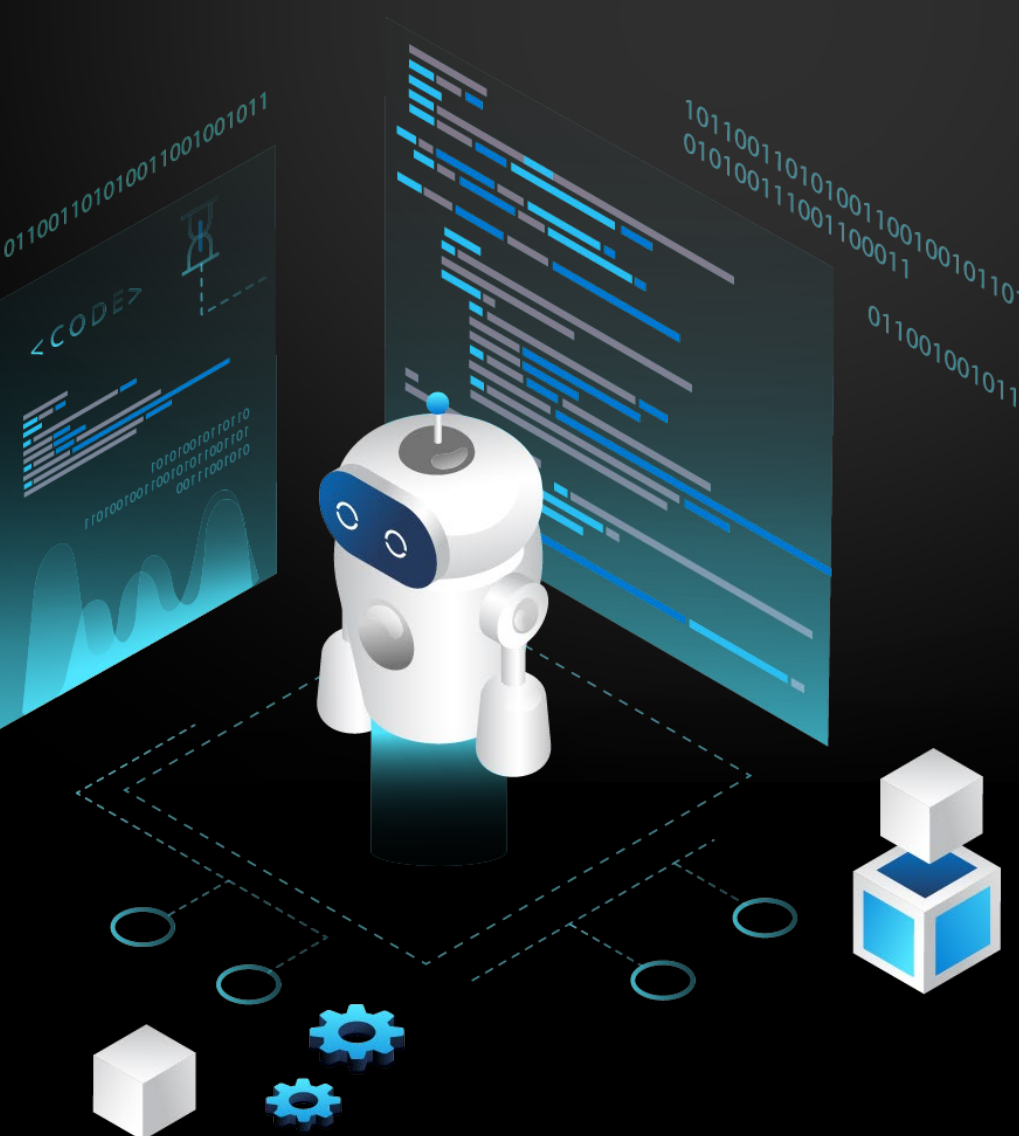
There's so much to learn about Machine Learning on Azure. Don't worry—we've curated an easy to understand journey to prepare you from the very basics all the way to scaling your ML projects. Click on the icon to jump to that week's training.

