FPGAS ACCELERATING AI FOR FINANCIAL SERVICES

Intel® Network & Custom Logic Group (NCLG)

Intel® AI Hardware – Device, Edge, and Multi-Cloud

OPTIMIZED SOFTWARE STACK

CPU | **FPGA** | **GPU** | **ACCELERATORS**

WORKLOAD BREADTH → **AI SPECIALIZATION**

Multi-purpose foundation for artificial intelligence (AI)	Real-time deep learning inference and more	Highly-parallel media, graphics and compute	Multi-modal deep learning inference	Edge media and vision inference	Deep learning training

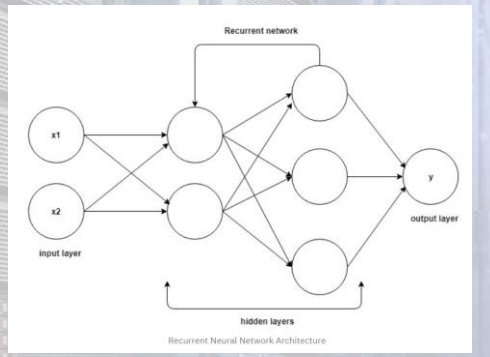
All products, computer systems, dates, and figures are preliminary based on current expectations, and are subject to change without notice.

[1]Unified software stack development in progress

www.intel.ai/technology

RNNs for Financial Applications

Recurrent neural networks (RNNs) are neural networks with memory



Fraud detection

Anti-money laundering

Speech recognition

Requirements

- Low latency for real-time response
- High memory-to-compute ratio for increased performance

Intel® FPGAs Well Suited to Address RNN Workloads

Intel® FPGAs enabling technologies

- Pipelining
- Many large independent local memories
- Independent DSP

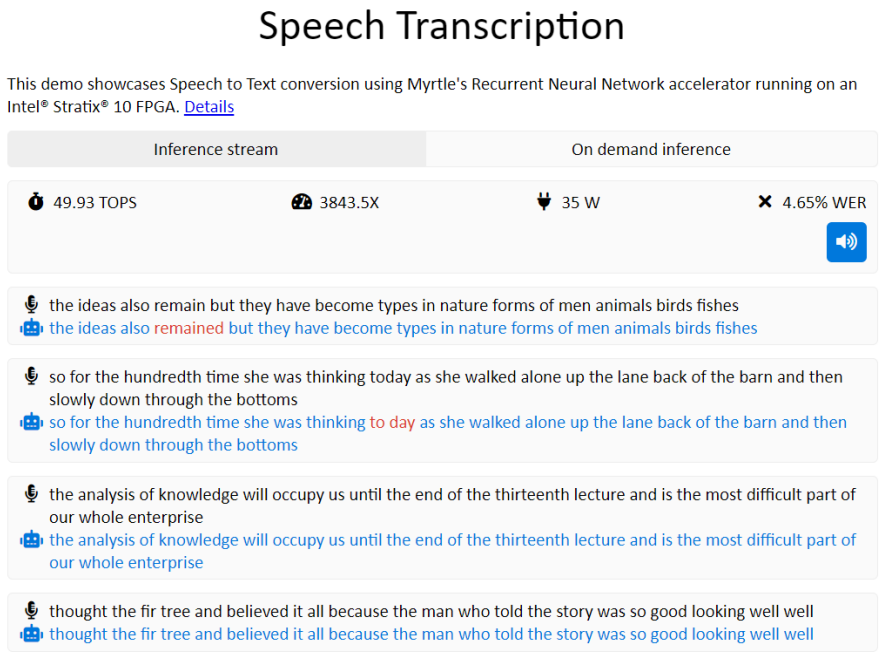
What this means for RNN applications:

Delivering batch 1 performance	**54 TOPs at 34.9 W**
High memory bandwidth	**Up to 58TB/s**
Delivering unstructured sparsity	**96% sparsity**

If you would like to hear more, stop by our stand today

RNN Demo at Booth

	Myrtle results
Platform	Intel® FPGA PAC D5005 [1]
Sparsity (%)	96
Batch Size	1
Effective Throughput (TOPS)	54.0
Power (W)	34.9
Performance per Watt (Effective GOPS/W)	1547
Latency per 1s input audio (mS)	**0.343**



