

Weebit Nano and the Technion collaborate on 'Real Processing in Memory' project using SiOx ReRAM

11 February 2019 – Weebit Nano (ASX: WBT), the Israel-based semiconductor company seeking to develop and commercialise the next generation of memory technology, and the Technion (Israel Institute of Technology) agreed to examine the possible use of ReRAM memories in a novel computing architecture that could speed up processing, memory transfer rate and memory bandwidth, and decrease processing latency – while using much less power.

Weebit Nano and a team at the Technion, led by Professor Shahar Kvatinsky, a pioneer in the field of circuits and architectures with emerging memory technologies and design of energy efficient architectures, will perform characterisation and implementation of logic operations using Weebit's SiOx ReRAM test chips, demonstrating basic logic operations on a ReRAM array using the Technion's MAGIC (Memristor Aided Logic) technique implementing 'Real Processing in Memory', or Real PIM.

Although ReRAM technology is targeted for next generation memory devices, there is a huge potential for ReRAM to be used as logic circuits to revolutionise current computing architectures. Traditional computing architectures ('von Neumann' architectures) have a clear distinction between processing and memory. The memory component and the central processing unit (CPUs) are separate devices, with the memory serving only as 'dumb' storage from which the CPU reads and writes. These 'read' and 'write' transactions require significant amounts of time and energy, increasing the power consumption of the chip and being relatively slow.

However, Real PIM uses ReRAM elements as 'logic gates', allowing the computer to perform logical operations *inside* the memory on the same devices that store data, that is, the computer can perform computation inside the ReRAM arrays rather than in the CPU. This is much faster and uses up to 1,000-times less power by avoiding the need to export and import data between the memory chip and CPU.

Prof. Shahar Kvatinsky, said: "We, at the Technion, have been investigating Real Processing-in-Memory for several years. Our MAGIC technique utilises the unique characteristics of emerging memories such as ReRAM where the same cells can be used for both memory and logic. We are very proud to co-operate with Weebit, a leader in the ReRAM domain, on this research and to use their test chips as the basis for the research."

Coby Hanoch, CEO of Weebit Nano, said: "Weebit is constantly looking for opportunities to utilise our ReRAM in the most advanced and innovative fields. We believe that ReRAM, in addition to being the next generation memory element, will also be a part of the computing revolution enabling novel architectures mixing logic and memory to allow significantly power efficient Real Processing-In-



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Memory computing. We believe that by collaborating on this with the Technion, one of the leading research institutes in this domain, we can better prepare for yet another use for our unique SiOx ReRAM technology.”

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About Weebit Nano Limited

Weebit Nano is a leader in the development of next generation computer memory technology, and plans to become the new industry standard in this space. Its goal is to address the growing need for a significantly higher performance and lower power computer memory technology. Weebit Nano’s ReRAM technology is based on fab-friendly Silicon Oxide, allowing the company to rapidly execute, without the need for special equipment or preparations. The company secured several patents to ensure optimal commercial and legal protection for its ground-breaking technology.

Weebit Nano’s technology enables a quantum leap, allowing semiconductor memory elements to be significantly cheaper, faster, more reliable and more energy efficient than the existing Flash technology. Weebit Nano has signed an R&D agreement with Leti, an R&D institute that specialises in nanotechnologies, to further develop SiOx ReRAM technology.

For more information please visit: <http://www.weebit-nano.com/>



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