Before you begin, [click here](#) to prepare for your journey.





[Back to Learning Journey](#)



Get prepared

Make sure to complete the following tasks before you begin.

- ☐ Sign up for the [30 Days to Learn It Challenge](#) and after completing all required learning modules, you'll be eligible to receive 50 percent off a Microsoft Certification exam*.
- ☐ Sign up for an [Azure Subscription](#). You'll need it for hands-on learning.
- ☐ Create an Azure Machine Learning workspace with a compute instance and the **ml-basics** repository cloned.
- ☐ Create a [trial workspace for Azure Databricks](#) with a [single node cluster](#).

Use the navigation bar to head back to your Learning Journey to begin your training or click ahead to move to week 1.

*Visit [Terms & Conditions](#) to learn more.



Week 1

Understand the fundamentals of Machine Learning

Machine learning models are the heart of many modern applications and services. With a commitment to open source, Azure Machine Learning helps data scientists and ML engineers rapidly build and deploy machine learning regardless of skill level.

This week you'll learn the core principles of machine learning by exploring and analyzing data with Python. To help you build on your terms, we have two areas of focus this week: (1) how to train, evaluate, and deploy machine learning models using common tools and frameworks, and (2) how to publish a variety of learning models with without writing a single line of code.

Click below to access the training or click ahead to view the training modules.

Create machine learning models

[Click to begin training >](#)

Create no-code predictive models with Azure Machine Learning

[Click to begin training >](#)





WEEK 1



[Back to Learning Journey](#)

Click the box to launch each module. Once completed, check the box to easily track your progress.

Create machine learning models

Create no-code predictive models with Azure Machine Learning

30 mins

1. Explore and analyze data with Python

Learn common data exploration and analysis tasks, as well as how to use Python packages.

35 mins

2. Train and evaluate regression models

Know when to use regression models and how to train and evaluate them using the Scikit-Learn framework.

45 mins

1. Use automated machine learning in Azure ML

Identify types of ML models and use automated ML to train and deploy a predictive model.

55 mins

2. Create a Regression Model with Azure ML designer

Use Azure ML designer to train a regression model, then use it for inferencing and deploy it as a service.

35 mins

3. Train and evaluate classification models

Know when to use classification models and how to train and evaluate them using the Scikit-Learn framework.

35 mins

4. Train and evaluate clustering models

Know when to use clustering models and how to train and evaluate them using the Scikit-Learn framework.

1 hr

3. Create a classification model with Azure ML designer

Use Azure ML designer to train a classification model, then use it for inferencing and deploy it as a service.

50 mins

4. Create a Clustering Model with Azure ML designer

Use Azure ML designer to train a clustering model, then use it for inferencing and deploy it as a service.

1 hr 10 mins

5. Train and evaluate deep learning models

Learn the basic principles of deep learning and how to train neural networks using PyTorch or Tensorflow.

Optional resources

To learn even more click on these optional trainings.

1 hr 30 mins

Developer's intro to data science video series

Learn the basics of data science on Azure with these bite-sized videos.

12 mins

What is automated machine learning (AutoML)?

Understand what AutoML is, how it works, and when to use it.

12 mins

What is Azure Machine Learning designer?

Discover more about the Azure ML designer – a visual drag-and-drop canvas to create ML models.



Check out the optional resources to the right. Then use the navigation bar to return to your learning journey or click ahead for week 2.



WEEK 2



[Back to Learning Journey](#)

Week 2

Learn the essentials of building ML solutions using Python

Trying to meet the rising demands for enterprise-ready ML solutions without the right tools has left many in the data science community bewildered. Azure Machine Learning fills the gap, delivering the capabilities enterprise data science teams need to be productive from day 1 including a collaborative workspace and integrated compute environments with support for all open source tools, frameworks, and libraries.

This week dive into the Azure Machine Learning Python SDK. We'll start with the essentials including how to use it to provision a workspace, train a machine learning model, and create machine learning pipelines. You won't want to skip this week!

