Open Position

Postdoctoral Researcher – 24 months

Neuromorphic Hardware with On-Chip Learning

We are looking for a postdoctoral researcher to join the « ECO-Neuro » project – « Energy-Efficient, Context-Aware Neuromorphic Systems for Resilient Smart IoT ».

The project focuses on developing energy-efficient neuromorphic systems that combine analog spiking neurons, memristive synapses, and local online learning. The work will involve designing neuromorphic circuits, studying how hardware variability, noise, stochasticity, and drift affect learning and inference, and developing learning strategies that can work reliably under these conditions. We also want to explore whether some of these hardware effects can actually be used to improve learning and adaptation. The ultimate goal is to demonstrate neuromorphic systems that can learn directly on hardware, with low energy consumption and improved robustness.

The postdoctoral researcher will work mainly on hardware–algorithm co-design and prototyping to define and implement a mixed-signal neuromorphic architecture in which learning mechanisms operate under realistic hardware constraints.

The work will focus on the design and evaluation of neuron–synapse interfaces, memristive synapse arrays, and architectures supporting local online learning. A key objective is to understand how hardware variability, noise, and limited precision affect spike timing, synaptic updates, learning stability, energy consumption, and long-term reliability, and to develop solutions that make the most of these hardware characteristics.

The researcher will be involved in the design, implementation, and prototyping of neuromorphic hardware, with the objective of bringing selected circuits or subsystems to ASIC tape-out. Activities will include transistor-level and mixed-signal simulations, behavioral modeling, hardware-in-the-loop evaluation, FPGA-based prototyping, and physical design and validation. The goal is to move from circuit and architecture concepts to working hardware implementations and experimental demonstrations.

The position is particularly suited to candidates interested in working across the boundary between microelectronics and neuromorphic learning.

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Candidate profile

Applicants should hold a PhD in microelectronics, electrical or computer engineering, neuromorphic engineering, AI hardware, or a closely related area.

A strong background in one or more of the following would be particularly relevant:

- analog or mixed-signal IC design;
- neuromorphic circuits or SNN hardware;
- memristive or emerging memory technologies;
- hardware–algorithm co-design;
- low-power AI hardware;
- FPGA or silicon prototyping.

Demonstrated experience with tools such as Cadence/Spectre, SPICE, Verilog/Verilog-A and Python would be a strong asset.

We welcome candidates with either a strong background in hardware design and an interest in spiking neural networks and online learning, or a background in neuromorphic computing combined with solid hardware design skills.

Research environment

The position will be based at TIMA Laboratory in Grenoble, in a research environment covering microelectronics, emerging computing architectures, neuromorphic systems, reliability and hardware security.

The postdoctoral researcher will interact closely with researchers and PhD students working on circuit design, hardware-aware learning, and dependable neuromorphic systems.

Practical information

Duration: 24 months
Location: Grenoble, France
Starting date: to be agreed

Applications should include a CV with a publication list, a short motivation letter outlining the candidate's research interests and proposing a research direction or project within the scope of the position, and contact information for two references.

For scientific questions or applications, please contact:

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