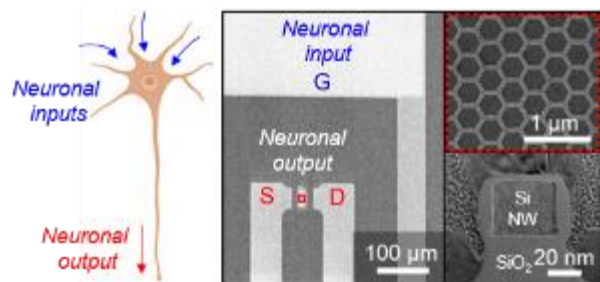# Master Thesis

Neuromorphic systems for next generation computing beyond von Neumann architecture

Development of bioinspired devices that integrate memory and information processing in single hardware units

Neuromorphic architectures ambition to outperform von Neumann computing by combining learning and memorization in a single unit. The optimization of its building blocks, artificial synapses and neurons, would represent the ability to perform energy-efficient and effective brain-inspired algorithms at a hardware level. In this thesis the aim is to develop new neurotransistors that outperform the state of the art. The first part of the work will consist on the fabrication of the basic hardware unit, the transistors, and their modification to provide the memory properties. The second part includes the assessment of their performance in neuromorphic computing.

The **research plan** will include:

1. Fabrication and modification of the nanoelectrical devices.
2. Morphological, chemical, and electrical characterization.
3. Assessment of the performance of the devices as artificial neurons

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