

## This issue's highlights:

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- News: Special Report on IPDPS 2016 Workshops, and The ANTAREX project
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- Faculty and postdoctoral open positions
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## IPDPS'16 Highlights

This year IPDPS was held in downtown Chicago. This year's conference featured keynote talks from Kai Li (Princeton University), Thomas Pawlowski (Micron), and Katrin Heitmman (Argonne National Laboratory). In total 23 workshops and 28 sessions took place to discuss the 114 accepted papers. These 114 papers were selected among 496 submitted papers giving us an acceptance rate of roughly 23%. During IPDPS a number of awards were given (which are listed in the awards section). Katrin Heitmman's keynote talk emphasized the importance of computer scientists interacting with computational scientists. NVIDIA's sponsored hands-on learning session for university educators was conducted by Prof. Wen-Mei Hwu. This and other activities indicated an increasing trend towards introducing parallel and distributed computing during the first 2 years of undergraduate studies.

This year's conference banquet reception included Chinese string band; their performance featured Jasmine flower. All in all, the conference was a very successful event. Next year IPDPS'17 will be held from May 29 – June 2, at Buena Vista Palace Hotel Orlando, Florida USA.

## Guidelines for Posting to TCPP Email Distribution List

In order to avoid being termed as spam, TCPP mailing list policy is to allow stand-alone announcements mainly for TCPP sponsored conferences and events (e.g. Call for Papers and Call for Participation one or two per event) and TCPP communications. Events related to the areas covered by TCPP (parallel and distributed processing, high performance computing, etc.) can be also listed in the website's events calendar at [tcpp.computer.org](http://tcpp.computer.org) and in the newsletter. Please send your announcement to [tcpp-announce@computer.org](mailto:tcpp-announce@computer.org).

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<https://cs-listserv.ieee.org/cgi-bin/wa?SUBED1=tcpp-announce&A=1>

Be a part of the PDC+HPC community and join IEEE-CS TCPP at: <https://www.ieee.org/membership-catalog/productdetail/showProductDetailPage.html?product=CMYPP723>.

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# In News

## Special Report on IPDPS 2016 Workshops

IPDPS 2016 had 23 workshops which were held on Monday and Friday, preceding and following the main events. We also had two community workshops on Sunday, one Roundtable workshop on Monday and another Roundtable workshop on Tuesday. All of these events offered 218 peer-reviewed papers, invited talks, posters and great participant interaction.

This year's workshops ranged from well-established ones, such as RAW and HCW to the five brand new workshops which covered visualization, variability, monitoring and analysis of high performance computing systems, runtime systems, and computational social systems. Below you will find a few words about some of the 23 workshops.

Call for workshops for IPDPS 2017 can be found at the IPDPS web page. A committee is formed to evaluate all proposals. All topics related to IPDPS and extend the topics of interest beyond those of the main symposium are welcome.

### Accelerators and Hybrid Exascale Systems – ASHES (+ PLC)

The Sixth International Workshop on Accelerators and Hybrid Exascale Systems kicked-off with a Keynote from Prof. Wen-Mei Hwu (UIUC) on programming challenges for heterogeneous computing. He also shared lessons learnt from migrating applications to Blue Waters and potential solutions for effective programming on Exascale Systems. The workshop resumed with talks from eleven authors regarding their work on programming models, tools, algorithms, parallelization techniques, and scheduling workload on current systems.

The Best Paper Award was given to the authors from Queen's University that presented on topology-aware GPU communication.



ASHES Keynote Talk

### Advances in Parallel and Distributed Computational Models – APDCM

Novel parallel and distributed computational models have been proposed in the literature, reflecting advances in new computational devices and environments such as optical interconnects, programmable logic arrays, networks of workstations, radio communications, mobile computing, DNA computing, quantum computing, sensor networks etc. It is very encouraging to note that the advent of these new models has led to significant advances in the resolution of various difficult problems of practical interest.

The main goal of this workshop is to provide a timely forum for the exchange and dissemination of new ideas, techniques and research in the field of the parallel and distributed computational models. The workshop is meant to bring together researchers and practitioners interested in all aspects of parallel and distributed computing taken in an inclusive, rather than exclusive, sense. We are convinced that the workshop atmosphere will be conducive to open and mutually beneficial exchanges of ideas between the participants.



