

Algo-Logic Systems Demonstrates Scale-Out Machine Learning and Real-time Inference Accelerated by FPGA Key-Value Store at SC17

FPGA Key-Value Store reduces training time and bounds jitter for access to shared data

San Jose, California, November 9, 2017 – Algo-Logic Systems will demonstrate machine learning and real-time inference accelerated by their Key Value Store (KVS) running on a Field Programmable Gate Array (FPGA) at the Super Computing 2017 conference. The application to train and control self-driving cars will be demonstrated at the upcoming conference on November 13th through the 16th, 2017 in Denver, Colorado. In the demonstration, parallel simulations of cars are run and data is shared between computation nodes using Algo-Logic's networked-attached KVS. Simulated sensor input and data from the KVS are used to control real-time inputs to self-driving cars.

The demonstration highlights the capabilities of Algo-Logic's hardware accelerated, in-memory KVS scale-out to support data center applications. Parallel simulations of a Markov model are run and data is shared between computation nodes using Algo-Logic's networked-attached KVS that runs entirely in FPGA logic and interfaces through a software API to standard computation servers.

At the SC17 conference, we will be showing KVS scale-out using multiple interconnected Intel Xeon® compute servers, Intel® FPGAs on Nallatech P385 cards, an Intel i7 display server, and an Ethernet switch. The distributed machine learning application runs parallel simulations for a Markov model on the compute servers and performs inference using real-time data with live results shown on the display server. Algo-Logic's scale-out KVS shares system state results between parallel processing nodes with sub-microsecond latency over standard Ethernet switches to train a car to safely drive and navigate on the highway. Within minutes, the simulated self-driving car is able to use sensor inputs to decide how to change lanes, adjust car speed, and achieve driving skills on par with a human driving experience.



Algo-Logic's FPGA In-memory Key-Value Store deployments dramatically benefits the sharing of data in compute clusters:

- **Lowers Latency:** *Network latency that is 88x faster than a traditional software-based database shard*
- **Increases Throughput (IOPs):** *3x to 13x more operations per second than existing network-attached storage systems*
- **Reduces Power:** *13x to 21x reduction in power per operation leading to lower operating expenditures*
- **Scale-up design:** *Direct connection of FPGA to 10G and 40G Ethernet provides best latency, throughput and power*
- **Scale-out architecture:** *Supports distributed computing within datacenters that have thousands of nodes*

Algo-Logic's KVS solutions add Gateway Define Networking® (GDN) functionality to Intel® Stratix® and Arria® FPGA platforms that come with at least two SFP+ networking interfaces, a QSFP+ port, and/or a PCIe host interface. Other applications of Algo-Logic's scale-out FPGA-accelerated KVS include fusing data from multiple sensors, accelerating NoSQL database queries, filtering IP traffic for cybersecurity, lowering latency for trading, and sharing data in AdTech exchanges. Algo-Logic's GDN products are used by storage companies, network architects, datacenter operators, and cloud services providers to lower latency, increase packet throughput, and lower energy consumption for servers in datacenters.

About Algo-Logic Systems:

Algo-Logic Systems Inc., is the recognized leader of Gateway Defined Networking® products and solutions. Algo-Logic's GDN runs on off-the shelf FPGA platforms. The pre-built applications include software APIs to make them easy to use and deploy.

Price and availability: Email sales@algo-logic.com, call (408) 707-3747 or visit www.algo-logic.com