Energy-Efficient Embedded Intelligent Sensor Systems

Embedded Systems and Smart Sensors are gaining increasing prominence in the research community. The reason lies in the degree of pervasiveness that embedded systems have allowed them to achieve. Embedded intelligent sensor systems, defined as sensors capable of processing information with algorithms in-situ interfacing with the external environment to provide feedback, are now widespread in everyday life. Progress in this area is now driven by the need for embedded sensor systems comprising one or more low-power and resource-constrained elements organized in an extensive network. This pushes to develop sensors systems based on new hardware, lightweight machine learning algorithms, and software that are energy and computationally efficient. Moreover, the machine learning algorithms run in tiny low-power processors (including microcontrollers, milliwatts ASIC and FPGA) with few megabytes of memory. New embedded intelligent sensors should introduce the concept of energy efficiency, adaptive management of resources, power, and communications, and include hardware-software architecture extending the device's life through renewal energy sources or with energy harvesting approaches. However, efficiency must not be limiting and indeed promote quick in-loco data processing and thus fast feedback, ensuring operating reliability. In this context, embedded systems-oriented, low-complexity, and energy-saving algorithms should also be developed to address application-specific challenges for sensor data processing.

It is intended that this Special Issue of the IEEE Sensors Journal will show the state-of-the-art in energy-efficient intelligent sensors original research contributions, tutorials, and review papers are sought in both energy-efficient and embedded aspects for intelligent sensors-related areas including (but not limited to):

- Embedded Sensors enabled by low-complexity, energy-efficient algorithms
- Energy-neutral and self-sustaining sensing systems, including energy harvesting
- Sensors provided with tiny machine learning (few Mbytes memory or less) and energy-efficient processing of the information.
- Ultra-low power read-out systems for sensor networks
- Energy-efficient sensor interfaces: analog and digital sensor data processing architectures
- Printed, flexible technology for energy-efficient smart sensors.
- Embedded Smart Sensors and Sensor Networks in Healthcare, Transportation, Environmental, Industrial, and Robotic

Solicited and invited papers shall undergo the standard IEEE Sensors Journal peer review process. All manuscripts must be submitted on-line, via the *IEEE Manuscript Central™*, see http://mc.manuscriptcentral.com/sensors. When submitting, please indicate in the "Manuscript Type" roll down menu that the paper is intended for the "Energy-Efficient Embedded Intelligent Sensor Systems" Special Issue. For manuscript preparation and submission, please follow the guidelines in the *Information for Authors* at the IEEE Sensors Journal web page, http://www.ieee-sensors.org/journals

Guest Editors:
- Michele Magno, ETH Zurich, Switzerland Michele.magno@pbl.ee.ethz.ch
- Ohta, Jun, Nara Institute of Science and Technology, Japan ohta@ms.naist.jp
- Daniela De Venuto, Politecnico di Bari, Italy daniela.devenuto@poliba.it
- Jan Rabey, UC Berkeley, USA jan_rabaey@berkeley.edu
- Giuseppe Ferri, Università dell'Aquila, Italy giuseppe.ferri@univaq.it
- Linda Milor, Georgia Tech, USA linda.milor@ece.gatech.edu
- Seonyung Heo, Kyung Hee University, Korea seonyeong.heo@khu.ac.kr

Deadlines:
·	Manuscript submission:	September 30, 2023
·	Notification of acceptance :	December 30, 2023
·	Tentative date of complete issue:	March 2024

Upon acceptance papers appear as Early Access (preprints) in IEEExplore and are fully citable.