Volatco – The Ultra-Compact, Low-Power AI Engine for Researchers, Makers, and Edge-Computing Pioneers

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Why Volatco?

Artificial-intelligence research is no longer confined to massive data-center farms. To explore **embodied AI, neuromorphic experimentation, and ultra-low-energy inference**, we need hardware that is **massively parallel, energy-frugal, and easily extensible**.

The **Volatco prototype**, engineered by **Cartheur Research**, delivers exactly that. It packs **two GA144 mesh-processor chips**, **2 MB of SRAM**, **16 MB of SPI flash**, and a flexible off-board I/O architecture into a board **smaller than a credit card** that draws **only milliwatts of power when idle**.

Accessories: Dedicated power, Ethernet, BLE: Volatco has them!

polyForth: On-board operating system that is lightweight, dual-stack operating system and programming environment.

Bottom line: Volatco gives you a full-blown AI compute node for **€495 per board**—transparent, open-hardware pricing with no hidden markup.

Key Features

Feature	Benefit
Dual GA144 Cores (144 × 2 = 288 cores)	Run 288 concurrent threads —ideal for parallel algorithms, machine-intelligence, and evolutionary computing.
PolyFORTH® Runtime	A lightweight, stack-based language that lets you prototype, debug, and iterate on AI kernels in minutes—no heavyweight SDKs required.
2 MB SRAM + 16 MB SPI Flash	Fast volatile memory for model parameters and large non-volatile storage for firmware, datasets, and compiled Forth programs.
Zero On-Board Regulation	Power is supplied externally, eliminating regulator quiescent draw and shrinking the PCB. Choose the most efficient supply for your experiment.
Rich Off-Board I/O (0.1" Headers)	All GPIO, analogue-in/out, and power pins are exposed on a standard breadboard-compatible header. Plug in sensors, actuators, or custom expansion boards without soldering.
Watchdog & Reset Circuitry	Automatic recovery from software hangs, essential for long-running experiments.
Modular Expansion Row	Connect external power modules, additional memory, Bluetooth, Ethernet, or bespoke I/O boards via header rows.
Compact Form Factor	Designed to fit into tight enclosures, drone payload bays, or multi-board racks for scalable clusters.

Who Is Volatco For?

- **Academic & industry researchers** exploring new AI architectures, spiking networks, or energy-aware machine learning.
- **Hardware hackers & makers** who want a hands-on platform for autonomous robots, sensor-fusion nodes, or edge-AI devices.
- **Educators & students** seeking a tangible, low-cost system to teach parallel computing and low-power design principles.
- **Start-ups & prototypers** needing a ready-made, asynchronous AI engine that can be integrated into products without additional licensing fees.

Our Vision

To **democratize high-performance, energy-efficient machine intelligence**. By bringing Volatco to the community, we'll create an ecosystem of **open-source tools, asynchronous multicomputing, and collaborative research**—all built around a board anyone can afford and modify on an individual scale.

Questions?

- Email: sales@cartheur.com