ASHES Best Paper Award

## **International Workshop on Automatic Performance Tuning – iWAPT**

The Eleventh International Workshop on Automatic Performance Tuning (iWAPT2016) has been successfully held in conjunction with IEEE IPDPS 2016. Researchers met in the workshop to investigate automated techniques for constructing and/or adapting algorithms and software for high-performance on modern complex machine architectures. The two invited speakers, Mary Hall (University of Utah, USA) and Paul Hovland (Argonne National Laboratory, USA), talked about the latest issues and solutions about auto-tuning for diverse architectures regarding compiler, productivity, models, and mathematics. Seven international speakers presented their refereed papers regarding the following topics. The speakers focused on auto-tuning regarding hybrid MPI/OpenMP on ppOpenAT, OpenACC on ppOpenAT, Address aliasing, BlkTune for stencil computations, time cost based auto-scheduling, portability in search algorithms, and search space generation. See the web page <http://iwapt.org/2016/> for more information. The next iWAPT in 2017 is under planning in conjunction with IEEE IPDPS 2017.

## **Chapel Implementers and Users Workshop – CHIUW**

First CHIUW Workshop that offered paper supported talks and the quality of the papers was very good. The CHIUW code camp held on Saturday after IPDPS allowed CHIUW users to work closely with Chapel developers. Keynote talk by Yale Astrophysicist Nikhil Padmanabhan was interesting, entertaining, and an excellent motivation for using the Chapel Language.

## **Dependable Parallel, Distributed and Network-Centric Systems – DPDNS**

Increasingly, large and complex parallel distributed and network-centric computing systems provide unique challenges to the researchers in dependable computing, especially because of the high failure rates intrinsic to these systems. This workshop is a continuation of the FTPDS (Fault-Tolerant Parallel and Distributed Systems) workshop series. The goal is to provide a forum for researchers and practitioners to discuss all aspects of dependability including reliability, availability, safety and security for parallel, distributed and network-centric systems. All aspects of design, theory and realization are of interest.

## **Emerging Parallel and Distributed Runtime Systems and Middleware – IPDRM**

Node architectures of extreme-scale systems are rapidly increasing in complexity. Emerging homogeneous and heterogeneous designs provide massive multi-level parallelism, but developing efficient runtime systems and middleware that allow applications to efficiently and productively exploit these architectures is extremely challenging. Moreover, current state-of-the-art approaches may become unworkable once energy consumption, resilience, and data movement constraints are added. The goal of this workshop is to attract the international research community to share new and bold ideas that will address the challenges of design, implementation, deployment, and evaluation of future runtime systems and middleware. This workshop will emphasize novel, disruptive research ideas over incremental advances. Workshop accepts novel work in as either full Papers (8 Pages Max) or short Papers (4 Pages Max).

## **Graph Algorithms Building Blocks – GABB**

The Basic Linear Algebra Subprograms, introduced over 30 years ago, had a transformative effect on software for linear algebra. With the BLAS, researchers spend less time mapping algorithms onto specific features of hardware platforms and more time on interesting new algorithms.

Would it be practical to define an analogous set of basic building blocks for graph algorithms? Can we define a core set of mathematical primitives from which we can build most (if not all) important graph algorithms? If we can agree on the mathematical foundations, how would these interact with the data structures used in graph algorithms and result in an API the graph algorithms research community could support?

Workshop's goal is to be interactive platform where the full range of issues behind "Graph Algorithms Building Blocks" will be explored. We encourage researchers to submit papers that report preliminary results and unproven but interesting ideas.

## **Heterogeneity in Computing Workshop – HCW**

Heterogeneous computing systems comprise growing numbers of increasingly more diverse computing resources that can be local to one another or geographically distributed. The opportunity and need for effectively utilizing heterogeneous computing resources has given rise to the notions of cluster computing, grid computing, and cloud computing. HCW encourages paper submissions from both the research and industry communities presenting novel ideas on theoretical and practical aspects of computing in heterogeneous computing environments.

The proceedings of the HCW 2016 are distributed at the conference and are submitted for inclusion in the IEEE Xplore Digital Library after the conference.

