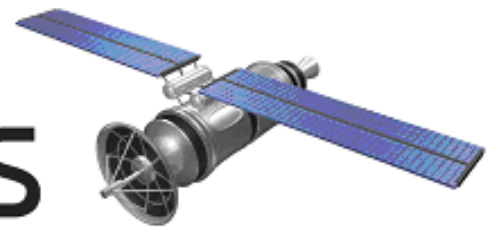


# FutureHorizons



The Global Semiconductor Industry Analysts

## FH MONDAY

19 April 2021

### Startup Transforms Compute-In-Memory

At the TinyML Summit, early-stage analog AI accelerator startup Areanna presented the first public reveal of its architecture, disclosing some of the features of its 40 TOPS/W SRAM array-based design.

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### Ice Lake Launch: First Data Center CPU From Intel's Delayed 10nm Process

Intel has finally launched Ice Lake Xeon CPUs, its first data center CPU family to be built on the integrated device manufacturer's (IDM) delayed 10nm process technology. Ice Lake, which is the second family of third-generation Xeon Scalable parts, promises a 46% performance increase on common data center workloads, compared to second-generation parts, Intel said.

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### New Arm architecture brings enhanced security and AI to IoT

It has been nearly a decade since Arm introduced a new architecture, but growth of the IoT and the movement of artificial intelligence (AI) to these edge devices are trends the company has clearly been tracking. Arm has just introduced a processor architecture that aims to meet the growing need for both enhanced security and AI functionality at the edge.

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### TALK TO US



### Piezo MEMS Market Heats Up

The MEMS sensor market continues to heat up as well-known investors target emerging piezoelectric technology being incorporated into consumer devices such as microphones used in home virtual assistants.

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### EVENTS

#### [Silicon Chip Industry Seminar](#)

-November 2021- London UK

#### [Industry Forecast Briefing](#)

- Sept 2021- London UK

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### Knowles MEMS Microphones Amplify In-Car Audio

Sensors such as MEMS microphones have become critical enablers of human-machine interactions in cars. Illinois-based Knowles announced it is sampling two MEMS microphones to support the growing demand of the automotive market for hands-free calling, advanced voice assistance, and in-cabin noise cancellation.

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## **Startup Transforms Compute-In-Memory**

At the TinyML Summit, early-stage analog AI accelerator startup Areanna presented the first public reveal of its architecture, disclosing some of the features of its 40 TOPS/W SRAM array-based design. The unusual design integrates analog-to-digital and digital-to-analog conversion within the memory array. Since ADCs and DACs typically take up the vast majority of silicon area and power budget for compute-in-memory designs, integrating this functionality within the memory array could be a game changer for analog compute technology.

Areanna is led by former Tektronix analog design engineer Behdad Youssefi alongside another ex-Tek colleague, Patrick Satarzadeh. They remain the company's only two full-time employees, alongside a couple of part time engineers and several advisors. The company has achieved a test chip with one computing tile based on its architecture up and running.

## **Ice Lake Launch: First Data Center CPU From Intel's Delayed 10nm Process**

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Ice Lake was announced at CES in January 2019. At that time, availability was scheduled for 2020. Production delays due to a difficult transition from 14nm to 10nm account for this delay, though Intel will be hoping this new device family puts any doubts about the new 10nm process to bed.

## **New Arm Architecture Brings Enhanced Security And AI To Iot**

It has been nearly a decade since Arm introduced a new architecture, but growth of the IoT and the movement of artificial intelligence (AI) to these edge devices are trends the company has clearly been tracking. Arm has just introduced a processor architecture that aims to meet the growing need for both enhanced security and AI functionality at the edge.

The Armv9 architecture launched at the end of March, with the aim of enhancing AI processing in IoT devices. The need seems clear: the company estimates that 90% of new IoT applications will contain some kind of AI element. Among the applications expected to require AI are voice processing for device control, vision processing for industrial automation and consumer systems, and machine learning for robotics, autonomous mobile devices, and smart sensors. AI is also providing developers with an alternative to custom programming when adapting their device designs to specific use cases.

## **Piezo MEMS Market Heats Up**

The MEMS sensor market continues to heat up as well-known investors target emerging piezoelectric technology being incorporated into consumer devices such as microphones used in home virtual assistants.

Case in point, piezoelectric MEMS sensor vendor Vesper Technologies Inc. closed an \$8 million funding round this week led by the venture arm of Applied Materials Inc. Amazon Alexa Fund and Bose Ventures are among other investors in Vesper, which is transitioning microphone production from capacitive to piezoelectric MEMS architectures.

The Boston-based MEMS designer has so far raised \$65 million, and said it would use Applied Material's financing to scale production of its piezoelectric technology to meet growing demand for ever-smaller microphones. Vesper said it expects to scale production to ship billions of MEMS-based devices.

## **Knowles MEMS Microphones Amplify In-Car Audio**

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Knowles has expanded its SiSonic MEMS microphone series with the introduction of the SPH1878 and SPH9855 to provide carmakers with additional capabilities to develop enhanced voice call quality and in-cabin audio features.

More than 16 million premium automotive audio systems will be shipped by 2025, according to SAR Insight & Consulting's latest report on the topic, "In-Car Audio Distribution: The Connection Between Audio and Vehicle Brands." In a recent discussion with EE Times Europe, Dennis Goldenson, director of artificial intelligence and machine learning at SAR Insight & Consulting, assessed that close to one-fifth of new vehicles produced globally now include a premium audio system. "With over 50 million mid-range and luxury vehicles being produced annually in 2020, growing to 70 million by 2025, we can expect to see a growing trend in the advancement of network-enabled