

Arm Ethos-U System Design

Summary

The Arm Ethos-U processor series training courses are designed to help embedded engineers working on new or existing Arm Ethos-U designs. Whether you're working on design, verification or validation, for an Arm Ethos-U system, the course can be **configured according to your team's needs**.

Courses include fundamental topics to enable a solid platform of understanding. The rest of the course then builds on from this with optional topics and can be tailored appropriately. Some key topics are delivered via pre course **on-demand video**.

A pre course call with the engineer delivering the training will help you discuss your team's individual training requirements.

At the end of this course, delegates will be able to

- Describe the Ethos Neural Processor Unit (NPU) main functions and supported API
- Explain the Ethos NPU data flow and block architecture
- Describe the physical model integration and the NPU interface signals
- Configure and integrate the Ethos NPU into their SoC
- Run the supplied test cases
- Describe Arm Machine Learning SW architecture
- Understand Ethos NPU (Neural Processor Unit) driver stack
- Build and test Ethos NPU driver
- Setup FPGA and run Arm NPU demo
- Build a Compute Library.
- Understand the structure of Compute Library.
- Gain knowledge about how to optimize and implement algorithm using OpenCL.
- Implement the Winograd algorithm

Course Length	Delivery Method	Location
1-2 Days	Classroom	Virtual or Onsite

Audience:

Engineers working on a SoC project using Ethos-U NPU and carrying out System Design or verification.

Prerequisites:

- A working knowledge of RTL design
- Experience of IC verification flow
- Machine Learning using Arm Online Training Module
- Background knowledge about Machine Learning

Related Products

Arm Ethos-U55

Topics

Agendas will be created from the following list of fundamental and optional topics

Fundamental Topics

- **Machine Learning using Arm** ♥ Online introduction to Machine Learning using Arm Products
- **Arm ML SW Architecture**, an introduction to the Architecture, how to build it, driver structure and support neural networks
- **Ethos NPU Overview**, Machine Learning overview, Arm's heterogeneous ML platform, Supported APIs, Deliverables, Performance scenarios and summary
- **Ethos NPU Architecture**, definitions, data flow, the block architecture, programmers' model and boot flow
- **Ethos NPU HW Integration**, Getting Started, the Implementation process flow, configuration, Physical Model integration, Clock and resets, Interface signals, Memory system considerations, Testbenches and Integration Kit
- **NPU Driver Stack**, How to Build one, the driver structure and supported neural networks
- **FPGA setup**, the requirements, connects, resources and software available plus a Arm NPU Demo.

Optional Topics

- **ArmNN** – How to build and structure ArmNN and how to run Caffe Model
- **Compute Library Introduction**, Compiling, structuring as well as Gaussian Pyramid, Integral Image, SGEMM and Winograd optimisation

♥ = Online and on-demand.