

FutureHorizons



The Global Semiconductor Industry Analysts

Future Horizons Newsletter

January 2020

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Industry News By Company

[Blaize Fires Up GSP for AI Processing](#)

TOKYO — AI processor designer Blaize, formerly known as ThinCI (pronounced “Think-Eye”), revealed its fully programmable Graph Streaming Processor (GSP) will go into volume production in the second quarter of 2020.

While the six-year-old startup is mum on its product specifications — such as power level and benchmarking results — its test chip, taped out in mid-2018 and housed in a Linux-based box, has been engaged in 16 pilot programs worldwide for a year, claimed Blaize co-founder and CEO Dinakar Munagala.

Blaize describes its GSP as capable of performing “direct graph processing, on-chip task-graph management and execution, and task parallelism.” In short, Blaize designed the GSP to fulfill AI processing needs that have been previously unmet by GPU, CPU or DSP.

[Broadcom Ships 25.6Tbps Switch On Single 7nm Chip](#)

The monolithic chip delivers 64 ports of 400GbE switching and routing for hyperscale networks.

As demands for machine learning grow, so does the need for speed, especially for the big hyperscaler companies as they address their own rapid expansion into almost every industry vertical. To meet this requirement, Broadcom has launched what it claims is the highest bandwidth Ethernet switch chip, demonstrating 25.6 terabits/sec switching in a single monolithic device.

Built by TSMC in a 7nm process, the new 31-billion transistor Tomahawk 4 chip delivers up to 64 ports of 400GbE switching and routing for high-throughput, low latency hyperscale networks, at 75 percent lower power and cost compared to alternative solutions, according to Broadcom. It also offers the highest radix of 100GbE ports: 256 ports supported on a single chip, enabling low-latency, single-hop networks for massive alternative compute clusters.

[Toggle MRAM Readies for 5G](#)

TORONTO — Higher density MRAM’s potential as an emerging memory — to replace incumbents such as DRAM and flash — often overshadows where it’s already successfully supplanting established technologies in the form of Toggle MRAM.

For Everspin Technologies, Toggle MRAM’s success is helping to power its ambitions in other product areas, and the company recently announced its new 32-Mb Toggle MRAM, which doubles the capacity of its current solution. It’s designed to enable critical applications that need a higher density option, such as storing configurations, setup and data logging in embedded systems and Internet of things (IoT) devices, as well as anticipating device requirements driven by 5G networking, said Troy Winslow, Everspin vice president of global sales.

Imagination Reignites Relationship With Apple

A year after taking the helm at Imagination Technologies, CEO Ron Black appears to have managed to put an end to a phase of uncertainty for his company by signing a new agreement with Apple.

Apple made a public statement in 2017, notifying that it was ditching Imagination, by designing the UK firm's IP cores out of Apple's products within two years.

That, however, appears to be no longer the case.

Imagination, in a one-line press statement, said today that it has replaced the multi-year, multi-use license agreement with Apple, first announced on February 6, 2014, with a new multi-year license agreement under which Apple has access to a wider range of Imagination's intellectual property in exchange for license fees.

Intel Acquires Habana Labs For \$2bn

Intel has acquired Israeli AI chip startup Habana Labs for approximately \$2 billion.

Habana Labs, whose products are AI training and inference chips for data centers, was one of the first to deliver working AI accelerator silicon and its Goya inference chip performed impressively in the recent round of MLPerf benchmarks. The company is based in Tel Aviv and employs around 150 people in several offices worldwide.

“This acquisition advances our AI strategy, which is to provide customers with solutions to fit every performance need — from the intelligent edge to the data center,” said Navin Shenoy, executive vice president and general manager of the Data Platforms Group at Intel, in a statement. “More specifically, Habana turbo-charges our AI offerings for the data center with a high-performance training processor family and a standards-based programming environment to address evolving AI workloads.”

Lattice Reveals Latest FPGAs On FD-SOI

LONDON – Lattice Semiconductor has launched a new FPGA technology platform for its low-power FPGAs based on 28nm fully depleted silicon-on-insulator (FD-SOI) process technology. The company also announced its first FD-SOI product, CrossLink-NX.

Lattice announced its intention to transition to FD-SOI for new products a couple of years ago, in order to take advantage of the process technology's inherent strengths in power consumption and reliability. The company's Nexus FD-SOI platform continues its focus on small form factor, low power FPGAs, and is optimized for devices with 10-200k logic cells.

“We are using Nexus to enable the development of some FPGA families that provide up to 75% reduction in power compared with competing families, are 100 times more reliable in terms of soft error rate, are able to deliver the smallest form factor. They have some of the performance features that we see people are needing in high performance edge computers,” said Gordon Hands, director of product marketing, Lattice Semiconductor.

