

## CALL FOR PAPERS



IEEE Transactions on Industrial Informatics

Special Section on:



“From Embedded Systems to Cooperating-Objects”

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**Background:** Although the IT transformation in the 20th century appeared revolutionary, a bigger change is probably yet to come. The terms “Cooperating-Objects” or “Cyber-Physical Systems (CPS)” have come to describe the research and technological effort that will ultimately efficiently allow interlinking the real world physical objects and cyberspace. The integration of physical processes and computing is not new. Embedded systems have been in place since a long time to denote systems that combine physical processes with computing. The revolution will come from extensively networking embedded computing devices, in a blend that involves sensing, actuation, computation, networking, pervasiveness and physical processes. Wireless Sensor Networks have emerged as a means for instrumenting the physical world by embedding low power computing, sensing and communication capabilities within the physical world. Such systems pose considerable technical challenges, ranging from the (distributed) programming paradigms to networking protocols with timeliness as a structuring concern, including systems theory that combines “physical concerns” (control systems, signal processing, etc.) and “computational concerns” (complexity, schedulability, computability, scalability, etc.). Applications of Cooperating Objects and Cyber-Physical Systems include, among others, critical infrastructure control (electric power, water resources, gas and fuel distribution, transportation, etc.), process control and manufacturing, high dependable medical devices and systems, traffic control and safety, advanced automotive systems, energy conservation and environmental control, etc.

The Special Section “From Embedded Systems to Cooperating Objects” aims at presenting some of the most significant research works representing the state-of-the-art in scientific foundations and technologies that integrate computational and communication concepts with the dynamics of physical and engineered systems.

Topics include, but are not limited to, the following aspects of cooperating objects :

- Real-time sensor network protocols and architectures
- Coordination middleware and programming for pervasive computing
- Distributed real-time middleware
- Querying and searching sensor data
- Mobile ecosystems of sensors / actors, including mobile robotics
- Key applications (manufacturing, medical, power grid, auto) and case studies

Submissions to this Special Section must represent original material that has not been neither submitted to, nor published in, any other journal. Extended versions of papers previously published in conference proceedings, digests or preprints may be eligible for consideration, provided that the authors inform the Special Section Guest Editors at the time of submission.

**Manuscript preparation and submission:** Follow the guidelines in “Information for Authors” in <http://iee-ies.org/tii/>

Submit using Manuscript Central only  
<http://mc.manuscriptcentral.com/tii>

Paper submission deadline: May 31, 2009

Expected publication date: February/May 2010 (tentative)

Note: The recommended papers for the section are subject to final approval by the Editor in Chief. Some papers may be published outside the special section, at her/his discretion.