arm

AI Ecosystem Catalogue

Partner Solution Brief

Edge AI should be cloud-free.
Optimize your Arm edge AI
implementation with Akida.

brainchip
Essential AI

Use Case: AI/ML Solutions

Arm IP: Cortex-M

Speciality: High performance,
ultra-low power AI/ML IP

BrainChip

BrainChip is the worldwide leader in edge AI on-chip processing and learning. The company's first-to-market neuromorphic processor, Akida™ mimics the human brain to analyze only essential sensor inputs at the point of acquisition, processing data with unparalleled efficiency, precision, and economy.

Efficient and performant as Arm Cortex-M MCUs are, the processing of multiple sensor inputs for AI inference demands compute cycles and power. The Akida neural accelerator off-loads AI inference with improved performance and radically reduced power consumption. Arm's Cortex-M coupled with BrainChip's Akida delivers unparalleled system performance.

Akida IP optimizes edge AI/ML performance.
Flexible and scalable for multiple edge AI use cases.

Highly Configurable for implementation optimization.

Akida neuron fabric integrates into any Arm CPU.
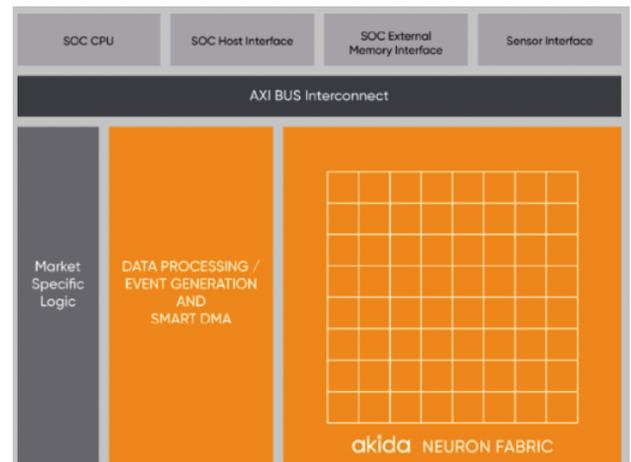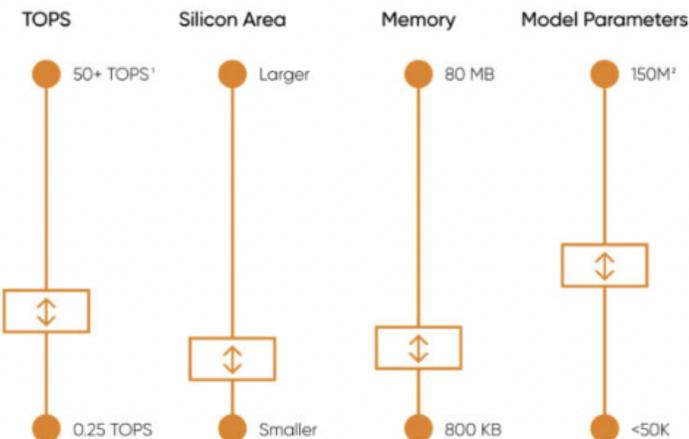
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> The Challenge: AI at the Edge should learn locally and infer with high-performance and ultra-low power.

BrainChip's Akida IP is fully compatible with Arm's product families. System-level pre-integration accelerates evaluation and development. BrainChip hardware acceleration supports real-time multi-sensor inference, and frees up the Arm CPU for improved system-level performance and unparalleled efficiency.

Use cases requiring integrated inference from multiple sensors exploit the benefits of Akida embedded into the Arm Cortex-M MCU. For example, the sequence of presence detection, person or object identification, keyword spotting, gesture recognition are seamlessly and accurately executed with minimum computation and maximum efficiency. AI enablement integrating sensor inputs improves user experience in homes, in cars, and in the real world...

Akida provides cost-effective, high-performance, power-efficient AI processing for edge AI devices - even those in locations where there is limited or no connectivity. As part of the Arm AI Partner Program, BrainChip will enable developers to meet the need for high-performance and ultra-low power edge AI inference, unlocking new opportunities for innovation for best-in-class tools, algorithms, and applications to customers worldwide.

- State of the art performance at μW-mW levels
- Lowest power and memory footprint
- Avoid external memory accesses, reduced bit computation
- Quantization to 1b, 2b, 4-bit
- On-chip learning & device personalization
- Fully scalable architecture
- Runs full network with no CPU dependency Supports CNN & native SNN
- Mature tools suite
- Fully synthesizable RTL

> The Result: Silicon-proven IP that is flexible and scalable, delivering unparalleled AI inference performance and on-chip learning with ultra-low power.

Unlocking the Future of AI	BrainChip Demos

BrainChip+Nviso Emotion Detection Demo