Click below to access the training or click ahead to view the training modules.

[Click to begin training >](#)





WEEK 2



[Back to Learning Journey](#)

Build AI solutions with Azure Machine Learning

Click the box to launch each module. Once completed, check the box to easily track your progress.

40 mins

1. Introduction to the Azure ML SDK

See how to train, deploy, and manage machine learning models with the cloud-based platform from Azure ML.

45 mins

2. Train a machine learning model with Azure ML

Use Azure Machine Learning to train a model and register it in a workspace.

40 mins

3. Work with Data in Azure ML

Create and use datastores and datasets in Azure ML to build scalable, cloud-based model training solutions.

45 mins

4. Work with Compute in Azure ML

Find out how to use cloud compute in Azure ML to run training experiments at scale.

55 mins

5. Orchestrate machine learning with pipelines

Create, publish, and run pipelines to train models in Azure ML.

40 mins

6. Deploy real-time ML services with Azure ML

Learn how to register and deploy ML models with the Azure ML services.



Check out the optional resources to the right. Then use the navigation bar to return to your learning journey or click ahead for week 3.

Optional resources

To learn even more click on these optional trainings.

24 mins

The Team Data Science Process (TDSP) lifecycle

Find out what lifecycle the TDSP recommends you use to structure your data-science projects.

11 mins

How Azure Machine Learning works

Learn about the architecture of Azure ML and get an understanding of how the components work together.

2 mins read + poster download

Machine Learning Algorithm Cheat Sheet

Choose the right algorithm from the designer for a predictive analytics model.



[Back to Learning Journey](#)

Week 3

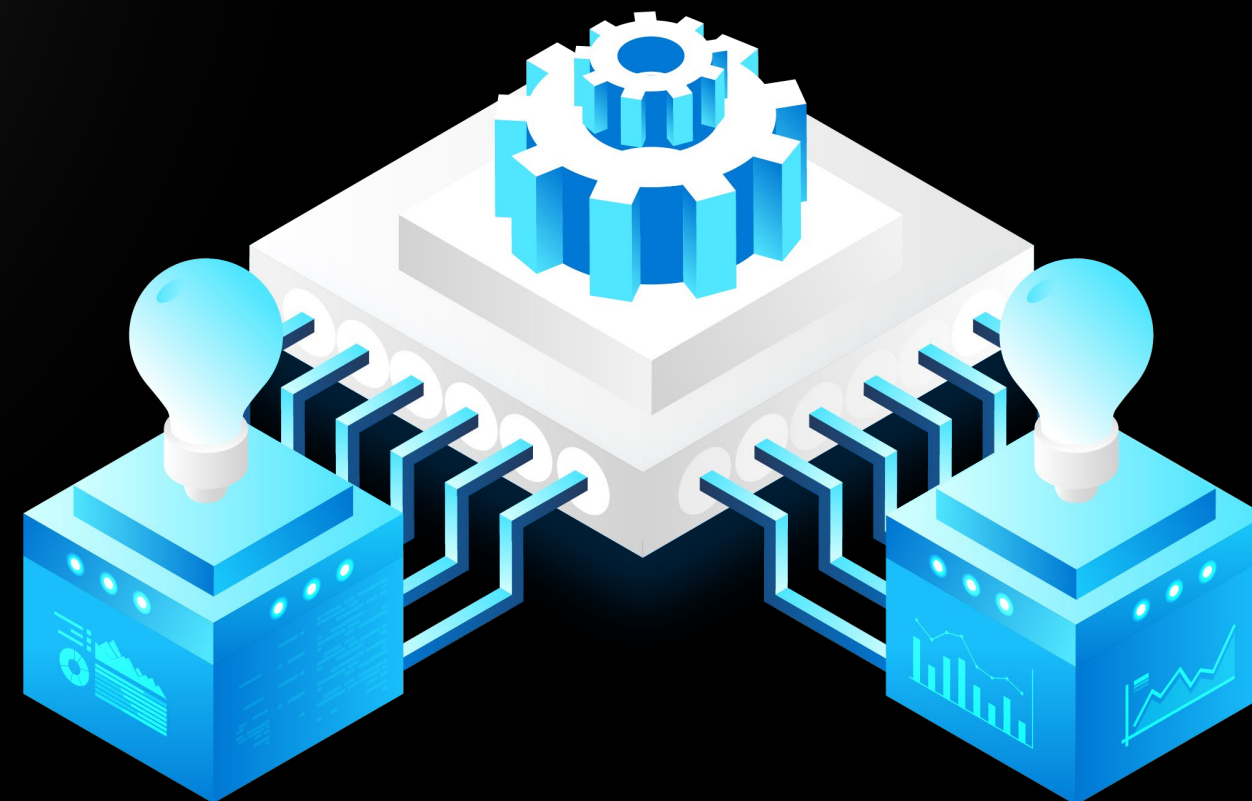
Acquire skills to operationalize ML models

