Research fellow – Integrated circuit accelerators for in-memory computing @Politecnico di Milano

Context and Mission
Learning from big data is the next big thing for a wide range of fields, including communications, industry, business, and healthcare. The von Neumann computer architecture is however not efficient for these tasks, due to the large energy and time needed for data movement between the memory and the CPU/GPU. In the frame of an ERC project, we are developing in-memory computing accelerators for machine learning and data analytics, to process information within analogue memory circuits. Our technology enables one-shot learning with a 10,000x reduction of energy and time thanks to non-iterative computing in cross-point arrays of memories and memristors.

The project
This project aims at demonstrating this performance in hardware by (i) designing integrated circuits with foundry design kit including resistive memory, (ii) testing the hardware circuits fabricated by the industrial partner foundry. The postdoctoral researcher should interact with a team of about 15 PhDs/postdocs working on in-memory computing using resistive switching memory (RRAM) and phase change memory (PCM).

Your tasks
To design integrated in-memory accelerator circuits
To design the testing board and test the circuit prototypes for practical data problems
To actively interact with the team members for device and theory development
To become actively involved in the dissemination/communication activities within the project
To mentor junior staff

Education
PhD in electrical engineering

Essential Knowledge and Professional Experience
Proficiency in modern integrated circuit design using Cadence and Mentor Graphics tools
Fluent English, both spoken and written

Additional Knowledge and Professional Experience
Research or job experience as integrated circuit design engineer
Research related with nonvolatile memories (multilevel programming, read circuitry, reliability)

Conditions
The position will be located at Politecnico di Milano within the EE, CS and Bioengineering Department. The campus offers a clean room facility and a startup incubator. A semiconductor industry campus (STMicroelectronics, Micron) is within 20 min driving time.
The position will be a full time-contract within a stimulating research group (>3 million Euro funding in the last 5 years). The project has opportunities for becoming a high-technology industrial spinoff.
The salary (33k€ yearly gross salary, 2k€ monthly net rate) is equivalent to a young Associate Professor in the same institution.

How to apply
Please send your application by email to daniele.ielmini@polimi.it, including your CV, a list of publications, degrees and certificates, job references, as well as relevant special knowledge and professional experiences.
The position will remain open until a suitable candidate has been hired.