

Innovative Parallel Computing

Foundations & Applications of GPU, Manycore, and Heterogeneous Systems (INPAR'12)

Call for papers

We are pleased to announce the **2012 Innovative Parallel Computing: Foundations & Applications of GPU, Manycore, and Heterogeneous Systems (InPar'12)**. This new conference provides a first-tier academic venue for peer-reviewed publications in the emerging fields of parallel computing, encompassing the topics of GPU computing, manycore computing, and heterogeneous computing.

InPar has dual focus on “Foundations”—the fundamental advances in parallel computing itself— and “Applications”—case studies and lessons learned from the application of commodity parallel computing in domains across science and engineering. The goal of InPar is to bring together researchers in the myriad fields being revolutionized by GPUs to share experiences, discover commonalities, and both inform and learn from the computer scientists working on the foundations of parallel computing.

Template: The paper template and directions are available at <http://innovativeparallel.org/CFP.aspx>. There is no official length limit; however papers longer than ten typeset pages in the final format must make a significant contribution that warrants the increased length.

Topics: InPar encourages papers involving current GPU/manycore architectures, new or emerging commodity parallel architectures (such as Intel “MIC” products), and hybrid or heterogeneous systems. Possible topics include, but are not limited to:

Foundations:

- Programming systems
 - Parallel programming models
 - Languages, including domain-specific languages (DSLs)
 - Compilers and runtime systems
 - Operating system support for GPU/manycore processors and heterogeneity
 - Approaches and tools for program analysis, profiling and debugging
- Rethinking algorithms and data structures for parallel computing
 - Core algorithms and data structures: sorting, hash tables, etc.
 - Graph algorithms
 - Numerical algorithms and data structures
- Heterogeneous computing with a primary focus toward GPUs/manycore processors
 - Compilation for heterogeneous applications
 - Runtime support for heterogeneous applications
 - Applications that effectively use heterogeneous resources

- Cross-platform solutions
 - Languages and runtime systems (OpenCL, Ocelot, PyOpenCL, etc)
 - Performance evaluation and comparisons
- Computer architecture for commodity parallel computing
 - Parallel system simulators and predictive models
 - Microarchitecture
 - Memory system architecture
 - System interconnect
 - Fault tolerance and reliable computing

Applications:

- Computational physics and chemistry
 - molecular physics, quantum chemistry
 - condensed-matter physics, fluid dynamics and material science
 - earth sciences, climate and weather modeling
 - astrophysics and cosmology
- Life sciences & computational biology
 - bioinformatics, protein folding
 - neuroscience
 - biomedical imaging
- Engineering simulation & design
 - optimization
 - electronic design automation
 - product development
- Statistical modeling and computational finance
 - random number generators, Monte Carlo
 - data analysis and forecasting
- Data-intensive applications
 - machine learning
 - artificial intelligence
 - real-time processing
- Computer vision
 - fast graph algorithms
 - visual saliency, recognition, object detection
- Video/image/audio and signal processing
 - speech recognition
 - photo-realistic rendering
 - spectral analysis
 - visual effects for film and video

Committee:

General co-chairs:

- Amitabh Varshney (University of Maryland)
- David Luebke (NVIDIA Research)

Paper co-chairs:

- Lorena Barba (Boston University)
- John Owens (University of California Davis)

Program co-chairs:

- John Stone (University of Illinois)
- Hanspeter Pfister (Harvard University)

Steering Committee chair:

- Wen-Mei Hwu (University of Illinois)

Treasurer:

- Andrew Schuh (University of Illinois)

Dates:

Abstract due:	December 6, 2011 (11:59 PM PST)
Papers due:	December 13, 2011 (11:59 PM PST)
Authors informed of decisions:	February 10, 2012
Camera-ready papers due:	March 2, 2012 (11:59 PM PST)
Conference:	May 13-14, 2012

Submissions to InPar should be anonymous. Papers should contain no identifying information. Please contact the Papers Chairs (inpar12@innovativeparallel.org) if you require an exception.

Proceedings: InPar is a highly selective, peer-reviewed, and archival publication venue. Due to the diverse, multi-disciplinary nature of this conference, some authors may be unfamiliar with publication traditions that are customary in computer science but uncommon in other fields. We are currently working towards ACM sponsorship of this conference. After approval, the papers will be published via

the ACM International Conference Proceedings Series and will appear in the ACM Digital Library, will receive an ISBN number, etc. The program committee and tertiary reviewers will review, rank, and select only the best papers for presentation at the conference and publication in the proceedings. Authors will receive review reports, but the short publication cycle allows only minor revisions.

The conference website is available at www.innovativeparallel.org.