Azure Machine Learning helps you operationalize machine learning models irrespective of criteria stringency and encourages the use of state-of-the-art responsible ML capabilities to understand, protect, and control your models.

This week focuses on operationalizing your machine learning models with optimal accuracy and fairness. You'll practice advanced skills such as publishing a batch inference pipeline and tuning hyperparameters. Plus, you'll learn how to detect and mitigate unfairness and data drift to ensure continual success. What are you waiting for - dive in!

Click below to access the training or click ahead to view the training modules.

[Click to begin training >](#)





[Back to Learning Journey](#)

Build AI solutions with Azure Machine Learning

Click the box to launch each module. Once completed, check the box to easily track your progress.

45 mins

7. Deploy batch inference pipelines with Azure ML

Learn how to create, publish, and use batch inference pipelines with Azure Machine Learning.

45 mins

8. Tune hyperparameters with Azure ML

See how to use Azure ML hyperparameter tuning experiments to optimize model performance.

25 mins

9. Automate ML model selection with Azure ML

Find out how to use automated ML in Azure ML to find the best model for your data.

45 mins

10. Explain machine learning models with Azure ML

Understand how to explain models by calculating and interpreting feature importance.

45 mins

11. Detect and mitigate unfairness in models with Azure ML

Evaluate machine learning models for fairness and mitigate predictive disparity in a machine learning model.

40 mins

12. Monitor models with Azure ML

Learn how to use Azure Application Insights to monitor a deployed Azure ML model.

40 mins

13. Monitor data drift with Azure ML

Understand how to monitor data for changing trends over time to ensure accuracy of model predictions.



Check out the optional resources to the right. Then use the navigation bar to return to your learning journey or click ahead for week 4.

Optional resources

To learn even more click on these optional trainings.

30 mins

GigaOm report – Delivering on the vision on MLOps

Download the GigaOm MLOps report which includes best practices for effective ML implementation.

4 mins

Whitepaper - Drive efficiency and productivity with MLOps

Learn how to streamline and automate the end-to-end machine learning life cycle and tie it into existing DevOps processes.

4 mins

IDC Report on Responsible AI

Understand how organizations should approach Responsible AI from a practitioner's perspective.



WEEK 4



[Back to Learning Journey](#)

