



Call for Papers

Journal of Systems Architecture

Special Issue on

*Design Flows and System Architectures for Adaptive
Computing on Reconfigurable Platforms*

General Information

This special issue pursues the definition of a novel computational paradigm, based on the so called reconfigurable computing, which will use innovative technological solutions able to extend the Von Neumann architecture using adaptive digital technologies. It is possible to envision for reconfigurable technologies the possibility to move from the prototyping and very specialized low-volume arenas to the implementation of **real-world** systems capable of adapting their behaviour and resources thousand times a second, according to the surrounding environment evolution.

At the moment, potential benefits of massively reconfigurable digital systems in real-life applications is far beyond sight, therefore the definition of novel architecture and design flows can be considered as key point for the future of this research area . Potentially, continuously trained devices could be implemented with reconfigurable logic technologies, allowing small devices to stabilize, with proper actions, physical parameters depending on huge sets of factors; with proper training procedures implemented in a distributed way over the whole device, behaviour could be specified as the maximization of desired target functions. Reconfiguration would not be provided from the outside as an input to the device, but would be computed autonomously by the device itself, according to the target behaviour and to the environment. This would make such devices particularly suited for applications of pervasive computing/control of any kind, e.g., medical pilot plants, neurological control systems, adaptive communication infrastructures.

The inherent advantages of hardware over analogous software solutions (computational speed, inherent parallelism, device size) would make it possible to apply such control and optimization strategies to systems such as: biomedical implants (think of an artificial art control), telecommunications (think of adaptive intelligent routers), intelligent nanorobot control, artificial audio and vision, intelligent transducers at bio-electronic interfaces, etc

Contribution are solicited on, but are not limited to, the following topics

- Dynamic reconfiguration description languages and modelling
 - Modelling HW/SW reconfigurable systems with Java or SystemC
 - *High Level* reconfigurable systems description
 - Offline and online methods for reconfigurable cores placement and scheduling
- Innovative reconfigurable SOC architectures
 - Reconfigurable MPSOC architectures
 - Operating systems and reconfigurable SOC architectures
- Simulation frameworks for reconfigurable architectures
- Adaptable systems
 - Adaptive algorithm and distributed self-training algorithms
 - Adaptive communication infrastructure
 - Distributed auto-reconfiguration capabilities of digital devices
 - Automotive and reconfigurable computing
- Innovative applications of dynamically reconfigurable systems
- Biologically inspired systems

Submission Information

All manuscripts and any supplementary material should be submitted via the online submission and peer review systems at <http://ees.elsevier.com/jsa>. Follow the submission instructions given on this site.

Please select the article type as “*Special Issue: Adaptive Computing Trends*”. All manuscripts should comply with the journal's Guide for Authors. Please refer to the following site:

http://www.elsevier.com/wps/find/journaldescription.cws_home/505616/authorinstructions.

Important Dates

Submission Deadline: 15 OCT 2009

Acceptation Notification: 1 March 2010

Final Papers: 16 April 2010

Publication: Summer of 2010 (subject to JSA editorial calendar)

JSA Editor-in-Chief

Iain Bate

Guest Editors for the JSA Special Issue on *Design Flows and System Architectures for Adaptive Computing on Reconfigurable Platforms*:

- Ignacio Bravo.
Lecturer & Researcher
Electronics Department. University of Alcala DO-217. Escuela Politecnica Superior Ctra. Madrid
- Barcelona km. 33.6
28871 - Alcalá de Henares
Madrid - Spain
e-mail:ibravo@depeca.uah.es
web:<http://www.depeca.uah.es>
- Marco D. Santambrogio
Dipartimento di Elettronica e Informazione Politecnico di Milano Via
Ponzio 34/5 ZIP 20133 Milano, ITALY
e-mail: marco.santambrogio@polimi.it
web: <http://home.dei.polimi.it/santambr/>
Research group: www.dresd.org