FCCM 2012

Call for Papers

The 20th Annual International
IEEE Symposium on Field-Programmable Custom Computing Machines

Toronto, Canada
29 April – 1 May 2012
www.fccm.org

The IEEE Symposium on Field-Programmable Custom Computing Machines is the original and premier forum for presenting and discussing new research related to computing that exploits the unique features and capabilities of FPGAs and other reconfigurable hardware. Over the past two decades, FCCM has been the place to present papers on architectures, tools, and programming models for field-programmable custom computing machines as well as applications that use such systems. Papers on the traditional topics of FCCM as described below are solicited:

Non-Conventional High Level Compilation and Synthesis

This year we will host a special track on the synthesis of circuits from high level descriptions written in alternative languages with a focus on the compilation of programs into circuits. In particular we wish to attract papers that show how programs may be converted into circuits rather than using an existing programming language to improve the productivity of hardware engineers (as is the case for SystemC). Examples include:

- Use of functional languages for the synthesis of programs into circuits.
- Novel compilation technology that make FPGA technology more accessible to regular programmers by transforming regular programs into circuits.
- Systems that support mapping high level descriptions onto heterogeneous architectures that may comprise FPGAs, GPUs and multicore processors.
- Analysis (e.g. formal verification) of high level descriptions (e.g. model checking properties).
- Languages based on alternative semantics (rather than event-based simulation) e.g. on term-rewriting systems, actors, Petri-nets, models of delay-intensive circuits.

Architectures and Programming Models

- Architectures for high-performance and/or low-power configurable computing
- New spatial architectures with immense parallelism but different basic components than FPGAs
- System-level architectures for reconfigurable computing in either real-time or non-real-time systems

- Heterogeneous architectures that integrate a mix of coarse, fine, special-purpose, and general-purpose hardware
- Implications and effects of nanotechnology on reconfigurable computing (and vice versa)

Languages and Compilers

- New languages and development environments to describe spatial or heterogeneous applications
- Tools to make run-time reconfiguration more accessible to application designers
- Compilation and CAD techniques for reconfigurable computing systems and other spatial computers

Run-Time Systems and Run-Time Reconfiguration

- Operating system techniques to manage run-time reconfiguration of resources in reconfigurable computing or spatial computing systems
- Run-time CAD algorithms to support the above techniques or improve fault tolerance/avoidance
- Use of reconfigurability to build evolvable or adaptable computing systems
- Novel uses of run-time reconfiguration in application-specific systems

Applications

- Applications that use reconfigurability to customize hardware for scientific computation, mobile communications, medical image processing, data and communication security, network infrastructure and other embedded systems. These papers must discuss or show novel use of some particular attribute of the reconfigurable device used.
- Comparison of application implementations on different spatial hardware, such as GPGPUs, multi-core processors, and FPGAs

Submissions

FCCM will accept 8-page full papers for oral presentation, 4-page short papers for poster presentation, and poster presentations not included in the proceedings. All submissions should be written in the English language. An online submission link will be available on the FCCM website starting in late December. Papers should use the formatting template linked at the FCCM website.

FCCM is using a blind reviewing system. Manuscripts must not identify authors or their affiliations. Self-references should be shown as “Removed for blind review”. Papers that identify authors will not be considered.

Best Paper Award

For 2012, FCCM will continue to have a best paper award. Send in your best work for consideration!

Important Dates

Title and Abstract Submission: **6 January 2012**

Short and Regular Paper Submission: ~~**6 January 2012**~~ **Extended to 13 January 2012**

Notification of Acceptance: **27 February 2012**

Camera-ready Copy: **29 March 2012**

Conference: **29 April – 1 May 2012**

Organizing Committee

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20 Years of FCCM:

As this is the 20th anniversary of FCCM, we will be highlighting the most significant contributions from the conference over the past 20 years in a special volume. We are calling for your nominations on what you feel were the most impactful papers. Please see http://tcfpga.org/fccm20/index.html for more information.

Please direct questions about the program and submission of papers to Satnam Singh at s.singh@acm.org