

Whether your organization needs to monitor fraudulent financial transactions, product defects, equipment health, or cybersecurity threats, AI can help catch data abnormalities before they impact your business. AI models can be trained to automatically analyze datasets, define “normal behavior,” and identify breaches in patterns. These models can then be deployed to predict future anomalies quickly and effectively. With massive amounts of data available across industries and subtle distinctions between normal and abnormal patterns, it’s critical that organizations use AI to detect anomalies that pose a threat.

In this NVIDIA Deep Learning Institute (DLI) workshop, developers will learn three different AI-based anomaly detection techniques using GPU-accelerated XGBoost, autoencoders, and generative adversarial networks (GANs). Together, these approaches allow developers to leverage supervised and unsupervised learning anomaly detection techniques for both labeled and unlabeled data. At the end of the workshop, developers will be able to use AI to detect anomalies in their work across many key industries, such as telecommunications, cybersecurity, finance, and manufacturing.

All workshop attendees get access to a fully configured, GPU-accelerated server in the cloud, guidance from a DLI-certified instructor, and the opportunity to network with other developers, data scientists, and researchers attending the workshop. Attendees can earn a certificate to prove subject matter competency and support professional growth.

Learning Objectives

In this workshop, developers will learn how to:

- > Prepare data and build, train, and evaluate models using XGBoost, autoencoders, and GANs
- > Detect anomalies in datasets with both labeled and unlabeled data
- > Classify anomalies into multiple categories regardless of whether the original data was labeled

Overview

Duration	8 hours
Price	Contact us for pricing
Prerequisites	> Professional data science experience using Python; experience training deep neural networks. > Experience training deep neural networks (DLI’s Getting Started with Deep Learning course is recommended) > Experience with data science with Python (Kaggle’s Intro to Machine Learning course is recommended)
Tools, libraries, and frameworks	XGBoost, autoencoders, GANs, TensorFlow, pandas, scikit-learn
Assessment type	Skills-based coding assessments evaluate students’ ability to train a machine and deep learning models to high accuracy
Certificate	Upon successful completion of the assessment, participants will receive an NVIDIA DLI certificate to recognize their subject matter competency and support professional career growth.
Hardware requirements	Desktop or laptop computer capable of running the latest version of Chrome or Firefox. Each participant will be provided with dedicated access to a fully configured, GPU-accelerated workstation in the cloud.
Language	English

Workshop Outline

Introduction (15 mins)	> Meet the instructor. > Create an account at courses.nvidia.com/join
Anomaly Detection in Network Data Using GPU-Accelerated XGBoost (110 minutes)	> Assess and improve your model's performance before deployment. > Learn how to detect anomalies using modern unsupervised learning. > Build and train a deep learning-based autoencoder to work with unlabeled data.
Lunch (60 minutes)	
Anomaly Detection in Network Data Using GPU-Accelerated Autoencoders (110 minutes)	> Apply techniques to separate anomalies into multiple classes. > Explore other applications of GPU-accelerated autoencoders.
Break (15 minutes)	
Project: Anomaly Detection in Network Data Using GANs (110 minutes)	> Learn how to detect anomalies using GANs. > Train an unsupervised learning model to create new data. > Use that new data to turn the problem into a supervised learning problem. > Compare the performance of this new approach to more established approaches.
Assessment and Q&A (45 minutes)	> Apply your learning to earn a course certificate. > Use XGBoost for supervised anomaly detection. > Build an autoencoder for unsupervised anomaly detection.

Connect with your NVIDIA contact to schedule an onsite workshop for your team or submit your request at www.nvidia.com/requestdli and the DLI team will be in touch.

Related Training

For organizations in the manufacturing industry, we also recommend the instructor-led workshop **Applications of AI for Predictive Maintenance**. Your team will explore how to use AI to predict the condition of equipment and estimate when maintenance should be performed.

For organizations with beginner developers who need to ramp up on deep learning before taking this workshop, we recommend **Fundamentals of Deep Learning**. Your team will learn to build deep learning workflows.

For organizations with additional machine learning or data science needs, we recommend **Fundamentals of Accelerated Data Science**. Your team will learn end-to-end GPU-accelerated data science in Python, including data prep, analysis, and visualization.

Why Choose NVIDIA Deep Learning Institute for Hands-On Training?

- > Access workshops from anywhere with just your desktop/laptop and an internet connection. Each participant will have access to a fully configured, GPU-accelerated server in the cloud.
- > Obtain hands-on experience with the most widely used, industry-standard software, tools, and frameworks.
- > Gain real-world experience through content designed in collaboration with industry leaders, such as the Children's Hospital of Los Angeles, Mayo Clinic, and PwC.
- > Earn an NVIDIA DLI certificate to demonstrate your subject matter competency and support your career growth. 🏆

For the latest DLI workshops and trainings, visit www.nvidia.com/dli

For questions, contact us at nvdlit@nvidia.com

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