Deep Learning for Intelligent Video Analytics

This workshop teaches you how to build object detection and tracking models to analyze data from large-scale video streams using NVIDIA DeepStream technology. You'll access hands-on tasks to build, train, and deploy deep learning models to analyze parking lot camera feeds of a hardware-accelerated traffic management system. At the end of the workshop, you'll have access to additional resources to design and deploy intelligent video analytics (IVA) applications on your own.

Duration:	8 hours
Price:	$10,000 for groups of up to 20 (price increase for larger groups). During the workshop, each participant will have dedicated access to a fully configured, GPU-accelerated workstation in the cloud.
Assessment type:	Code-based
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.
Prerequisites:	Experience with deep neural networks (specifically variations of convolutional neural networks); intermediate-level experience with C and Python
Languages:	English
Tools, libraries, and frameworks:	TensorFlow, DeepStream 3.0

Learning Objectives

At the conclusion of the workshop, you'll be able to:

> Understand data normalization, annotation, and metadata formatting in IVA applications

> Wrangle video data and perform raw data ingestion into underlying models

> Deploy deep learning models for accurate and effective object detection and tracking applications

> Accelerate the development of IVA applications by using the DeepStream framework

Why Deep Learning Institute Hands-On Training?

> Learn to build deep learning and accelerated computing applications for industries such as autonomous vehicles, finance, game development, healthcare, robotics, and more.

> Obtain hands-on experience with the most widely used, industry-standard software, tools, and frameworks.

> Gain real-world expertise 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 career growth.

> Access content anywhere, anytime with a fully configured, GPU-accelerated workstation in the cloud.

Workshop Outline

TOPIC	DESCRIPTION
Introduction (15 mins)	> Meet the instructor. > Create an account at **courses.nvidia.com/join**
Object Detection for Intelligent Video Analytics (IVA) (120 mins)	> Learn the fundamentals of object detection methods in IVA applications, as well as preliminaries of raw data processing and metadata formatting. > Get hands-on experience with the Object Detection API. > Learn how to measure accuracy and performance of the models using intersection over union (IoU) metrics.
Break (60 mins)	
Using Transfer Learning and Multiple-Object-Tracking Techniques in IVA (120 mins)	> Get familiar with the nuances of fine tuning an IVA application and learn about the implications of modeling. > Measure and visualize model performance. > Understand how object detectors can be bootstrapped into your IVA application.
Break (15 mins)	
Deploying the Application Using NVIDIA DeepStream (120 mins)	> Learn to deploy the video analytics models into a ready-to-use video-processing pipeline using DeepStream. > Understand the fundamentals of creating robust smart city applications. > Learn how to easily plug in multiple inference models, and explore methods for visualizing the inference data.
Final Review (15 mins)	> Review key learnings and wrap up questions. > Complete the assessment to earn a certificate. > Take the workshop survey.