PARALLEL COMPUTING JOURNAL (PARCO) SPECIAL ISSUE ON APPLICATION ACCELERATORS IN HPC

CALL FOR PAPERS

The High-performance computing (HPC) community is shifting its focus from homogeneous systems employing identical processing elements to hybrid computing architectures that employ multi-core processors in combination with special-purpose chips. New multi-core architectures combined with application accelerators hold the promise of increasing application performance by exploiting levels of parallelism not supported by the conventional systems. Prominent examples of high-end systems based on such architectures include the Cell-based RoadRunner (currently #2 on the TOP-500 list), GPU-based Tianhe-1 system (currently #5 on the TOOP-500 list), and FPGA-based Novo-G systems. However, while there is a general trend towards hybrid systems, application developers wishing to take advantage of them are faced with significant algorithmic re-design and software re-engineering effort. The scientific computing community is only beginning to understand the intricacies and interactions between the new hardware, execution models, software architectures, development processes, and the application transformations necessary to utilize the available resources effectively.

The *Parallel Computing* journal (ParCo) seeks articles for a March 2011 special issue focusing on the use of application accelerators in HPC. The guest editors invite papers that address the challenge of using such systems for developing and running production applications. Contributions to the following topics of interest are invited:

- novel accelerator processors, systems, and architectures
- integration of accelerators with high-performance computing systems
- programming models for accelerator-based computing
- languages and compilers for accelerator-based computing
- run-time environments, profiling and debugging tools for accelerator-based computing
- scientific and engineering applications that use application accelerators

SUBMISSION INSTRUCTIONS

Authors are asked to submit high-quality original work that has neither appeared in, nor is under consideration by other journals. All submissions will be peer reviewed following the standard journal practices. Manuscripts based on previously published conference papers must be extended substantially to include at least 50% of new material.

Manuscripts should be submitted via Elsevier Editorial system (http://ees.elsevier.com/parco/). When submitting, please select "Special Issue: AAHPC" for the *Article Type* during the submission process. All questions about this special issue should be sent to one of the Guest Editors at the addresses below.

GUEST EDITORS

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IMPORTANT DATES

Manuscript submission: August 20, 2010
Acceptance notification: December 17, 2010
Final papers due: January 21, 2011
Publication date: March 2011