Western Digital.

SOLUTION BRIEF

Machine Learning Accelerator

Mipsology

Seamless Deployment

- Same software environment as CPU/GPU
- No application software changes required
- No new training required
- U.2 Small Form Factor (SFF8639)

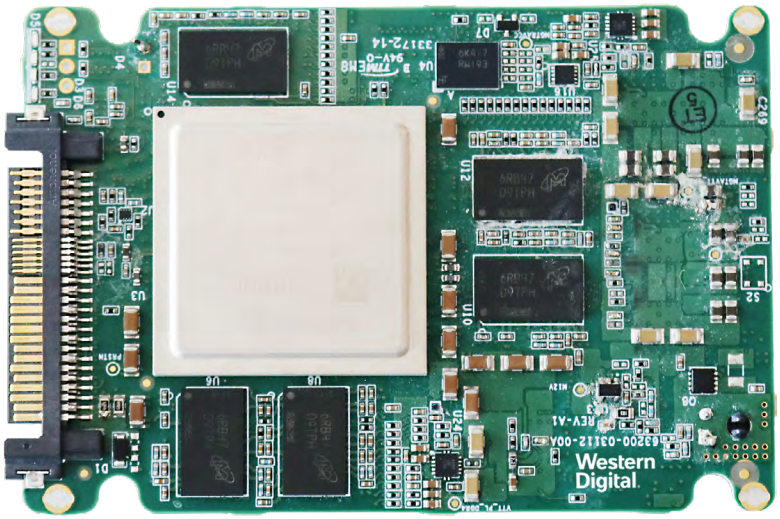
Broad Network Support

- Works under Caffe, Caffe2, TensorFlow, MXNET
- Same CPU/GPU-based trained neural network with similar accuracy without any change

Power Efficient

- Scalable and Lower Power than GPUs
- Ideal for Edge or Data Center Applications

Network	Performance frames/sec
Caffenet	1715
Googlenet	561
Inception v3	143
Inception v4	76
Resnet50	239
Resnet152	120
Yolo v1	24
Yolo v2	44



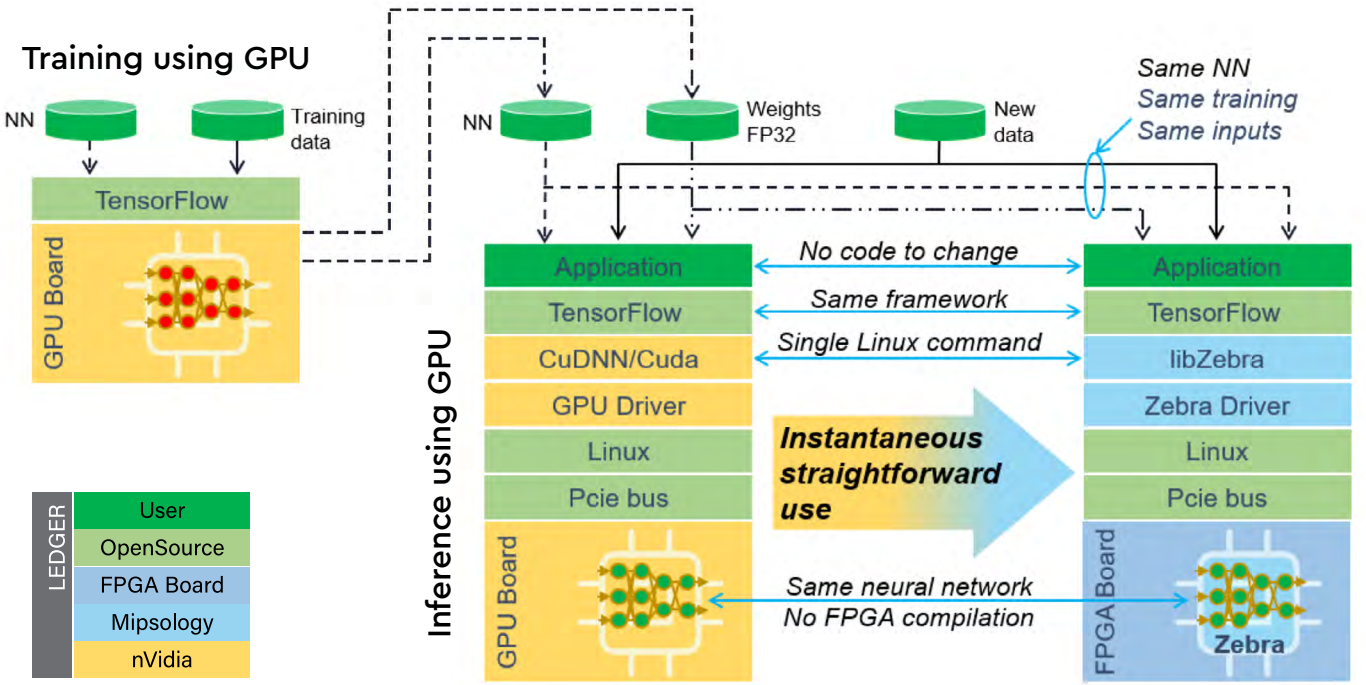
U.2 Form Factor | 70mm x 100mm

Seamless Deployment,Broad Network Support, Power Efficient

No longer does the CPU have to be the center of a system. Data centric solutions are quickly emerging to unlock the value in Big Data and Fast Data by using purpose-built architectures. One important technology which can extract insights from data is Machine Learning.

Western Digital partnered with Mipsology to provide a complete, easy to adopt and power efficient Machine Learning Accelerator based on the Zebra platform.

Seamless Deployment



Broad Support

Neural Networks

- Tested with many pretrained networks: AlexNet, CaffeNet, GoogLeNet V1, Inception V3, Inception V4, VGG16, VGG19, ResNet50, ResNet152, Nin, Yolo, SSD...
- Supports custom CNN without modification
- Supported layers: Convolutions, Fully Connected, Max/Average Pooling, Concat, LRN, Relu, Softmax, Batch Norm, Scale, Eltwise, etc
- Up to 1 billion weights in a single network
- Up to 1 million layers
- Up to 200,000 filters per convolution

Supported Frameworks

- Caffe, Caffe2, MXNet or TensorFlow
- No code change required

Computation

- 8-bit or 16-bit integers with automatic quantization
- No mandatory pruning

Migration from GPU or CPU

- Trained parameters from GPU training without changes
- No proprietary training or re-training needed
- Similar accuracy as GPU or CPU
- Switch networks instantaneously without reprogramming FPGA
- Supports multiple users, multiple networks in parallel, multiple boards

Hardware format, power & cooling

- U.2 Small Form Factor (SFF8639)
- Typical power less than 20W, passive cooling
- Single BGA package planned

Western Digital.

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