

## CALL FOR PAPERS



IEEE Transactions on Industrial Informatics

Special Section on:



“Model-based Approaches for Embedded Systems”

### Special Section Guest Editors

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**Background:** Embedded systems development requires integration of a variety of hardware and software components. This field, due to its multifaceted nature, has received contributions from different disciplines, namely computer engineering, software engineering, hardware-software co-design, computer science, and system modeling. Nowadays, model-based development approaches are gaining popularity both in industry as well as in academy, since they offer a higher degree of abstraction, which is crucial to tackle the growing complexity of the systems under consideration.

The development of embedded systems may benefit from the usage of model-driven approaches. These approaches use models that allow the development team to create more abstract artifacts, when compared with the traditional code, which is a key issue to handle complex systems. The typical characteristics of embedded systems (computing platform dedicated to a specific purpose, continuous functioning, rich behavior, interaction with the environment, real-time response, etc.) imply that model-driven approaches for software-based systems cannot be directly applied to the embedded field.

This Special Section on “Model-based Approaches for Embedded Systems” aims at presenting some of the most significant research works representing the state-of-the-art in the area of modeling formalisms and techniques for embedded systems, with an emphasis on the use of graphical and visual notations for modeling the system’s behavior.

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

- **Models of computation**, including state machines, statecharts, SDL, UML, SysML, Petri nets, data-flow graphs, CDFG, SpecCharts, for modeling embedded systems with a rich behavior.
- **Modeling approaches**, including the use of formal models for analysis, design, test, implementation, validation, verification, operation, and maintenance of embedded systems.
- **Key applications** (manufacturing, control, medical, power grid, automotive, aerospace and defense, consumer industries/electronics) and *case studies*.

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 the adoption of models for analyzing, designing, implementing, or testing embedded 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://ieeee-ies.org/tii/>

Submit using Manuscript Central only  
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**Paper submission deadline:** September 30, 2009

**Expected publication date:** August/November 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 his discretion.