Revolutionary AI Model Compiler AltiCore-LogicMCU transforms machine learning for resource-constrained embedded systems

Breakthrough technology enables ultra-low-power AI deployment on devices from $1 microcontrollers to custom ASICs

DANA POINT, CA, UNITED STATES, September 9, 2025 /EINPresswire.com/ -- Evochip.ai today announced the launch of AltiCore-LogicMCU, a groundbreaking AI model compiler that transforms labeled training data directly into deterministic logic inference engines synthesized as VHDL or Verilog hardware descriptions. This innovative approach eliminates the need for traditional software-based AI implementations, enabling real-time machine learning inference on the most resource-constrained embedded devices.

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> *Alain Blancquart CEO at EvoChip.ai*

Unlike conventional AI deployment solutions that require significant computational resources and complex software stacks, AltiCore-LogicMCU compiles structured training data into symbolic logic, delivering a complete hardware inference solution that operates with predictable performance and minimal power consumption.

Addressing Critical Market Needs

The embedded systems market faces increasing pressure to integrate intelligent decision-making capabilities while maintaining strict constraints on power, space, and cost. Traditional AI solutions often prove impractical for these applications due to their computational complexity and resource requirements. "AltiCore-LogicMCU represents a paradigm shift in how we approach AI deployment in embedded systems," said Alain Blancquart CEO at EvoChip.ai. “By eliminating the software layer entirely and embedding intelligence directly into hardware, we're enabling AI capabilities on devices that were previously considered too constrained for machine learning applications."

Key Technical Advantages

Streamlined Development Process: The system learns decision-making patterns automatically without extensive manual configuration, significantly reducing development complexity and the need for specialized expertise in HDL or FPGA tools.

Intelligent Feature Selection: AltiCore-LogicMCU identifies only the most relevant data points for accurate classification, ensuring optimal efficiency while maintaining performance.

Compact Hardware Implementation: The compiler produces streamlined hardware components (down to 700 bytes) that can be customized in size to fit various application requirements, from ultra-low-cost microcontrollers to complex System-on- Chip (SoC) integrations.

Direct Hardware Integration: With no requirement for additional microcontrollers or software layers, the solution simplifies system architecture and reduces overall complexity.

Performance and Efficiency Benefits

The technology delivers exceptional performance characteristics critical for real-time embedded applications:

- High-Speed Processing: Capable of processing large data volumes rapidly, essential for time-sensitive applications
- Ultra-Low Power Consumption: Optimized for battery-powered and energy- constrained devices
- Minimal Resource Footprint: Lightweight hardware implementation simplifies integration
- Customizable Precision: Flexible architecture allows precision tuning based on specific application needs

Certification-Ready Architecture for Mission-Critical Applications

AltiCore-LogicMCU features a certification-ready architecture specifically designed for applications where reliability and verification are paramount:

Predictable Performance: Pipelined logic operating on fixed clock cycles ensures deterministic behavior and simplified validation processes.

Static Analysis Capability: The system enables early issue detection through static design analysis, reducing the need for extensive runtime testing.

Full Transparency: The completely inspectable architecture allows engineers to understand exactly how the system reaches its conclusions, critical for safety-critical applications.

Cross-Platform Portability: Core logic can be ported across different platforms and product variations, providing flexibility and future-proofing investments.

Simple Four-Step Workflow

AltiCore-LogicMCU streamlines the deployment process through an intuitive four-step workflow:

1. Data Input: Accept training data in CSV format, via API, or other standard formats
2. Compilation: Run the compiler and select the target platform for optimized synthesis
3. Synthesis Output: Receive VHDL or Verilog files along with comprehensive integration guides
4. Integration: Drop files directly into existing FPGA or CPLD toolchains as standard digital peripherals

Target Applications and Markets

The technology is ideally suited for applications where space, power, or cost constraints are fundamental, including:

- Industrial IoT sensors and controllers
- Automotive embedded systems
- Medical device instrumentation
- Battery-powered monitoring systems
- Safety-critical control systems
- Edge computing applications

AltiCore-LogicMCU provides value in scenarios requiring accurate and reliable decision- making for safety and user experience, where predictability and system behavior verification are essential to prevent failures and ensure continuous operation.

Industry Impact and Availability

The launch of AltiCore-LogicMCU addresses a significant gap in the embedded AI market by making machine learning accessible to applications previously considered too resource-constrained for intelligent capabilities. The technology supports deployment across an unprecedented range of platforms, from inexpensive microcontrollers costing just one dollar to complex custom ASICs.

"This technology democratizes AI deployment in embedded systems," added Alain Blancquart: "We're enabling intelligence in places where it was previously impossible due to resource constraints, opening up entirely new possibilities for smart, responsive embedded products."

Availability

AltiCore-LogicMCU is available immediately for early access partners and will be broadly released in January, 2026.

About Evochip.ai

EvoChip is pioneering next-generation AI computing solutions that bridge performance, efficiency, and accessibility. With innovations like Evotech (EvoChip Core Technology), AltiCore (AI model compiler for compute intensive solutions) and AltiCore-LogicMCU (AI model compiler for Edge devices), EvoChip empowers developers, engineers, and enterprises to integrate AI into their designs—seamlessly, reliably, and at scale.

Media Contact

Alain Blancquart CEO
EvoChip.ai
Phone: +1 949 828 6363
Email: ab@evochip.ai

Investor Relations

Jerry Conrad
EVP Business Development Phone: +1 949 466 3388
Email: jc@evochip.ai

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Alain Blancquart
EvoChip.ai
+1 949-828-6363
email us here
Visit us on social media:
LinkedIn
