EXADAPT

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ACM SIGPLAN 1st International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era (EXADAPT 2011)

San Jose, California, USA *June 5th, 2011*

(co-located with **PLDI 2011** / **FCRC 2011**)

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Modern large scale computing systems are rapidly evolving and may soon feature millions of cores with exaflop performance. However, this leads to a tremendous complexity with an unprecedented number of available design and optimization choices for architectures, applications, compilers and run-time systems. Using outdated, non-adaptive technology results in an enormous waste of expensive computing resources and energy, while slowing down time to market.

The 1st International Workshop on Self-tuning, Large Scale Computing Systems for Exaflop Era is intended to become a regular inter-disciplinary forum for researchers, practitioners, developers and application writers to discuss ideas, experience, methodology, applications, practical techniques and tools to improve or change current and future computing systems using self-tuning technology. Such systems should be able to automatically adjust their behavior to multi-objective usage scenarios at all levels (hardware and software) based on empirical, dynamic, iterative, statistical, collective, bio-inspired, machine learning and alternative techniques while fully utilizing available resources.

Full papers (at most 12 pages) and short position papers (at most 6 pages) will be peer-reviewed and should include unpublished ideas on the topics listed below. Submissions should be PDF documents typeset in the ACM SIGPLAN proceedings format using 10pt fonts. The proceedings of this workshop will be published in the ACM Digital Library.

- whole system parameterization and modularization to enable self-tuning across the whole hardware and software stack
- transformation space of static, JIT and source-to-source compilers
- run-time resource management/scheduling
- task/process/thread/data migration
- design space of architectures including heterogeneous multi-cores, accelerators, memory hierarchy and IO
- propagation and usage of the feedback between various system layers
- static and dynamic code and data partitioning/modification for self-tuning
- application conversion to support multi-level, hybrid parallelization
- modification of existing tools and applications to enable auto-tuning
- resource and contention aware scheduling
- performance, power and reliability evaluation methodologies
- scalable performance evaluation tools
- detection, classification, and mitigation of resource contentions
- collaborative optimization repositories and benchmarks
- characterization of static program constructs
- characterization of dynamic program behavior under various system load scenarios
- software/hardware co-design and co-optimization
- analysis of interactions between different parts of a large application
- prediction of optimizations and architectural designs based on prior knowledge
- scalable system and processor simulation
- hardware support for self-tuning and scheduling
- virtualization
- fault-tolerance

Important Dates:

Submissions due:	**April 13th, 2011** (23:59:59 submitter's time zone)
Author notification:	April 30th, 2011
Revised papers due:	May 15th, 2011
Early registration deadline:	TBA (Register at http://pldi11.cs.utah.edu)

Paper Submission Guidelines and News:

http://exadapt.org

Proceedings: ICPS Published by ACM

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