

NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2009)

Co-located with DAC-2009



July 29-August 1, 2009

Moscone Convention Center
San Francisco
California
USA



Organized by

National Aeronautics and Space Administration – Jet Propulsion Laboratory (NASA-JPL), USA
European Space Agency (ESA), Netherlands
University of Edinburgh, UK

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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 5-8 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 interferences), 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 generic 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 tuneable structures and automated tuning	Adaptive optics
Automatic/self-calibration	Adaptive antennas
Built-in self-test and self-repair	Adaptive sensing
Design and test of integrated system in nano scale	Adaptive MEM/NEMS devices
On-chip learning and adaptation	Adaptive interfaces
Adaptive circuits and configurable IP cores	Hardware for adaptive signal processing
Reconfigurable and morphable hardware	Adaptive medical and prosthetic devices
Reconfigurable hardware for space applications	Adaptive wired and wireless networks
Embryonic hardware, morphogenesis	Adaptive hardware for autonomous systems
Evolvable hardware	Adaptive flight hardware
Design for adaptive systems	Space applications
Adaptive embedded system	Communications applications
Adaptive control circuits and adaptive flight hardware	MEMS/NEMS energy scavenging devices
Search and optimization algorithms for adaptive hardware	Emerging technologies-Nanoelectronics
Hardware implementations of optimization engines	Reconfigurable computing incl. multi core architectures
Learning and evolutionary algorithms for adaptive hardware	Adaptive wireless for space
Algorithms for exploring design space of adaptive hardware	Secure data and information systems
Adaptive computing and run-time reconfiguration	High-performance reconfigurable computing
Adaptation with hardware in the loop	

Prospective authors are invited to submit the electronic version of their full paper (i.e. PS, PDF, MSWord) on the conference web site. 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 name(s), (3) first author physical address, (4) first author e-mail address, (5) first author phone number, (6) 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 IEEE Computer Society Conference Publishing Services (CPS) and made available through the IEEE Xplore.

Questions regarding papers should be addressed to:

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Paper submission deadline: March 4, 2009 **Extended to March 15, 2009**
Author notification: April 10, 2009
Camera ready manuscript deadline: April 24, 2009