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Accenture, Airbus, GE and Hitachi Join Intel Neuromorphic Research Community

SANTA CLARA, Calif.--(BUSINESS WIRE)-- **What's New:** Today, Intel announced the first corporate members – Accenture, Airbus, GE and Hitachi – to join the fast-growing Intel Neuromorphic Research Community (INRC). The INRC has tripled in size over the past year and now has more than 75 organizations, spanning leading universities around the world, government labs, neuromorphic startup companies, and now several Fortune Global 500 members.

This press release features multimedia. View the full release here: https://www.businesswire.com/news/home/20191118005132/en/

Members of the Intel Neuromorphic Research Community share research progress and results at the group's October 2019 fall workshop in Graz, Austria. (Credit: Intel Corporation)

"Our collaborators around the world have made great progress on pioneering the basic tools, algorithms and methods needed to make Intel's neuromorphic technology useful. We are now encouraging commercially oriented groups to join the community, and we are thrilled to welcome our first large corporate members to help push the technology forward. These groups bring important perspectives, ideas and challenges that can help advance the research from lab bench to real-world applications."
–Mike Davies, director of Intel's Neuromorphic Computing Lab

Why It's Important: While neuromorphic computing is still in its infancy, the technology is gaining momentum, driven forward by companies large and small around the globe. If all technical challenges are solved in the next few years, analysts forecast the neuromorphic computing market could rise from $69 million in 2024 to $5 billion in 2029 – and $21.3 billion in 2034[1].

Intel's Role: Intel created the INRC – bringing together leading researchers from academia, industry and government – to collaboratively tackle the challenges facing the field of neuromorphic computing. The addition of the first Fortune Global 500 members reflects a growing commercial interest in the technology, as well as the advancing maturity of the field for solving artificial intelligence (AI) problems that are not well suited to conventional deep learning methods. By mimicking the adaptive behavior of natural neural networks, neuromorphic technology promises to provide great gains in computing performance and energy efficiency for demanding applications, ranging from robotics to smart manufacturing to brain-computer interfaces.

Accenture, Airbus, GE and Hitachi are joining forces with Intel and other INRC members to create proof-of-concept applications that will bring the most value to their businesses. Intel will leverage the insights that come from this customer-centric research to inform the designs of future processors and systems. These engagements will ensure Intel remains strategically positioned at the forefront of neuromorphic technology commercialization.

What New Members are Researching:

- **Accenture:** Working with 92 of the Fortune Global 100, Accenture provides services and solutions in strategy, consulting, digital, technology and operations to help clients shape their visions for the future. At the heart of this work are Accenture Labs' applied R&D technologists, who deliver breakthrough ideas and technologies that generate new sources of competitive advantage and drive strategic impact for both Accenture and its clients.

  Accenture Labs is exploring how the Intel Loihi neuromorphic processor can help enterprises prepare for a future that will require specialized computing and heterogeneous hardware to maximize computing power for workload-intensive operations – from smart vehicle interaction to distributed infrastructure monitoring to speech recognition.

  "As artificial intelligence continues to permeate our world, neuromorphic computing has the potential to transform computing infrastructures to harness its potential in new ways," said Edy Liongosari, chief research scientist at Accenture Labs. "As one of the first commercial research labs working with neuromorphic processors, Accenture Labs is exploring how neuromorphic computing can re-envision how systems learn and behave – to ultimately advance the way we live and work."

- **Airbus:** While Airbus is most well-known as a global leader in aerospace manufacturing, today cybersecurity forms a large and important part of its internal activity and market portfolio. Collaborating with Cardiff University, Airbus is exploring how Intel's Loihi neuromorphic processor can advance existing in-house developed automated malware detection technology. The company expects the addition of Loihi's real-time learning and scaling capabilities will enable both faster and more accurate malware detection, a time-critical problem. This will significantly aid the fight against ransomware, while at the same time operating at a low-power level that is well-suited for constant monitoring.

  "In the rapidly evolving sphere of cybersecurity, AI, machine learning and automation

will all be vital to protect and improve the resilience of critical systems and infrastructure. Airbus, in partnership with Cardiff University, is proud to be leading the way on research for AI-based cyber-attack detection and processing," said Dr. Kevin Jones, global chief information security officer at Airbus.

- **GE:** As GE works to create new value across its industrial products and services portfolio, the company is exploring how it can utilize the energy efficiency and novel learning approaches of Intel's Loihi neuromorphic processor to improve industrial operations.

  As part of this endeavor, GE will research how neuromorphic hardware can bring robust online learning to the edge of the industrial network to enable adaptive controls, autonomous inspection and unlock new capabilities such as real-time inline compression, which would improve data storage utilization and reduce the overall cost of operation.

  "Intel's Loihi neuromorphic processors have enormous potential to deliver new capabilities in AI and Edge computing," said Joel Markham, chief engineer of the Edge Computing Lab at GE Research. "The flexibility in programming, ready access to the cloud-based resources and connections to a robust third-party neuromorphic computing ecosystem are all key factors industrial companies like GE require to transform complex industrial systems and networks."

- **Hitachi:** Hitachi is unique in the way it combines information technologies (IT) including AI, big data analytics and other digital technologies; operational technologies (OT) for system control and operation; and an extensive range of products. Through its Social Innovation Business, Hitachi is providing digital solutions to help resolve challenges faced by customers and society.

  "Intel's Loihi and Spiking Neural Networks have the potential to recognize and understand the time series data of many high-resolution cameras and sensors quickly," said Norikatsu Takaura, chief researcher of the Research & Development Group at Hitachi Ltd. "Neuromorphic computing and its technology stack will improve the scalability and flexibility of edge computing systems."

How the INRC Has Grown: Launched in 2018, the INRC is dedicated to developing and accelerating the capabilities of neuromorphic computing across commercial and academic environments. The community now comprises more than 75 groups from 17 countries, which is a three-times increase since last year.

More Information: Researchers interested in participating in the INRC and developing for Loihi can visit the Intel Neuromorphic Research Community website. A list of current members can also be found at the site.

More Context: Intel Labs (Press Kit) | How Neuromorphic Computing Uses the Human Brain as a Model (YouTube Video)

About Intel

Intel (NASDAQ: INTC), a leader in the semiconductor industry, is shaping the data-centric

future with computing and communications technology that is the foundation of the world's innovations. The company's engineering expertise is helping address the world's greatest challenges as well as helping secure, power and connect billions of devices and the infrastructure of the smart, connected world – from the cloud to the network to the edge and everything in between. Find more information about Intel at newsroom.intel.com and intel.com.

[1] I-Micronews: "Neuromorphic Sensing and Computing 2019," September 2019.

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Alexa Korkos
415-706-5783
alexa.korkos@intel.com

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