

Course Description

This course describes how to use Xilinx machine learning solutions for data center and cloud-based applications.

The emphasis of this course is on:

- Utilizing DNN algorithms, models, inference and training, and frameworks in the cloud
- Using the xFNN software stack to optimize the trained model
- Optimizing the xDNN instructions for the xDNN processing engine in a cloud application

Level – FPGA 2

Course Duration – 1 day live instructor led training (in person or online)

Price – \$800 or 8 Xilinx Training Credits

Course Part Number – FPGA-AICLOUD

Who Should Attend? – FPGA developers and anyone who needs to accelerate their software applications using FPGAs

Prerequisites

- Basic knowledge of machine learning concepts
- Basic knowledge of Xilinx FPGA architecture
- Comfort with the C/C++/Python programming language

Software Tools

- Xilinx ML Suite

Hardware

- Architecture: Xilinx Virtex® UltraScale™ FPGAs

** Check with [Morgan Advanced Programmable Systems, Inc.](http://morgan-aps.com) for the specifics of the in-class lab board or other customizations.

After completing this comprehensive training, you will have the necessary skills to:

- Describe Xilinx machine learning solutions for DC/cloud-based applications
- Utilize DNN algorithms, models, inference and training, and frameworks on AWS or Nimbix
- Use the architectural features of the xDNN processing engine to optimize the xDNN engine in a cloud application
- Use the xFNN software stack and xFNN flow to implement a design in the cloud
- Describe the supported frameworks and network modes and pre-trained models
- Describe the environment to set up the Xilinx ML Suite and how to create a custom application and deploy the design

Course Outline

Introduction to Xilinx Machine Learning Solutions for Cloud Applications

Describes Xilinx machine learning solutions for data center and cloud-based applications. {Lecture}

Overview of ML Concepts

Overview of ML concepts such as DNN algorithms, models, inference and training, and frameworks. {Lecture}

xDNN Architecture Overview

Describes the architectural features of the Xilinx Deep Neural Network (xDNN) processing engine and how the engine can be optimized for cloud applications. {Lecture}

xFNN Middleware

Describes the xFNN middleware, a high-performance software library with a well-defined API, which acts as a bridge between deep learning frameworks such as Caffe, MXNet, TensorFlow, and the xDNN IP running on an FPGA. {Lecture}

ML Suite-Supported Frameworks

Describes the support for many common machine learning frameworks such as Caffe, MXNet, and TensorFlow as well as Python and RESTful APIs. {Lecture}

Using ML Suite for Custom Applications with the Alveo Card

Describes the environment to set up the Xilinx ML Suite and how to create a custom application and deploy the design. {Lecture, Demo}

Register Today

Morgan Advanced Programmable Systems, Inc. (Morgan A.P.S.) delivers public and private courses in locations throughout the central US region; including Iowa, Illinois, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin.

Visit morgan-aps.com/training, for full course schedule and training information.



You must have your tuition payment information available when you enroll. We accept credit cards (Visa, MasterCard, or American Express) as well as purchase orders and Xilinx training credits.

Student Cancellation Policy

- Student cancellations received more than 7 days before the first day of class are entitled to a 100% refund. Refunds will be processed within 14 days.
- Student cancellations received less than 7 days before the first day of class are entitled to a 100% credit toward a future class.
- Student cancellations must be sent [here](#).

Morgan A.P.S. Course Cancellation Policy

- We regret from time-to-time classes will need to be rescheduled or cancelled.
- In the event of cancellation, live on-line training may be offered as a substitute.
- Morgan A.P.S. may cancel a class up to 7 days before the scheduled start date of the class; all students will be entitled to a 100% refund.
- Under no circumstances is Morgan A.P.S. responsible or liable for travel, lodging or other incidental costs. Please be aware of this cancellation policy when making your arrangements.
- For additional information or to schedule a private class contact us [here](#).

Online training with real hardware

During the Covid-19 period, some companies do not allow their staff to participate in live in-person training.

- Consequently, Morgan Advanced Programmable Systems, Inc. has set up a training VPN where engineer participants can take classes online using the same computers and devCards used during in-person training.



Developing Xilinx AI Solutions for Cloud-based Applications

FPGA 2

FPGA-AICLOUD (v1.0)

Course Specification

- Even better, and upon request, you can use these computers after hours on training days to experiment with labs. This is not possible for in-person training.
- Additionally, just like in-person training, the laptops and devCards, tools, OS, and licensing are set up in advance.
- In some ways, live online-training is better than in-person...for example, you can grant the instructor permission to look at your Vivado, PetaLinux terminal, or Vitis for extended periods of time if your lab is not going exactly as planned to a missed step.
- This is often more comfortable than two engineers crowding around a laptop screen.
- Taking remote training also allows you to learn some tips and tricks for working remote. Whether your devCard is in the lab down the hall, or across the world via VPN, you can control your Xilinx based device quickly and efficiently.