## **Workshop on High Performance Computational Biology – HiCOMB**

High-performance computing is an integral part of research and development in bioinformatics/computational biology and medical and health informatics. The large size and complexity of biological data sets, and inherent complexity of the underlying biological problems have collectively resulted in large run-time and memory requirements. The goal of this workshop is to provide a forum for discussion of latest research in developing high-performance computing solutions to data- and compute-intensive problems arising from all areas of computational life sciences. We are especially interested in parallel and distributed algorithms, memory-efficient algorithms, large scale data mining techniques, including approaches for big data and cloud computing, algorithms on multicores, many cores and GPUs, and design of high-performance software and hardware for biological applications.

HiCOMB 2016 invited Alex Pothen from Purdue University as their keynote speaker on "The Big Challenges of Big Data in Bioinformatics". And also a special invited talk on "Parallel de novo Assembly of Complex Genomes via HipMER" by Aydin Buluc, Lawrence Berkeley National Lab.

## **High Performance Data Analysis and Visualization – HPDAV**

While the purpose of visualization and analysis is insight, realizing that objective requires solving complex problems related to crafting or adapting algorithms and applications to take advantage of evolving architectures, and to solve increasingly complex data understanding problems for ever larger and more complex data. These architectures, and the systems from which they are built, have increasingly deep memory hierarchies, increasing concurrency, decreasing relative per-core/per-node I/O capacity, lessening memory per core, are increasingly prone to failures, and face power limitations.

The purpose of this workshop is to bring together researchers, engineers, and architects of data-intensive computing technologies, which span visualization, analysis, and data management, to present and discuss research topics germane to high performance data analysis and visualization. Specifically, this workshop focuses on research topics related to adapting/creating algorithms, technologies, and applications for use on emerging computational architectures and platforms.

## **Workshop on High-Level Parallel Programming Models & Supportive Environments – HIPS**

Focuses on high-level programming of multiprocessors, compute clusters, and massively parallel machines. Like previous workshops in the series, which was established in 1996, this event serves as a forum for research in the areas of parallel applications, language design, compilers, runtime systems, and programming tools. It provides a timely and lightweight forum for scientists and engineers to present the latest ideas and findings in these rapidly changing fields. In our call for papers, we especially encouraged innovative approaches in the areas of emerging programming models for large-scale parallel systems and many-core architectures.

## High-Performance Big Data Computing – HPBDC

HPBDC aims to bring HPC and Big Data processing into a ‘convergent trajectory’. The workshop provides a forum for scientists and engineers in academia and industry to present their latest research findings on major and emerging topics in this field. HPBDC 2016 had one keynote talk, “High Performance Computing and Which Big Data?”, from Dr. Chaitanya Baru, who is a Distinguished Scientist in San Diego Supercomputer Center (SDSC). Six regular paper presentations and two short paper presentations were given by researchers coming from around the world. A fantastic panel on the topic of “Merge or Split: Mutual Influence between Big Data and HPC Techniques” was moderated by Prof. Jianfeng Zhan from Institute of Computing Technology, Chinese Academy of Sciences, China. Five world-class scientists (Dr. Chaitanya Baru from San Diego Supercomputer Center; Dr. Pete Beckman from Argonne National Laboratory and The University of Chicago; Dr. Andrew A. Chien from The University of Chicago and Argonne National Laboratory; Dr. Geoffrey C. Fox from Indiana University Bloomington; Dr. D. K. Panda from The Ohio State University) joined the panel and presented their opinions on this field. The panel and Q&A were very interactive. All the slides of the presentations and more details about the workshop program can be found at <http://web.cse.ohio-state.edu/~luxi/hpbdc2016/program.html>.



HPBDC Workshop In-progress

## High-Performance, Power-Aware Computing – HPPAC

Power and energy are now recognized as first-order constraints in high-performance computing. Optimizing performance under power and energy bounds requires coordination across not only the software stack (compilers, operating and runtime systems, job schedulers) but also coordination with cooling systems and outwards to electrical suppliers. As we continue to move towards exascale and extreme scale computing, understanding how power translates to performance becomes an increasingly critical problem.

The purpose of this workshop is to provide a forum where cutting-edge research in the above topic can be shared with others in the community.

## Workshop on Job Scheduling Strategies for Parallel Processing – JSSPP

Workshop had a keynote talk on “Pushing Cloud out of the Comfort Zone” by Walfredo Cirne (Google), Narayan Desai (Ericsson).

