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Computing-in-Memory Innovator Solves Speech Processing Challenges at the Edge Using Microchip's Analog Embedded SuperFlash® Technology

SuperFlash memBrain™ memory solution enables WITINMEN's System on Chip (SoC) to meet the most demanding neural processing cost, power, and performance requirements

CHANDLER, Ariz., Feb. 28, 2022 (GLOBE NEWSWIRE) -- Computing-in-memory technology is poised to eliminate the massive data communications bottlenecks otherwise associated with performing artificial intelligence (AI) speech processing at the network's edge but requires an embedded memory solution that simultaneously performs neural network computation and stores weights. Microchip Technology Inc. **(Nasdaq: MCHP)**, via its **Silicon Storage Technology (SST)** subsidiary, today announced that its SuperFlash® memBrain™ neuromorphic memory solution has solved this problem for the WITINMEM neural processing SoC, the first in volume production that enables sub-mA systems to reduce speech noise and recognize hundreds of command words, in real time and immediately after power-up.

Microchip has worked with WITINMEM to incorporate Microchip's memBrain analog in-memory computing solution, based on SuperFlash technology, into WITINMEM's ultra-low-power SoC. The SoC features computing-in-memory technology for neural networks processing including speech recognition, voice-print recognition, deep speech noise reduction, scene detection, and health status monitoring. WITINMEM, in turn, is working with multiple customers to bring products to market during 2022 based on this SoC.

"WITINMEM is breaking new ground with Microchip's memBrain solution for addressing the compute-intensive requirements of real-time AI speech at the network edge based on advanced neural network models," said Shaodi Wang, CEO of WITINMEM. "We were the first to develop a computing-in-memory chip for audio in 2019, and now we have achieved another milestone with volume production of this technology in our ultra-low-power neural processing SoC that streamlines and improves speech processing performance in intelligent voice and health products."

"We are excited to have WITINMEM as our lead customer and applaud the company for entering the expanding AI edge processing market with a superior product using our technology," said Mark Reiten, vice president of the license division at SST. "The WITINMEM SoC showcases the value of using memBrain technology to create a single-chip solution based on a computing-in-memory neural processor that eliminates the problems of traditional processors that use digital DSP and SRAM/DRAM-based approaches for storing and executing machine learning models."

Microchip's memBrain neuromorphic memory product is optimized to perform vector matrix multiplication (VMM) for neural networks. It enables processors used in battery-powered and deeply-embedded edge devices to deliver the highest possible AI inference performance per watt. This is accomplished by both storing the neural model weights as values in the memory array and using the memory array as the neural compute element. The result is 10 to 20 times lower power consumption than alternative approaches along with lower overall processor Bill of Materials (BOM) costs because external DRAM and NOR are not required.

Permanently storing neural models inside the memBrain solution's processing element also supports instant-on functionality for real-time neural network processing. WITINMEM has leveraged SuperFlash technology's floating gate cells' nonvolatility to power down its computing-in-memory macros during the idle state to further reduce leakage power in demanding IoT use cases.

For information contact **info@sst.com** or visit the **SST website**.

Resources

- Application Image: **www.flickr.com/photos/microchiptechnology/51896023551/sizes/l/**

About Silicon Storage Technology (SST)
Microchip Technology's SST subsidiary is a leading provider of embedded flash technology. SST develops, designs, licenses and markets a diversified range of proprietary and patented SuperFlash memory technology solutions for the consumer, industrial, automotive and Internet of Things (IoT) markets. SST was founded in 1989, went public in 1995 and was acquired by Microchip in April 2010. SST is now a wholly owned subsidiary of Microchip, and is headquartered in San Jose, Calif. For more information, visit the SST website at **www.sst.com**.

About Microchip Technology
Microchip Technology Inc. is a leading provider of smart, connected and secure embedded control solutions**.** Its easy-to-use development tools and comprehensive product portfolio enable customers to create optimal designs which reduce risk while lowering total system cost and time to market. The company's solutions serve more than 120,000 customers across the industrial, automotive, consumer, aerospace and defense, communications and computing markets. Headquartered in Chandler, Arizona, Microchip offers outstanding technical support along with dependable delivery and quality. For more information, visit the Microchip website at **www.microchip.com**.

About WITINMEM (Zhicun)
WITINMEM (Zhicun) technology Co. Ltd. is a leading provider of computing-in-memory chips and system solutions. WITINMEM designs computing-in-memory technology for high-efficient AI computation. Its SoC chips and development toolkit help customers to develop low-power AI system. Headquartered in Beijing, China. For more information, please visit the WITINMEM website at **www.witintech.com.**

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