Future Horizons Ltd, • Blakes Green Cottage, Stone Street Seal TN15 0LQ • England 4
Tel: +44 1732 740440 • Fax: +44 1732 740442
Affiliates in Europe, India, Israel, Japan, Russian, San Jose California, USA
e-mail: mail@futurehorizons.com • www.futurehorizons.com

Samsung Makes The First 3nm GAAFET Semiconductor!

As reported by the Korean Maeil Economy earlier this week, Samsung has succeeded in making a prototype of the first 3nm process. According to the report, Samsung's goal is to become the world's number one semiconductor manufacturer by 2030.

The 3 nm process is based around the Gate All Around (GAAFET) technology, which is different from the industry standard of FinFET. This change in technology reduces the total silicon size by 35% while taking less 50% less power as well. This allows for a 33% performance increase over the 5 nm FinFET process.

The GAAFET design differs significantly from the FinFET design, and the GAAFET design is built around having four sides of the channel which makes sure that the power leakage is reduced. This improves control over the channel, which is a fundamental step when shrinking the process node. This design allows for a more efficient transistor design paired with the overall smaller node size, which enables a tremendous jump in performance per watt over a 5 nm FinFET process.

Industry News & Trends

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HiSilicon No Longer Huawei's Captive Chipmaker

HiSilicon launched 4G communication chips on an open market, making it official that Huawei's internal IC division is now externally supplying a host of chips to the industry.

While Huawei HiSilicon is the largest chip design company in China, it has always preferred to portray itself as having just one big customer: Huawei.

Huawei's strategy to keep HiSilicon as an internal unit — tasked to design and supply its chips only to Huawei — has worked well for the global telecom giant. Especially, since HiSilicon's Kirin series of chips, capable of AI processing, has given Huawei a huge advantage over competitors.

It turns out, however, that HiSilicon has been quietly spreading its wings, supplying chips in some sub-sectors, a move Huawei and HiSilicon had not acknowledged before.

AWS Rolls Out AI Inference Chip

Amazon makes Inferentia chip available for customer machine-learning workloads.

A year after announcing its in-house designed AI accelerator chip, Amazon Web Services (AWS) is making instances based on its Inferentia chip available for customer workloads.

AWS' customers across a diverse set of industries are moving beyond the experimental stage with machine learning, and are now scaling up ML workloads. They are therefore ready for the increase in performance and efficiency Inferentia will bring, the company said.

Andy Jassy, CEO of AWS, pointed out in his keynote at AWS' Re:Invent conference last week that for machine learning systems at scale, 80-90% of the compute cost is in inference.

Future Horizons Ltd, • Blakes Green Cottage, Stone Street Seal TN15 0LQ • England 6
Tel: +44 1732 740440 • Fax: +44 1732 740442
Affiliates in Europe, India, Israel, Japan, Russian, San Jose California, USA
e-mail: mail@futurehorizons.com • www.futurehorizons.com

“We’ve talked a lot as a group about training for machine learning, it gets a lot of the attention. They are hefty loads,” he said. “But if you do a lot of machine learning at scale, and in production like we have, you know that the majority of your cost is actually in the predictions or in the inference.

Xiaomi Redmi K30 First To Use Fingerprints’ Side-mounted Sensor

First to develop fingerprint touch sensors on Android, Fingerprint Cards AB (Fingerprints) announces slim side-mounted fingerprint sensors for borderless and foldable smartphones.

After weeks of teasing and speculation, Chinese smartphone manufacturer Xiaomi Corp. unveiled Tuesday the much-awaited successor to Redmi K20, the Redmi K30 5G smartphone. It is the first one to integrate Fingerprints’ new biometric sensor.

Swedish firm Fingerprint Cards AB (Fingerprints) has just rolled out the FPC1540 slim side-mounted capacitive touch sensor for biometric authentication. Placed on the side of Xiaomi’s Redmi K30 smartphone inside the power button, the sensor is also suitable for the latest smartphone designs, including borderless and foldable phones.

OmniVision Cuts LED Flicker In HDR

The company will start sampling its new 8.3 megapixel automotive image sensors capable of mitigating LED flicker in the first quarter of 2020.

A vast number of things could blind a driver on the road. When exiting a tunnel with the sun low on the horizon, the sudden transition from dark to very bright can be dazzling. A machine vision unit fitted into a highly autonomous vehicle (Level 3+ or above) would struggle in the same situation. But it would also struggle in circumstances that humans can handle just fine, too. One of those is dealing with LED flickering.

Designed to pulse to control brightness and power, LEDs flicker because they are not always on.

Celine Baron, OmniVision’s staff automotive product manager, noted during an interview with EE Times that LEDs are everywhere, ranging from headlamps and traffic lights to road signs, billboards and bus displays. Given their ubiquity, it’s hard to avoid LED flickering. It can be distracting enough to human eyes, but it could be fatal to an AVs’ machine vision. Human vision can compensate for flickering. AV machine vision can’t.

Ultrasound Sensor Turns Any Surface Into A Touch Button

Whatever the material, whatever the material thickness, the California-based startup UltraSense Systems claims it can turn any surface into a user interface.