## Large-Scale Parallel Processing – LSPP

The workshop on Large-Scale Parallel Processing is a forum that focuses on computer systems that utilize thousands of processors and beyond. Large-scale systems, referred to by some as extreme-scale and Ultra-scale, have many important research aspects that need detailed examination in order for their effective design, deployment, and utilization to take place. These include handling the substantial increase in multi-core on a chip, the ensuing interconnection hierarchy, communication, and synchronization mechanisms. Increasingly this is becoming an issue of co-design involving performance, power and reliability aspects. The workshop aims to bring together researchers from different communities working on challenging problems in this area for a dynamic exchange of ideas. Work at early stages of development as well as work that has been demonstrated in practice is equally welcome.

## Monitoring and Analysis for High Performance Computing Systems Plus Applications – HPCMASPA

The third Workshop on Monitoring and Analysis for High Performance Computing Systems Plus Application (HPCMASPA) was a great success this year. The program started with a keynote from Bill Kramer, Director and PI of the NCSA Blue Waters Project, in which he discussed the past, present, and future of system monitoring, failure, and resiliency. The workshop's two paper sessions focused on Instrumentation and Metrics in the morning and System Monitoring in the afternoon, and the final session was a lively panel focusing on Accessible Analytics and Visualizations. The workshop discussion spilled over into the evening, and will continue via the Monitoring Large-Scale HPC Systems group at <https://sites.google.com/site/monitoringlargescalehpcsystems/>.

## NSF/TCPP Workshop on Parallel and Distributed Computing Education – EduPar

Parallel and Distributed Computing (PDC) now permeates most computing activities. The pervasiveness of computing devices containing multicore CPUs and GPUs, including home and office PCs, laptops, and mobile devices, is making even common users dependent on parallel processing. Certainly, it is no longer sufficient for even basic programmers to acquire only the traditional sequential programming skills. The preceding trends point to the need for imparting a broad-based skill set in PDC technology at various levels in the educational fabric woven by Computer Science (CS) and Computer Engineering (CE) programs as well as related computational disciplines. However, the rapid changes in computing hardware platforms and devices, languages, supporting programming environments, and research advances, more than ever challenge educators in knowing what to include in the curriculum and what to teach in any given semester or course.

The workshop especially seeks papers that report on experience with implementing aspects of the NSF/TCPP or ACM/IEEE CS2013 curriculum or other novel approaches to incorporating PDC topics into undergraduate core courses that are taken by the majority of students in a program. Methods, pedagogical approaches, tools, and techniques that have the potential for adoption across the broader community are of particular interest.

## Parallel and Distributed Computing for Large Scale Machine Learning and Big Data Analytics – ParLearning

This year ParLearning workshop invited Dr. Peter Kogge for keynote talk on “Comparative Performance of a Big Data Problem on a Variety of Highly Parallel Architectures”. In general workshop concentrates on technical challenge in the terms of “Big Data” for scaling up of machine-learning (ML), data mining (DM) and reasoning algorithms from Artificial Intelligence (AI) for massive datasets. In distributed computing, several frameworks such as Mahout, GraphLab and Spark continue to appear to facilitate scaling up ML/DM/AI algorithms using higher levels of abstraction. Workshops invites novel works that advance the trio-fields of ML/DM/AI through development of scalable algorithms or computing frameworks. Ideal submissions would be characterized as scaling up X on Y, where potential choices for X and Y are provided below.

Scaling up

- recommender systems
- gradient descent algorithms
- deep learning
- sampling/sketching techniques
- clustering (agglomerative techniques, graph clustering, clustering heterogeneous data)
- classification (SVM and other classifiers)
- SVD
- probabilistic inference (Bayesian networks)
- logical reasoning
- graph algorithms and graph mining

On

- Parallel architectures/frameworks (OpenMP, OpenCL, Intel TBB)
- Distributed systems/frameworks (GraphLab, Hadoop, MPI, Spark etc.)

## **Parallel and Distributed Processing for Computational Social Systems – ParSocial**

The 1st IEEE Workshop on Parallel and Distributed Processing for Computational Social Systems (ParSocial) provides a platform to bring together interdisciplinary researchers from areas, such as computer science, social sciences, applied mathematics and computer engineering, to showcase innovative research in computational social systems that leverage the emerging trends in parallel and distributed processing, computational modeling, and high performance computing.

## **Workshop on Parallel and Distributed Scientific and Engineering Computing – PDSEC**

This special workshop will bring together computer scientists, applied mathematicians and researchers to present, discuss and exchange ideas, results, work in progress and experiences in the area of parallel and distributed computing for problems in science and engineering applications and inter-disciplinary applications.

