

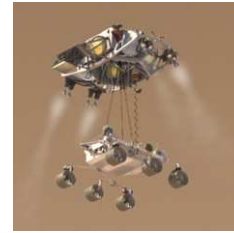


NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2012)



June 25-28, 2012

Nuremberg, Germany



Organized by

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

Supported by

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The NASA/ESA Conference on Adaptive Hardware and Systems (AHS-2012) will be held June 25 - 28, 2012, Nuremberg, Germany. AHS-2012 is technically sponsored by the IEEE Circuits and Systems Society (IEEE-CAS) and is organized in Cooperation with ACM Special Interest Group on Design Automation (ACM-SIGDA).

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. This includes 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, and continued annually with AHS-2007 conference held in Edinburgh, UK, AHS-2008 conference held in Noordwijk, The Netherlands, AHS-2009 conference held in San Francisco, USA, AHS-2010 conference held in Anaheim, USA, and AHS-2011 conference held in San Diego, USA.

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.

We welcome original contributions in the areas of hardware and software adaptation at different system levels, including, but not limited to, tools and algorithms for adaptive system design (e.g. adaptation-aware compilers), novel applications of adaptive hardware and systems (e.g. intelligent agent machines), and enabling technologies for such systems (e.g. instrumentation platforms, reconfigurable and multi-core architectures). We also welcome novel contributions in the areas of adaptive transmission for telecommunications (e.g. aware of power limitations, changing environment, and interferences), data compression techniques (e.g. new image compression techniques for space applications), software/hardware architectures for unmanned autonomous vehicles (e.g. adapting to extreme environments and mission unknowns), etc.

While the focus of this conference is on communications and space applications, we welcome original contributions in other application areas such as consumer, medical, defence and security, as the techniques employed can be disseminated across the board. We also welcome papers describing significant applications of adaptive hardware and systems to industrial case studies and demonstrating their capabilities and effectiveness.

In view of the above, the topics to be covered in this conference include, but are not limited to:

Adaptive Hardware

Adaptive antennas
Adaptive embedded systems
Adaptive circuits and configurable IP cores
Adaptive MEMS/NEMS devices
Adaptive optics
Hardware for adaptive signal processing
MEMS/NEMS energy scavenging devices
Emerging technologies-nanoelectronics
Embryonic hardware, morphogenesis
Evolvable, reconfigurable and morphable hardware
Built-in tuneable structures and automated tuning
Built-in self-test and self-repair

Adaptation Algorithms

Learning and evolutionary algorithms for adaptive hardware
Search and optimization algorithms for adaptive hardware
On-chip learning and adaptation
Automatic/self-calibration
Hardware implementations of optimization engines
Adaptive image and data compression

Design Methodology

Algorithms for exploring design space of adaptive hardware
Design for adaptive systems

Reconfigurable Computing

Adaptive computing and run-time reconfiguration
Reconfigurable computing incl. multi-core architectures

Adaptive Applications

Adaptive sensing
Adaptive wired and wireless networks
Adaptive medical and prosthetic devices
Adaptive flight hardware
Adaptive control circuits and adaptive flight hardware
Adaptive wireless for space

Reconfigurable/Adaptive Computing - Supercomputing
Reconfigurable/Adaptive Computing - DSP and Communications
Reconfigurable/Adaptive Computing - Security and Cryptography

Others

Adaptive interfaces
Adaptation with hardware in the loop
Adaptive hardware/software for autonomous systems
Machine Learning

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 and made available through the **IEEE Xplore**.

Questions regarding papers should be addressed to:

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For further information please check the conference web site <http://www.see.ed.ac.uk/ahs2012>, or contact:

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Paper submission deadline:

January 23, 2012 **February 6, 2012 (extended deadline)**

Author notification:

March 30, 2012

Camera ready manuscript deadline:

April 15, 2012