Memristors for Neuromorphic Circuits and Artificial Intelligence Applications

Guest Editor:

Prof. Dr. Jordi Suñé
Departament d'Enginyeria Electrònica, Universitat Autònoma de Barcelona, 08193 Cerdanyola del Vallès, Spain

Deadline for manuscript submissions:
closed (30 November 2019)

Message from the Guest Editor

Dear Colleagues,

Artifial Intelligence (AI) is a pervasive technology usually implemented in software. However, the solid-state nanoelectronic implementation of the memristor (for the first time in 2008 by the HP group led by Dr. Stanley Williams), a device predicted by Prof. Leon Chua in 1971 using symmetry arguments, opens up a new frontier for AI: the so-called Deep learning ICs. Less-known by the general public, these hardware-based neuromorphic systems will allow distributed energy-efficient deployment of AI in many areas requiring real-time response, intelligent decision and fast action. In this Special Issue we will try to give a general overview of this new technology and review the concepts of machine learning and deep learning, focused on applications. We will cover the state-of-the-art technological implementation of the memristor as an electron device with particular emphasis on resistive devices such as ReRAM and PCM. We will also present the actual state-of-the-art of memristor-based deep learning prototypes for different applications. Finally, we will dedicate a few papers to ethical issues related to AI.

Prof. Dr. Jordi Suñé
Guest Editor

Special Issue

Editor-in-Chief

Prof. Dr. Maryam Tabrizian
1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

Message from the Editor-in-Chief

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