The field of high performance computing has been prominent since the 1940s, and has become increasingly significant as recent advances in electronic and integrated circuit technologies have made it more widely accessible. The hardware is becoming faster, less expensive and more cost effective, which will result in a proliferation in the application of parallel and distributed systems. Scientific and engineering application domains play a key role in shaping future research and development activities in academia and industry, especially when the solution of large and complex problems must cope with tight timing constraints.

## **Parallel Computing and Optimization – PCO**

The IEEE Workshop on Parallel Computing and Optimization aims at providing a forum for scientific researchers and engineers on recent advances in the field of parallel or distributed computing for difficult combinatorial optimization problems, like 0-1 multidimensional knapsack problems and cutting stock problems, large scale linear programming problems, nonlinear optimization problems and global optimization problems. Emphasis will be placed on new techniques for the solution of these difficult problems like cooperative methods for integer programming problems and polynomial optimization methods. Aspects related to Combinatorial Scientific Computing (CSC) will also be treated. In particular, we solicit submissions of original manuscripts on sparse matrix computations and relatives (including graph algorithms); and related methods and tools for their efficiency on different parallel systems. The use of new approaches in parallel and distributed computing like GPU, MIC, grid computing, peer to peer computing will be considered.

## **Reconfigurable Architectures Workshop – RAW**

A reconfigurable computing environment is characterized by the ability of underlying hardware architectures or devices to rapidly alter (often on the fly) the functionalities of their components and the interconnection between them to suit the problem at hand. The area has a rich theoretical tradition and wide practical applicability. The Reconfigurable Architectures Workshop aims to provide a forum for creative and productive interaction for researchers and practitioners in the area.

RAW 2016 held social event at Kingstone Mines, 2548 North Halsted Street, Chicago, IL 60614 and was sponsored by TOPIC. Selected papers from this year's workshop will be invited for submission to a special issue on Reconfigurable Computing for the Journal of Parallel and Distributed Computing. RAW prides in the quality and number of papers that are accepted and in recognition it honors participants with 4 awards sponsored by Xilinx:

- 2 Best papers
- 1 Best demo
- 1 Best poster

## **Variability in Parallel and Distributed Systems – VarSys**

System variability increases with scale and complexity. The growing effects of variability are known to limit both performance and energy efficiency in large-scale systems. The goal of this workshop is to bring together researchers across parallel and distributed communities to share challenges, experiences, and developments related to variability.

## IPDPS'16 PhD Forum

The annual IPDPS PhD Forum event had increased number of participants compared to previous years. PhD forum continued with the traditional poster presentations by students working toward a PhD in broadly defined areas related to parallel and distributed processing. This year participating students had to opportunity to interact with senior academic and industry people to discuss possible career options. And also with conference best paper award recipients and ask questions on publishing their own work including pointers to work on dissertation in general. Participants also enjoyed the activities and had a good experience, especially so during student dinner at Gino's East Superior.

PhD forum at IPDPS is meant to groom next generation researcher and innovators. And this clearly seen from the number conference attendees showing interest in student's poster presentations.



## The ANTAREX, Project in High Performance Computing wins H2020 grant

The ANTAREX (Autotuning and Adaptivity Approach for Energy Efficient Exascale HPC Systems) research project, coordinated by prof. Cristina Silvano from Politecnico di Milano, is a H2020 Future and Emerging Technologies (FET) programme on High Performance Computing, granted with 3 million euro, and started on Sept. 1, 2015. The project involves CINECA, the Italian Tier-0 Supercomputing Centre and IT4Innovations, the Czech Tier-I Supercomputing Center. The Consortium also includes three top-ranked academic partners (ETH Zurich, University of Porto, and INRIA), one of the Italian leading biopharmaceutical companies (Dompé) and the top European navigation software company (Sygic).

**The main goal of the ANTAREX project is to provide a breakthrough approach to map, runtime manage and autotune applications for green and heterogeneous High Performance Computing systems up to the Exascale level.** One key innovation of the proposed approach consists of introducing a separation of concerns (where self-adaptivity and energy efficient strategies are specified aside to application functionalities) promoted by a Domain Specific Language (DSL) inspired by aspect-oriented programming concepts for heterogeneous systems. The new DSL will allow to express the adaptivity/energy/performance strategies and to enforce at runtime application autotuning and resource and power management. The goal is to support the parallelism, scalability and adaptability of a dynamic workload by exploiting the full system capabilities (including energy management) for emerging large-scale and extreme-scale systems, while reducing the Total Cost of Ownership (TCO) for companies and public organizations.