Week 4

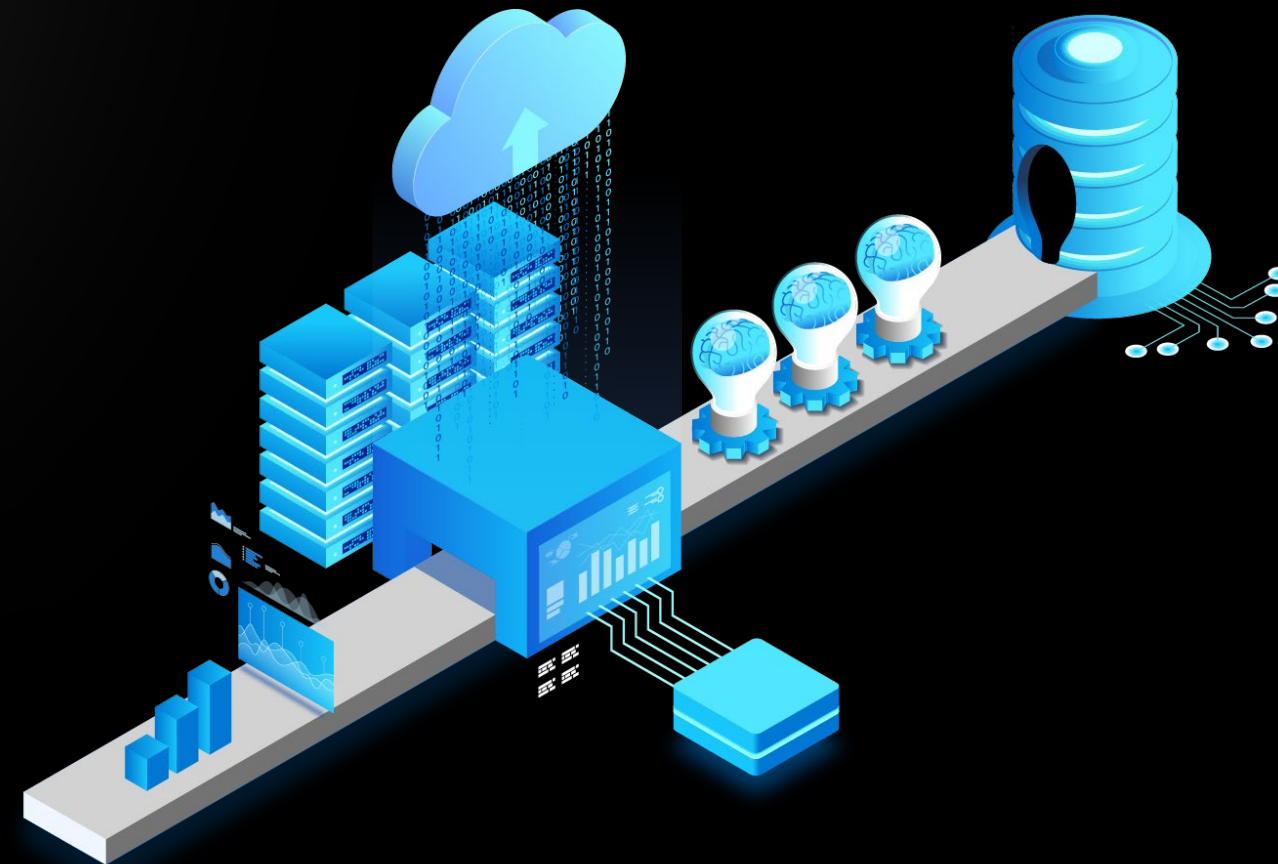
Scale your skills with ML on Spark

Apache Spark offers another optimal way of creating ML models. Since it's an optimized engine for distributed processing, it can be very useful when creating models with big data. Azure Databricks offers the best Spark experience on Azure. With Azure Databricks you can access advanced machine learning capabilities, combine data at any scale, and collaborate effectively on shared projects.

Spend your last week discovering the capabilities of Azure Databricks and its salient features for ML on Spark. You'll get tons of hands on experience- from performing data transformations to building machine learning workflows to deploying and serving models. There's so much to explore here!

Click below to access the training or click ahead to view the training modules.

[Click to begin training >](#)





WEEK 4



[Back to Learning Journey](#)

Perform data science with Azure Databricks

Click the box to launch each module. Once completed, check the box to easily track your progress. Then use the navigation bar to click ahead to complete your training.

55 mins

1. Describe Azure Databricks

Discover the capabilities of Azure Databricks and Apache Spark and how to identify tasks well suited for them.

