Fathom

Framework for DNN Prototyping

Accelerated Deep Learning for the MA2x5x Family of VPUs

PRODUCT BRIEF

Movidius provides the ultimate in low-power vision sensing solutions, enabling efficient imaging/vision workloads at the network edge, including high performance scene intelligence applications that employ Deep Neural Networks (DNNs). The Myriad 2 family of VPUs are a uniquely power efficient platform supporting Deep Neural Network compute, while keeping the total power dissipation of DNN and other simultaneous workloads within ~1 Watt.

Software developers and algorithm R&D engineers who develop Deep Neural Networks can now deploy their networks in a power efficient embedded platform with the Fathom software framework. Fathom is the Myriad 2 tool that enables rapid prototyping, validation and deployment of DNNs on the Myriad 2 platform.

Fathom intelligently parses existing networks from TensorFlow or Caffe and translates to the Myriad 2 VPU, creating an optimal conversion specifically for the Myriad 2 architecture. Developers can then run deep learning inference directly on the Myriad 2 VPU. For complex networks such as GoogleNet, Fathom enables performance at a nominal 15 inferences/sec with FP16 precision on Myriad 2 MA2450.

FEATURES OVERVIEW

Fathom translates Caffe or Tensorflow deep learning networks to a Myriad 2 compatible format. With Fathom, developers can do rapid prototyping and profile their networks, to iterate and find the best performance/accuracy tradeoff for their networks. Fathom also offers an infrastructure to enable testing over multiple inferences to determine network accuracy over a large dataset.

The Fathom tool flow runs in real-time on a Myriad 2 EVM, so it can be used to gather detailed per-layer statistics and to validate network models with native hardware precision. Fathom also accelerates DNNs when using online TensorFlow with a standard USB2 or USB3 connection.

APPLICATION USE CASES

- Object/Scene classification, recognition
- Autonomous navigation for vehicles/drones
- Scene intelligence for surveillance cameras

SUPPORTED PLATFORMS AND DEVICES

- PC Requirements
  64bit Linux (Ubuntu 14.04 LTS or 16.04 LTS)
  Python 3 or greater
- Compatible Hardware
  MA2x5x VPUs supported
  Myriad 2 Reference EVM board or
  Fathom Neural Compute Stick

FUNCTIONS SUPPORTED

- Prototyping – translate DNNs to run on Myriad 2 with statistics
- Validation – Run one or multiple data inputs through Myriad 2 to validate accuracy
- Generation – Translate networks with basic checks
- Compute/Acceleration – online TensorFlow with USB2 or USB3 connection

See the MDK Product Brief for an overview of the complete Myriad Development Kit, including the software development frameworks, tools, drivers and libraries, to enable developers to write code and integrate applications on Movidius VPUs. For more details on Fathom, the Myriad 2 Platform and MDK, please visit the Movidius website: www.movidius.com

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Fathom
NEURAL COMPUTE STICK

PROTOTYPE – VALIDATE – COMPUTE

The Fathom Neural Compute Stick is the first of its kind: A powerful, yet surprisingly efficient deep learning processor embedded into a standard USB stick.

The Fathom Neural Compute Stick acts as a **discrete neural compute accelerator,** allowing devices with a USB port run neural networks at high speed, while sipping under a single Watt of power.

The Fathom Neural Compute stick can also be used in **prototyping and validating neural networks,** moving them from the PC environment to actual end products like smart cameras, drones and mixed reality headsets.