Not STAC Benchmarks

1. *Intel® Programmable Acceleration Card (Intel PAC) measurements taken in conjunction with Intel i7-7700K at 4.20 GHz, RAM 4 * 16 GB at 2,800 MHz, 1 TB M.2 PCIe* SSD, PRIME Z270-P motherboard, 650 W PSU, Ubuntu*
2. *Peak throughput of 53.37 TOPS measured over shorter input duration of 200 ms, When measuring latency over a 1s input period, peak throughput drops to 23 TOPS*

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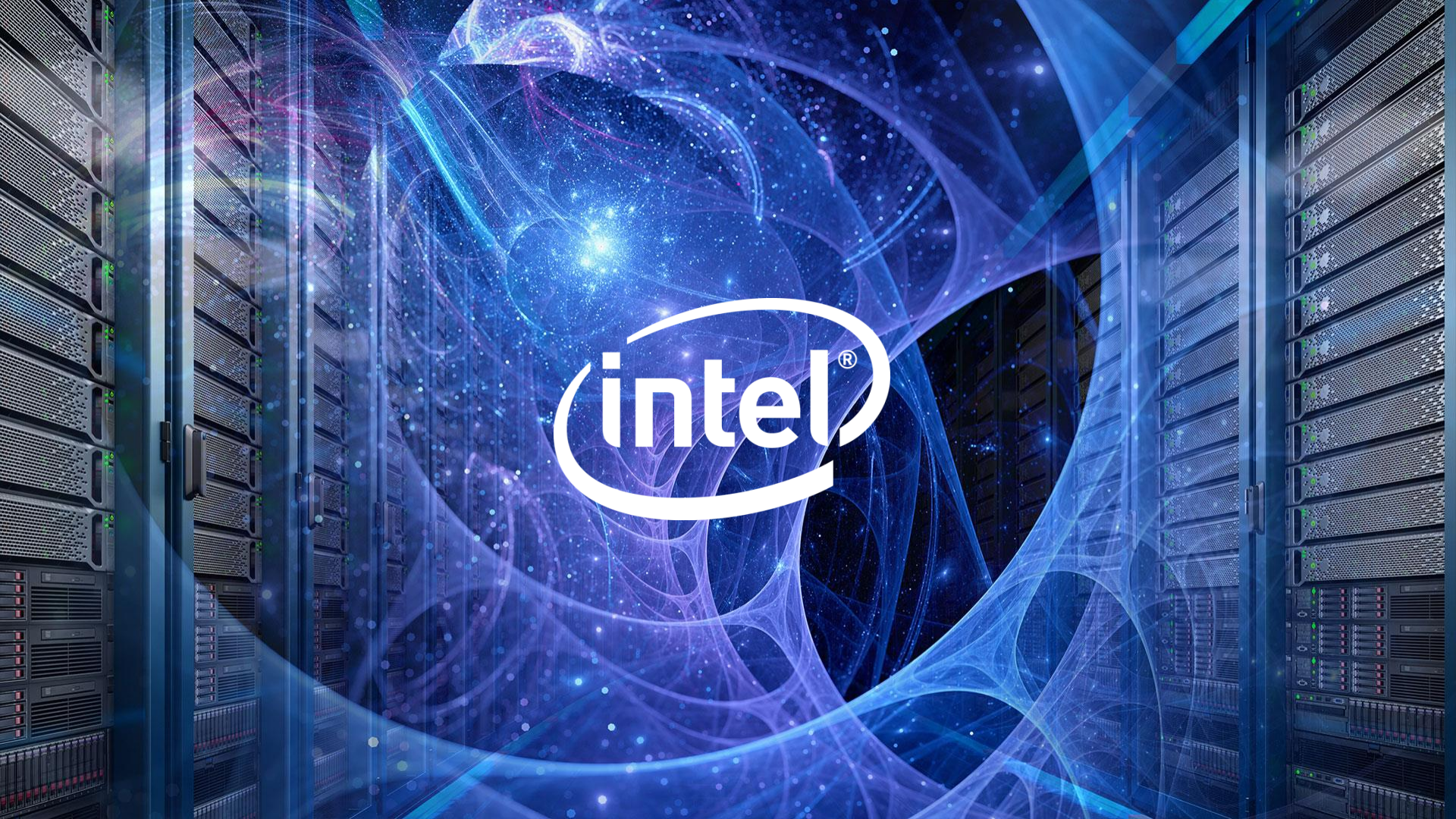
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