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Blueshift Memory announces successful development of computer vision AI accelerator chip

Groundbreaking CV AI accelerator design announced at Flash Memory Summit could be game changer for real-time threat detection

Cambridge, UK and Santa Clara, CA — 8 August 2023 — Blueshift Memory, designer of a novel proprietary high-speed memory architecture, has announced the successful completion of a 13-month R&D project to demonstrate the performance of its Cambridge Architecture™, which was funded by an Innovate UK Smart grant. Blueshift Memory is also showcasing at Flash Memory Summit the chip it has designed during the project, which is an accelerator solution for computer vision (CV) AI-enhanced image recognition.

A paper will be presented at the Summit, describing the development of the RISC-V-based chip, and reporting the achievement of acceleration by a factor of 16 to 128 times for processing image data, along with ultra-low power consumption.

When used in a security camera monitoring a rapidly-evolving active shooter situation, for example, the chip can enable real-time identification of different types of firearms to automatically trigger an alarm. This capability could be a game changer and could potentially save many lives.

The Cambridge Architecture has been developed to address the Von Neumann Bottleneck – the phenomenon that data transfer between the core and the memory has become the limiting factor in computational speed. As computing tasks grow more data-hungry, it overcomes a growing obstacle to computational efficiency, and it also offers huge energy savings by eliminating unnecessary movement of data.

“This is the first time that Blueshift Memory’s technology has been demonstrated in a real-life application, and the results are extremely promising,” said Peter Marosan, CTO and founder of Blueshift Memory. “We know that in more challenging, data-intensive use cases like servers for high-frequency trading, the Cambridge Architecture is capable of even higher levels of acceleration, up to 1000x or more, and this is the first step towards us reaching that market. This high performance will also be accompanied by dramatic energy savings, since moving large amounts of data around unnecessarily makes excessive demands on energy consumption.”

Recog.AI, based in Budapest, Hungary, will act as a distributor for the chips and accelerator modules, which it plans to use both in CCTV cameras and in the cloud.

“Recog.AI can set up a cloud-based Computer Vision as a Service (CVaaS) solution for its clients, powered by Blueshift Memory cloud inference cards," said Máté Hegedűs, CEO of Recog.AI. “The chip will offer the users considerable benefits such as faster processing, lower latency, and improved

energy efficiency. Alternatively, by using the solution as a standalone chip we can offer enhanced real-time image and video analysis capabilities on the edge, and integrate these devices into our own computer vision platform."

Blueshift Memory is exhibiting on Booth 757 at the Flash Memory Summit in Santa Clara, 8 – 10 August 2023. Sarmad Adeel, senior embedded design engineer at Blueshift Memory, will present a paper entitled, 'Novel memory-efficient computer architecture integration in RISC-V with CXL' in Session SARC-302-1 at 09:45 on Thursday 10 August.

Editorial contact details:

Helen Duncan, Marketing and Communications Manager, Blueshift Memory Ltd
Tel: +44 (0)7765 250610 Email: helen.duncan@blueshiftmemory.com

About Blueshift Memory

Blueshift Memory's proprietary chip design optimizes the memory architecture for more efficient handling of large data sets and time-critical data, enabling up to 1,000 times faster memory access for specific data-focused applications. These include high performance computing, artificial intelligence (AI), machine vision for augmented and virtual reality (AR/VR), 5G edge connectivity and the Internet of Things (IoT). The focus of Blueshift Memory's technology is the *Cambridge Architecture*™, the next-generation technology for stored-program machines, designed to replace the currently-used modified Harvard architecture and to overcome the traditional constraints of the von Neumann bottleneck. For more information see www.blueshiftmemory.com.