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IEEE Transactions on Industrial Informatics



Special Section on:

“Communication in Automation”

Special Section Guest Editors

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The past decade has witnessed a deep transformation of the automation world: thanks to the pervasive adoption of technologies derived from the ICT domain, the way automated systems are conceived, designed, deployed and maintained has changed dramatically. This is certainly true for what concerns communication. For instance, at the lower levels of distributed automation systems high-performance industrial Ethernet networks are gradually replacing previous solutions (e.g., fieldbuses) in most industrial and process control applications, including ultra-low-jitter motion control, whereas wireless communication technologies are more and more adopted in several application areas in order to provide simpler and more easily reconfigurable communication infrastructures. At the upper levels, description techniques and design methodologies, which derive directly from those already in use for information and computing systems, are currently being employed for large automated manufacturing plants as well.

As a consequence of these synergic actions, the technological gap between the office and automation environments is quickly vanishing, so that increased performance and higher flexibility are now possible at lower costs. Moreover, the adoption of standard communication technologies means that full integration between all the levels and subsystems found in automation systems can be easily achieved.

This Special Section on “Communication in Automation” aims at presenting some of the most significant research works representing the state-of-the-art in the area of the communication networks for automation systems (including process automation, industrial automation, building automation, and so on).

Topics include, but are not limited to, the following:

- **Real-time and Dependable Communication**, including fault-tolerant communication; safety and security issues in communication; synchronization in distributed systems; performance and dependability analysis; real-time message scheduling and task allocation; distributed embedded systems; networked control systems.
- **System Integration through Communication**, including data-flow integration and management; life-cycle and maintenance aspects; remote setup and configuration; transparency vs. security issues; internetworking; integration of wired and wireless networks; interoperability and interchangeability of devices and applications.
- **Information and Communication Technology in Automation**, including design of distributed automation systems; distributed objects, middleware, components and web-based frameworks; mobile computing; communication modeling, specification techniques, and formal methods.

Submissions to this Special Section must represent original material that have 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. All contributions must focus on communication for automation systems. Results obtained by simulations must be validated in bounds by experiments or analytical results.

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

Submit using Manuscript Central only
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Paper submission deadline: September 30, 2008

Expected publication date: May/August 2009 (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 his discretion.