Habana Labs Achieves First-Pass Silicon Success for High-Performance AI Processor SoC Using DesignWare IP

Silicon-Proven DesignWare IP for PCI Express 4.0 Delivers 16 GT/s Data Transfer Rate to Meet AI Inference Throughput Requirements

MOUNTAIN VIEW, Calif., Jan. 14, 2019 **Highlights:**

- Habana Labs achieved first-pass silicon success for its Goya inference processor SoC using Synopsys' DesignWare Controller and PHY IP for PCI Express 4.0
- DesignWare IP for PCI Express 4.0 in 16-nm FinFET process delivers the required 16 GT/s data rate and all key features needed for the AI application
- The Goya AI processor card and the HL-1000 chip, have been added to the PCI-SIG integrators list for PCI Express 3.0 x16, operating at 8 GT/s, as Add-in Cards and Components lists, respectively

Synopsys, Inc. (Nasdaq: SNPS) today announced that Habana Labs, Ltd. has achieved first-pass silicon success for its Goya™ inference processor system-on-chip (SoC) using DesignWare® Controller and PHY IP Solutions for PCI Express® 4.0. The silicon-proven IP, operating at 16 GT/s data rate and supporting all key features of the PCI Express 4.0 specification, and compliant with PCI Express 3.0, enabled Habana Labs to meet the required real-time data connectivity of their artificial intelligence (AI) SoC. Integrating Synopsys' IP for PCI Express also helped Habana Labs receive PCI-SIG certification with other host systems implementing the PCI Express 3.0 interface. Successful interoperability was also observed with systems operating at 16 GT/s PCI Express 4.0 speeds. The Goya inference processor delivers 15,012 images per second throughput with 1.3 mega-second latency on the ResNet-50 benchmark, while simultaneously attaining power efficiency of 150 images/second/watt. Due to the success of the Goya SoC, Habana Labs has also integrated Synopsys' DesignWare IP for PCI Express 4.0 into the next-generation Gaudi training processor SoC.

"For our fast AI inference processor, we needed a proven PCI Express IP solution that provided the required data throughput and accelerated our time-to-production," said Eitan Medina, chief business officer at Habana Labs. "After an extensive evaluation process, we selected Synopsys' leading 16 GT/s DesignWare IP for PCI Express 4.0 due to its established track record in the industry and advanced features required for the most demanding data-intensive SoCs like the Goya and Gaudi AI processors."

"Today's advanced AI SoCs need to integrate IP solutions that meet a range of specialized processing, memory performance, and real-time data connectivity requirements," said John Koeter, vice president of marketing for IP at Synopsys. "Synopsys provides the industry's broadest IP portfolio to address these specific design challenges, enabling innovative companies like Habana Labs to accelerate the development of their SoCs and differentiate in the fast-moving AI market."

Additional Resources

For more information on DesignWare IP Solutions for PCI Express visit the web page.
For more information on DesignWare IP for artificial intelligence visit the web page.

About DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes logic libraries, embedded memories, embedded test, analog IP, wired and wireless interface IP, security IP, embedded processors, and subsystems. To accelerate prototyping, software development and integration of IP into SoCs, Synopsys' IP Accelerated initiative offers IP prototyping kits, IP software development kits, and IP subsystems. Synopsys' extensive investment in IP quality, comprehensive technical support, and robust IP development methodology enable designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit https://www.synopsys.com/designware.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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