NASC-2009, California

The NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2009) will be co-located with the 46th Design Automation Conference (DAC 2009) and held July 29 - August 1, 2009, Moscone Convention Center, San Francisco, California, USA.

The purpose of the conference is to bring together leading researchers from the adaptive hardware and systems community to exchange experiences and share new ideas in the field. The conference expands the topics addressed by the precursor series of NASA/DoD Conference on Evolvable Hardware, held between 1999 and 2005. With a broader scope including a variety of hardware and system adaptation methods and targeting more industry participation, the NASA/ESA series started with the AHS 2006 conference held in Istanbul, Turkey, June 15-18, 2006, AHS 2007 conference held in Edinburgh, UK, August 9-11, 2007, and AHS 2008 conference held in Noordwijk, The Netherlands, June 22-25, 2008.

Adaptation reflects the capability of a system to maintain or improve its performance in the context of internal or external changes, such as uncertainties and variations during fabrication, faults and degradations, modifications in the operational environment, incidental or intentional interference, different users and preferences, modifications of standards and requirements, trade-offs between performance and resources.

Adaptation at hardware levels increases the system capabilities beyond what is possible with software-only solutions, and a large number of adaptation features employing both analog and digital adjustments are becoming increasingly present in the most elementary system components. Algorithms, techniques, and their implementation in hardware are developed over a diverse variety of applications, such as adaptive communications (adapting to changing environment and interference), reconfigurable systems on a chip and portable wireless devices (adapting to power limitations) or survivable spacecraft (adapting to extreme environments and mission unknowns). This meeting will provide a forum for discussion on the genetic techniques of adaptive hardware and systems, with a focus on communications and space applications, with view to its expansion and exploitation in other applications such as consumer, medical, defence and security, etc.

Topics to be covered include, but not limited to:

- Built-in testable and serviceable systems and test methods
- Design and test of integrated systems in nano scale
- On-chip learning and adaptation
- Adaptive circuits and configurable IP cores
- Reconfigurable and morphable hardware
- Adaptive embedded systems
- Adaptive control circuits and adaptive flight hardware
- High-performance reconfigurable computing
- Adaptive antennas
- Adaptive MEMS sensors
- Adaptive circuit and system design
- Hardware for adaptive signal processing
- Adaptive medical and prosthetic devices
- Adaptive wireless and wireless networks
- Adaptive systems for autonomous systems
- Adaptive flight hardware
- Space applications
- Communications applications
- MEMS/MEMS energy scavenging devices
- Emerging technologies
- Nanoelectronics
- Reconfigurable computing: incl. multi-core architectures
- Adaptive wireless for space
- Secure data and information systems
- High-performance reconfigurable computing

Prospective authors are invited to submit the electronic version of their full paper (i.e. PS, PDF, MSWord) on the conference website. Papers are limited to 8 pages and should be submitted in single-spaced, double column, 10 point type on a 8.5” x 11” or equivalent paper with 1” margins on all sides. Each submission should contain the following items: (1) Title of paper, (2) author names, (3) first author physical address, (4) first author e-mail address, (5) a maximum 200 words abstract (7) the text of the paper, and (8) references. Accepted papers will be published in the conference proceedings published by the IEEE Computer Society Conference Publishing Services (CPS) and made available through the IEEE Xplore.

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