33 mins

2. Spark architecture fundamentals

Understand the architecture of an Azure Databricks Spark Cluster and Spark Jobs.

1 hr

3. Read and write data in Azure Databricks

Perform data-handling functions with large datasets from multiple sources in different raw formats.

45 mins

4. Work with DataFrames in Azure Databricks

Execute data transformations in DataFrames and actions to display transformed data.

35 mins

5. Work with user-defined functions

Learn how to write and perform ETL (Extract, Transform, Load) functions with User-Defined Functions (UDFs).

45 mins

6. Build and query a Delta Lake

Use Delta Lake to create, append, and upsert data to Apache Spark tables.

1 hr

7. Perform machine learning with Azure Databricks

Learn how to use PySpark's ML package to build key components of the machine learning workflows.

55 mins

8. Train a machine learning model

Understand the building blocks in the Spark's ML library and build pipelines for common data featurization tasks.

35 mins

9. Work with MLflow in Azure Databrick

Track experiments, log metrics, and compare runs. Plus, track experiment metrics, parameters, artifacts, and more.

33 mins

10. Perform model selection with hyperparameter tuning

Know how to use modules from the Spark's ML library for hyperparameter tuning and model selection.

36 mins

11. Deep learning with Horovod for distributed training

See how Azure Databricks supports enables distributed, deep learning training jobs on Spark.

25 mins

12. Work with Azure Machine Learning to deploy serving models

Register, package, and deploy a trained model to Azure Container Instance and Azure Kubernetes Service.

Optional resources

To learn even more click on these optional trainings.

3 hours

MLOps with MLFlow and Azure Databricks – Watch on demand

Watch the talks from our MLOps Virtual Event to learn best practices for managing the ML lifecycle on Databricks with MLflow.

6 mins read + sample notebooks

Running Tensorflow pipelines with Azure Databricks

Get guidance on installing TensorFlow on Azure Databricks and running TensorFlow programs.

4 mins read + sample notebooks

Distributed deep learning with Horovod

Run distributed deep learning workloads on Azure Databricks using Uber's Horovod framework.



[Back to Learning Journey](#)

Congratulations on completing your journey! We hope seeing the possibilities of Azure Machine Learning and Azure Databricks has expanded your imagination. Now, you're ready to take on real-world ML projects. What's next?



Schedule your certification exam

Show the world you're equipped with the skills needed to implement an ML solution on Azure.



Engage with us on our resource page

Get the latest updates and best practices from the Product Management team.



Check out the AI for Developers journey

Try our developer centric AI services learning journey to create sophisticated apps with cognitive capabilities.

Looking for more?

This is just the beginning of realizing what machine learning on Azure can do. Click ahead to check out additional resources to keep learning and get started easily.





[Back to Learning Journey](#)

Additional resources

Click the box to access the resource.

eBook

Mastering Azure Machine Learning

Explore this free e-book from Packt for hands-on guidance, real examples, and executable code on Azure ML.

eBook

Principles of Data Science

Get a comprehensive beginner's guide to statistical techniques and theory.

Paper

Four real-life Machine Learning use cases

Dive into four practical end-to-end machine-learning use cases on Azure Databricks.

Paper

Standardizing the ML Lifecycle

Find out how to solve for ML lifecycle challenges compared to the traditional software development lifecycle.

Infosheet

MLOps Best Practices

Learn best practices for extending DevOps practices to Machine Learning pipelines on Azure.

Demo

Responsible ML Demo

Watch this interactive demo which showcases model interpretability, fairness and differential privacy in action.

Demo

MLOps Demo

Watch this interactive demo which showcases reproducible ML pipelines, deployment, CI/CD, and governance of ML projects.

Sample Code

NLP Recipe

See how to leverage recent advances in NLP algorithms, neural architectures, and distributed ML systems.

Sample Code

Recommenders Recipe

Get examples and best practices for building recommendation systems.

Sample Code

Computer Vision Recipe

See examples and best practices for building computer vision systems.