

PhD Student in Analog and Digital Circuit Design at IMSE-CNM

We are looking for a **motivated and enthusiastic PhD student** to develop research in the context of an EU funded project. The candidate will join the “neuromorphic group” (www.imse-cnm.csic.es/neuromorphs) at the Sevilla Microelectronics Institute in Sevilla (IMSE), Spain (www.imse-cnm.csic.es). The neuromorphic group develops microchips for Artificial Intelligence (AI) circuits exploiting bio-inspired vision cameras (like DVS sensors or event cameras: https://en.wikipedia.org/wiki/Event_camera), dedicated event-driven processing chips, FPGAs, or processing algorithms. The research results of our group apply to light-weight power-efficient compact systems for e.g. high-speed low-power robotics, biomedical devices, neuroprosthetics, drones, autonomous cars, etc. Our recent EU projects exploit emerging nanotechnology devices that can be used as nonvolatile nano-scale analog/digital ultra-compact memories, enabling training and on-line learning of autonomous AI systems.

The candidate will engage in some of our new or on-going EU projects, covering tasks that can range from system conception, simulation, off-line training of AI systems, to circuit design and hardware architectural floor planning, device-level characterization, design verification, laboratory setup (microcontroller, FPGA and instrument programming) for test and characterization of manufactured chips, and showcase specific application scenarios. Skills to be valued are:

- Experience with **analog and mixed-signal** integrated circuit **design and test**
- **Digital** circuit design (Verilog, VHDL, ...)
- Computational Skills in **AI systems** (PyTorch, Keras, ...)
- Experience with **Spiking Neural Networks**, software-level and/or hardware-level
- Experience in using **FPGAs, Microcontrollers**, lab experiments setups

Depending on candidate experience, background, and proficiency level, **salary** can range between **22800€ and 31500€**, gross annual.

The neuromorphic group at IMSE is very active in European Projects, which allows successful candidates to interact first hand with top European research labs and companies. It is presently active in 5 European projects, in addition to other National and Regional ones (www.imse-cnm.csic.es/neuromorphs/projects).

IMSE is a research center devoted to microelectronics, belonging to the Spanish Research Council (CSIC www.csic.es) and the University of Seville (www.us.es). It is located at walking distance from the city center, inside the Cartuja Technological Park (www.pctcartuja.es/en). According to numbeo.com it is a quite affordable city, with a Cost of Living Index of 49.9 (50% that of New York or Zurich, 60% that of London, Oslo, or Los Angeles), with nice climate, friendly people, and safe environments.

IMSE has outstanding facilities, both in computing and labs. It has its own supercomputing cluster for exhaustive chip design and verification, access to CSIC's and Univ. Seville high performance computing facilities, access to latest chip technologies (down to 7nm), access to Cadence courses, specialized labs in RF, optoelectronics, thermal characterization, pulsed laser, and is setting up a new clean room for advanced encapsulation and additive manufacturing.

Interested candidates please send detailed CV with Bsc and MSc transcripts to:

B. Linares-Barranco (bernabe@csic.es) or T. Serrano-Gotarredona (teresa.serrano@csic.es)