What if any surface — home door, car dashboard, oven glass — could be turned into a user interface? Mechanical buttons would disappear, and electronic devices would be waterproof. That’s the ambition of UltraSense Systems, Inc., a newly-formed company whose ultrasound sensor technology aims to create new touch experiences in the internet of things era.

Future Horizons Ltd, • Blakes Green Cottage, Stone Street Seal TN15 0LQ • England 7
Tel: +44 1732 740440 • Fax: +44 1732 740442
Affiliates in Europe, India, Israel, Japan, Russian, San Jose California, USA
e-mail: mail@futurehorizons.com • www.futurehorizons.com

UltraSense Systems (San Jose, Calif.) introduced what it claims is the smallest ultrasound sensor-on-chip for touch and gestures through any material and any material thickness. Dubbed TouchPoint and TouchPoint Z, its initial products are sampling now and are expected to be incorporated into several consumer and industrial devices in 2020.

East European News & Trends

WeWork To Help Russian Start-ups

WeWork, the world's largest co-working network, will be helping Russian start-ups through a new regional division of its global WeWork Labs start-up development program.

A new acceleration program may bring together as many as 40 Russian start-up companies.

“In our labs in Israel and the UK, start-ups line up for our acceleration programs, and we hope such a program in Russia will match those in success. Labs is a winning business project for us because companies grow with our help and remain our residents when they stop being a tiny team of three people and become a real company with offices in several countries,” said Mikhail Konoplev who runs WeWork Central and Eastern Europe.

Mobile Operator Bets On 5G Tech

By the end of next year MTS, one of Russia's leading mobile operators, has plans to invest an estimated \$1.6m in start-ups that develop 5G tech based solutions. A business incubator is being set up in Moscow to pursue the goal.

The mobile operator is interested in a range of cloud based services in remote gaming, new video streaming formats, Internet of Things solutions, data storage, and some others.

Mail.Ru Group About To Launch Russian Competitor To YouTube

In 2020, Mail.Ru Group, one of Russia's largest IT holding companies, wants to launch its proprietary video service. According to CEO Boris Dobrodeev, Mail.Ru's video hosting will be geared mostly towards the users' personal preferences.

“We have traditionally proceeded on the assumption that it's social services that give the most value; the user himself chooses what to subscribe to. But we are beginning to see that new niche markets are opening up for content that is not tied directly to subscriptions or the user's friends. Yes, YouTube offers subscriptions, but they are bought primarily through recommendations the service itself generates,” Mr. Dobrodeev said.

Russian VCs Invest In 3D Visualization

Leta Capital, a Russian VC fund, invested \$500,000 in its portfolio company called Unigine. The young company is developing a high-capacity 3D visualization platform that can operate in real time, Firma.ru reported.

Unigine is said to have plans to use the investment in its international expansion strategy.

Unigine's technology has already been quite welcomed across Asia, as well as in some European countries, in Australia, and in Russia

U.S. Company Buys AI Start-Up With Russian Roots

Snap, Inc., a U.S. company that owns a globally recognized messaging app called Snapchat, acquired AI Factory, a start-up of Russian origin, in a \$166m deal, Firrma.ru reported.

Set up in 2018 by alumni of three major Russian technology universities including MIPT (aka Phystech in Moscow), ITMO (St. Pete) and St. Petersburg State University, AI Factory has developed among other things what's known as Cameo functionality, which can turn one's selfie into a short video with a variety of effects and stickers that can be added.

World Economic Round Up

After a year that involved one of the biggest U-turns in recent monetary-policy history, central banks are now hoping for peace and quiet in 2020. This is particularly true for the European Central Bank (ECB) and the US Federal Reserve, the world's two most powerful monetary institutions. But the realization of peace and quiet is increasingly out of their direct control; and their hopes would easily be dashed if markets were to succumb to any number of medium-term uncertainties, many of which extend well beyond economics and finance to the realms of geopolitics, institutions, and domestic social and political conditions.

The latest economic news by country to include USA, Europe, UK, Japan, China, Asia Pacific and India can be found each month in our [Semiconductor Monthly Report](#).

Industry Events 2020

Future Horizons Events

- [Silicon Chip Industry Training Seminar](#) – London – 16th March 2020
- [Industry Forecast Briefing](#), London – 15th September 2020

To book your place on any of our events please contact us on:

Telephone: +44 1732 740440

Email: mail@futurehorizons.com

[Download Future Horizons Full Events Calendar Here](#)

Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP

MONDAY 16th March 2020

AND

INDUSTRY FORECAST BRIEFING

TUESDAY 15th January 2020

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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Future Horizons Ltd, • Blakes Green Cottage, Stone Street Seal TN15 0LQ • England 12

Tel: +44 1732 740440 • Fax: +44 1732 740442

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e-mail: mail@futurehorizons.com • www.futurehorizons.com