AMBIENT-IT

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Sign up

OpenUSD training: Nvidia tools

3 days (21 hours)

Presentation

OpenUSD (Universal Scene Description) is an open-source framework for designing, exchanging and composing complex 3D scenes. Our OpenUSD training course will teach you how to manage these large-scale 3D scenes.

In this course, you'll learn how to manipulate 3D scenes, use Python scripts to automate tasks and apply materials and shaders. You'll also learn how to manage USD files, stages and layers.

In addition to the fundamentals, this course will cover Nvidia Inference Model (NIM) microservices for generative AI, the creation of digital twins and integration with tools such as Nvidia Omniverse. You'll also explore performance optimization and real-time collaboration.

At the end of this course, you'll enjoy all the benefits of OpenUSD, being able to create, manipulate and optimize complex 3D scenes. You'll master advanced concepts such as generative AI and digital twins, positioning you as an expert in industrial simulation and 3D visualization.

Like all our training courses, this one will include the latest OpenUSD developments.

Objectives

- Master the fundamentals and ecosystem of OpenUSD
- Installing and configuring OpenUSD and Nvidia Omniverse
- Create and manipulate 3D scenes with OpenUSD
- Using NIM microservices for generative AI and 3D physics
- Modeling and optimizing industrial digital twins

Target audience

- Developers
- AI professionals

Prerequisites

- Basic knowledge of 3D modeling
- Notions in artificial intelligence
- Programming skills
- Experience in simulation or visualization
- 3D rendering and pipeline tools

OUR OPENUSD TRAINING PROGRAM

Introduction to OpenUSD

- History and origins of the Universal Scene Description (USD) framework
- Objectives and benefits of OpenUSD in the industry.
- Comparison with other 3D frameworks
- Presentation of current and potential use cases
- Overview of the Nvidia Omniverse ecosystem

Installation and configuration

- Hardware and software requirements
- Installing Nvidia Omniverse and OpenUSD tools
- Configuring work environments for 3D development
- Introduction to USD connectors and supported formats
- Creating a basic project in OpenUSD

The basics

- USD file structure: Prim, Stage, and Layers
- Handling 3D scenes: creation, import and export
- Managing materials and shaders in OpenUSD
- Using Python scripts to automate tasks
- Practical exercises: Creating a simple scene in OpenUSD

NIM Microservices and Generative AI

- Nvidia Inference Model (NIM) microservices presentation
- OpenUSD code generation with generative AI
- Automatic application of materials and textures to 3D objects
- Understanding and modeling 3D physics with NIM

- Practical exercises: Generating and modifying a scene with AI models

Creating digital twins

- What is a digital twin?
- Using OpenUSD to model industrial digital twins
- Integrating sensors and real data into simulations
- Optimizing digital twin performance with Nvidia RTX
- Practical exercises: Create a simple digital twin of an industrial environment

Interoperability and USD connectors

- USD connectors for robotics and industrial simulation
- Integration with third-party software (Siemens, Apple Vision Pro, etc.)
- Real-time collaboration with Nvidia Omniverse
- Management of large data sets and production pipelines
- Collaboration on a complex scene with multiple users

Deployment and advanced use cases

- Deploying OpenUSD applications in the cloud and data centers
- Resource optimization for large-scale applications
- Application of OpenUSD in specific sectors (automotive, robotics, etc.)
- Performance monitoring and updating of simulation models
- Develop and present a complete OpenUSD application for an industrial case study

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.