

# Call for Papers

## The 3<sup>rd</sup> International Workshop on Reconfigurable Computing Education (RC education 2008)

April 10, 2008; Montpellier, France

<http://helios.informatik.uni-kl.de/RCeducation08/>

### Motivations

#### **The pervasiveness of Reconfigurable Computing (RC).**

Being the fastest growing segment of the microelectronics market, FPGAs have become mainstream already years ago in all kinds of embedded systems. More recently FPGAs and other Reconfigurable Computing (RC) platforms are rapidly moving into every application area, not only automotive, aerospace, defence, medical, chemistry, molecular biology, physics, astrophysics, high performance computing, supercomputing, and many other areas.

#### **Obsolete Computer Science (CS) curricula.**

Increasing complexity and rapidly growing pervasiveness of high performance computing and RC-based dual-paradigm devices has led to a major programming productivity crisis. On the other hand RC is a dramatically efficient approach to accelerate performance. While the economic importance of RC and its FPGAs is widely acknowledged, but the strategic dimension of RC has not been appreciated until recently, academia has failed to pay sufficient attention to its impact on education of system designers and programmers. We have missed to realize, that our graduates students need to have a dual paradigm background integrating instruction-stream-based models with a data-stream-based mind set.

#### **RC education needed.**

We need to counter the current trend, where specialization is the target of education systems. We need to go toward transdisciplinary CS-related curricula for unifying the discipline since it has become evident that fundamental problems are shared across many different application domains. It is the goal of this workshop to bring together researchers, educators, and industrial representatives to discuss the pros and cons and to share design, research, and education experiences in Reconfigurable Computing and a wide variety of its applications. RC education involves not only hardware-configure-software co-design but also helps to cope with the multicore programming crisis.

Although configure engineering is a discipline of its own, fundamentally different from software engineering, and, a configure industry is already existing and growing, it is mainly ignored by our curricula. Modern FPGAs have all 3 paradigms on board of the same VLSI chip: hardwired accelerators like e.g. FPGAs, multiple microprocessors, and multiple memory banks, and we need software and configure to program the same chip. To cope with the clash of cultures we need interdisciplinary curricula merging all these different backgrounds in a systematic way. We need innovative kinds of lectures and lab courses supporting the integration of reconfigurable computing for progressive curricula.

**The workshop intends to be a forum for presenting surveys, experiences, new educational approaches, and, for an exchange of opinions and ideas.**

Contributions are sought (but not limited to) in the following areas

#### **Developing the foundations from Computer Science (CS), Computer Engineering (CE), and Electrical Engineering (EE)**

- Solving communication problems between people from different cultures, proposing courses bridging a large variety of cultures and practices, observations of the education landscape in embedded system domain.
- The role of CS by providing a unifying view on various computing models.

#### **Designing RC-based new courses and new curricula**

- National differences in curricula and interdepartmental issues (CS/ECE), definition of RC-based computer science and engineering curricula
- RC-based embedded systems curricular design and implementation, courses for teaching hardware / configure / software co-design

#### **RC-based courses to cope with the multicore programming crisis:**

- Programming heterogeneous multicore systems (CPUs + FPGAs).
- Designing multicore architectures including on-chip and/or off-chip memory blocks.

#### **Teaching Reconfigurable Computing for bridging inter-cultural barriers:**

- Courses to solve industrial needs regarding RC-based education, RC-based university programs by industry
- Teaching RC for system-on-chip, mixed-signal, IP-based design,
- RC integrated in CS, CE or EE graduate and undergraduate education.

#### **Courses including FPGA and RC application to:**

- Computer systems, embedded systems, signal and image processing, real-time systems.
- Telecommunication, automotive, networking, cryptography.
- Many other application areas...

### Organization:

General Chair: Lionel Torres, LIRMM, Université de Montpellier, France

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### Paper Submission and Deadlines

Full papers, which will be peer-reviewed. Authors should send a two-column PDF version of their papers to the submission site provided by the workshop web site.

Submissions should be no more than six pages. The cover page should include: (1) title, (2) authors and affiliation, (3) contact author's e-mail address, and (4) abstract.

Submission deadline (extended): December 21, 2007

The submission website can be reached from:  
<http://helios.informatik.uni-kl.de/RCeducation08/>

Selected papers will be published by the International Journal of Reconfigurable Computing - <http://www.hindawi.com/journals/ijrc/>