The ANTAREX project is driven by **two use cases** chosen to address the self-adaptivity and scalability characteristics of two highly relevant HPC application scenarios:

- a biopharmaceutical HPC application for accelerating drug discovery deployed on the 1.2 PetaFlops heterogeneous NeXtScale Intel-based IBM system at CINECA, and highlighting the performance demands for personalized drug design;
- a self-adaptive navigation system to be used in smart cities deployed on the server-side on a heterogeneous Intel-based 1.46 PetaFlops class system provided by IT4Innovations, and highlighting sophisticated navigation systems taking advantage of multiple sources of information from sensing and other providers.

The key ANTAREX innovations will be designed and engineered since the beginning to be scaled-up to the Exascale level. Performance metrics extracted from the two use cases will be modeled to extrapolate these results towards Exascale systems. These use cases have been selected due to their significance in emerging application trends and thus by their direct economic exploitability and relevant social impact.

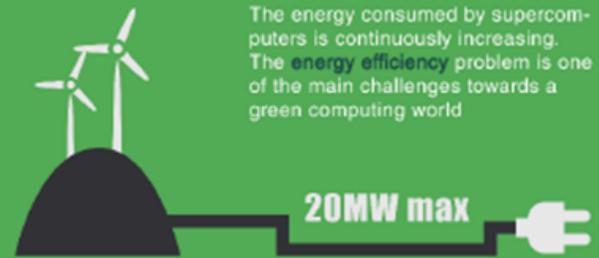
# ANTAREX<sup>10<sup>18</sup></sup>

## LEVERAGING EXASCALE

The next generation of super-computing systems will enable the design of new applications, such as personalized pharmaceutical drugs and self-adaptable navigation for smart cities



The energy consumed by supercomputers is continuously increasing. The **energy efficiency** problem is one of the main challenges towards a green computing world



Self-adaptivity and autotuning can increase the efficiency of a supercomputing system



ANTAREX proposes **tools, languages and techniques** over software knobs that allow current systems to become smarter



# Awards

## IPDPS '16 Best papers

### **ZNN - A Fast and Scalable Algorithm for Training 3D Convolutional Networks on Multi-Core and Many-Core Shared Memory Machines**

Aleksandar Zlateski and Kisuk Lee (Massachusetts Institute of Technology, USA); H. Sebastian Seung (Princeton University, USA)

### **Stochastic Matrix-Function Estimators Scalable Big-Data Kernels with High Performance**

Peter Staar and Panagiotis Barkoutsos (IBM Zurich Research Laboratory, Switzerland); Roxana Istrate (IBM ZRL, Switzerland); A. Cristiano I. Malossi (IBM ZRL, Switzerland); Ivano Tavernelli, Nikolaj Moll and Heiner Giefers (IBM ZRL, Switzerland); Christoph Hagleitner (IBM ZRL, Switzerland); Costas Bekas and Alessandro Curioni (IBM ZRL, Switzerland)

### **Discrete Cache Insertion Policies for Shared Last Level Cache Management on Large Multicores**

Aswinkumar Sridharan (INRIA, France); André Seznec (Irisa/Inria, France)

### **Massively Parallel First-Principles Simulation of Electron Dynamics in Materials**

Erik Draeger and Xavier Andrade (Lawrence Livermore National Laboratory, USA); John Gunnels (IBM T. J. Watson Research Center, USA); Abhinav Bhatele (Lawrence Livermore National Laboratory, USA); Andre Schleife (University of Illinois, Urbana-Champaign, USA); Alfredo Correa (Lawrence Livermore National Laboratory, USA)

## PhD Forum Best Poster Awards

### **Archer: Effectively Spotting Data Races in Large OpenMP Applications**

Simone Atzeni, Ganesh Gopalakrishnan and Zvonimir Rakamaric (University of Utah, USA)

### **Rapid Cache Sharing Prediction for Out-of-Order Cores**

German Ceballos and David Black-Schaffer (Uppsala University, Sweden)

### **Coarse Grained Reconfigurable General Purpose Hardware Accelerators**

Lukas Jung and Christian Hochberger (Technische Universität Darmstadt, Germany)

