



## **Emza and Alif Demonstrate Fast, Ultra-Efficient Object Detection for Tiny AI Edge Devices**

*Emza's optimized face detection model runs an order of magnitude faster  
on Alif silicon with Arm Ethos-U55 microNPU versus CPU-only solution*

**Giv'atayim, ISRAEL – May 16, 2022** – [Emza Visual Sense](#), a pioneer in Tiny AI visual sensing, is joining with [Alif Semiconductor](#) to show how the combination of powerful, highly efficient Arm®-based hardware and optimized models can make AI a reality at the edge. The companies are demonstrating Emza's trained face detection model running on Alif's Ensemble™ microcontroller (MCU), the first MCU featuring the Arm Ethos™-U55 microNPU. The Emza model runs an order of magnitude faster on the Ensemble device with Ethos-U55 compared to a CPU-only solution, with extremely low power consumption\*.

The combination of AI/ML frameworks, models, neural networking processors (NPUs) and silicon that are all optimized for edge AI solutions means it's now possible to support complex AI inference capabilities such as eye tracking and facial identification in low-power, low-cost devices. This creates an opportunity for creation of new applications and use cases across industrial IoT devices, consumer appliances, and numerous other segments.

"To unleash the potential of endpoint AI, we need to make it easier for IoT developers to access higher performance, less complex development flows and optimized ML models," said Mohamed Awad, vice president of IoT and Embedded at Arm. "Alif's MCU is helping redefine what is possible at the smallest endpoints and Emza's contribution of optimized models to the Arm AI open-source repository will accelerate edge AI development."

Emza trained a sophisticated, full implementation of a face detection model on the Arm Ethos-U55 microNPU and is the first Arm AI ecosystem partner to contribute a complete application code ML example to Arm's ML Embedded Eval Kit repository. Companies can use it to gauge runtime, CPU demands, memory allocation and other requirements even before silicon is available.

"Emza's powerful visual sensing technology is already shipping in millions of products, and we're excited to bring our optimized algorithms to the wider universe of SoC vendors and OEMs," said Yoram Zylberberg, CEO, Emza. "As we look at the dramatically expanding horizon for TinyML edge devices, Emza is focused on enabling new applications across a broad array of markets. There is virtually no limit to the types of visual sensing use cases that can be supported by new powerful, highly efficient hardware."

"In creating low-power, always-sensing IoT devices with AI/ML capability, it's clear that we need to take every opportunity for optimization, including innovations in MCU design," said Reza Kazerounian, President & Co-Founder, Alif Semiconductor. "Our Ensemble devices leverage one of the latest generation processor cores and neural network accelerators from Arm in highly scalable configurations.

On top of that, we layer Alif's unique technologies, low-power design techniques, deep embedded security, and a high level of functional integration – all resulting in extremely capable, secure devices with low power consumption and long battery life. We're delighted to work with Arm and Emza to showcase the capabilities of these devices and empower the next generation of edge AI applications."

### **Upcoming Tech Talk to Provide more Information**

The companies will present a tech talk, "Object Detection with Arm Ethos-U55 – from Virtual Platform to Silicon Deployment," on Tuesday, May 17 at 4pm BST. Alif representatives will present the Ensemble product line, and Emza representatives will walk through creation of a model for face detection, yaw face angle estimation and facial landmarks – including training, running the model on the Arm Fixed Virtual Platform (FVP), and porting the model to Alif's Ensemble MCU. Register [here](#).

### **Availability**

The full face detection project example for the Arm Ethos-U55 is available now:

<https://tinyurl.com/yx6cnxyp>.

Other Emza object detection models are also available: <https://github.com/emza-vs>.

The Arm Ethos-U55 microNPU is available now:

<https://www.arm.com/products/silicon-ip-cpu/ethos/ethos-u55>.

The Ensemble family of devices is sampling now from Alif: <https://alifsemi.com/ensemble>.

*\* A face detection neural network model (a light version of Single Shot Detector), that extracts a face bounding box and face yaw angle, executes on the Alif silicon with high-performance Ethos U55 core in 4ms, compared with 394ms executing on silicon with an M55 CPU only (at 400 MHz). On the HE (high efficiency) power-optimized Ethos U55 core, the model executes in 11ms.*

### **About Emza Visual Sense**

Emza Visual Sense is a pioneer in ultra-low power edge AI devices. The company provides solutions including hardware, software, algorithms and IP to semiconductor companies and OEMs bringing AI capability to tiny, power- and cost-constrained edge devices. As compute power increases and silicon costs decline, the market for these tiny edge AI devices is rapidly expanding across a broad array of segments such as consumer, industrial, automotive and smart cities.

Emza's WiseEye ultra-low power vision AI systems – combining the company's innovative computer vision and ML algorithms, CMOS imaging sensor and tiny AI system on chip (SoC) – are shipping today in popular consumer products. As the industry's first vendor to widely deploy an ultra-low power edge AI device, Emza is uniquely positioned to help customers make their tiny edge AI vision a reality. Emza is wholly owned by Himax Technologies Inc. Visit us at: [www.emza-vs.com](http://www.emza-vs.com).

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