## Workshop on Accelerators and Hybrid Exascale Systems - AsHES

### **Best Paper Award Winner**

Topology-Aware GPU Selection on Multi-GPU Nodes, Iman Faraji, Seyed Hessam Mirsadeghi and Ahmad Afsahi

## Faculty and postdoctoral open positions

### Georgia State University's Department of Computer Science is looking for Two Lecturer Positions Starting August 2016

The Department of Computer Science of Georgia State University invites applications for two lecturer positions. The positions will begin in August 2016 and an earned Ph.D. in Computer Science is required (candidates who are expected to receive their Ph.D. by December of 2016 will be considered). Preference will be given to candidates with prior experience in teaching undergraduate computer science courses.

The lecturers will be responsible for teaching a wide variety of undergraduate courses, including principles of computer science and programming, theoretical foundations of computer science, data structures, systems-level programming, and computer organization and assembly language. In addition, the lecturers will participate in advising, courses development, and lab supervision.

Georgia State University (GSU) is an urban public research university serving 52,000 students and is centered in the historic financial hub of downtown Atlanta. The Computer Science Department offers programs leading to the B.S., M.S., and Ph.D. degrees in computer science.

At GSU, lecturers play a significant role in achieving the mission of the University. To recognize this, there is a clear career path that includes promotion to Senior Lecturer and Principal Senior Lecturer. This path mirrors the promotion process for tenure-track faculty.

Women and minorities are especially encouraged to apply. For best consideration, applications are due by June 15th, 2016 submitted online at: <https://academicjobsonline.org/ajo/jobs/7306>

Applicants should submit an academic CV, teaching statement, and a list of at least three references.

An offer of employment, pending budgetary approval, will be conditional on background verification. Georgia State University, a Research University of the University System of Georgia, is an AA/EEO employer.

### Full-Time Faculty Position with IISc, Bengaluru

The Department of Computational and Data Sciences (CDS), Indian Institute of Science, Bengaluru, India is inviting applications for full-time tenure track faculty positions at all levels (Assistant Professor, Associate Professor and Professor).

CDS is an interdisciplinary engineering department spanning the research areas of Computational Science and Engineering, and Data Sciences. Computational science deals with computational methods, related mathematics and algorithms, and the design of high performance and scalable systems to support scientific and engineering applications. Data Science explores models, algorithms and scalable systems to extract knowledge and insight from both structured and unstructured data of various scales. CDS invites applications in all areas of computational and data sciences that lie at the intersection of methods, systems and applications, specifically in the following topics.

- Computational Mathematics and its Application to Science and Engineering – All areas, especially in emerging areas and in areas that complement the specialization of the current faculty
- Data science and its Applications--All areas including analytics, assimilation, visualization, knowledge extraction and representation, statistics at scale, programming models and platforms.

Scalable Systems for Computation and Data Sciences - emerging hardware architectures and software systems

The Indian Institute of Science (IISc) is the premier graduate teaching and research institution in India, and is highly ranked on global metrics. Established over a century ago and located in the vibrant technology capital of Bangalore, IISc is renowned for its academic freedom. Its focus on research excellence, quality of students and faculty, and leadership in national and international initiatives, are widely recognized. CDS fully internalizes this creative academic ambience, and enriches it with a variety of unique facets. Interdisciplinary and collaborative research is strongly encouraged and supported, as is reflected in the current CDS faculty profiles.

CDS welcomes rolling applications, round-the-year, from Indian nationals who are exceptionally motivated, with an established record of independent, high quality research, and a commitment to teaching. The department expects the candidates to have published in top-ranking fora in their areas of expertise. Prospective faculty candidates are invited to email their application packets consisting of their CV, a list of three or more referees, a research statement with prior contributions and future plans, a teaching statement, and three select publications to [frc-chair@cds.iisc.ac.in](mailto:frc-chair@cds.iisc.ac.in).

Additional information:

More details for prospective faculty - <http://cds.iisc.in/opportunities/faculty/>

Department web page: <http://cds.iisc.in>

Institute web page: <http://www.iisc.in>

## Upcoming TCPP sponsored and related meetings

Date	Event		Place
13-Jun-16	18th International Conference on Advances in Distributed and Parallel Computing (ICADPC)		Venice, Italy
19-Jun-17	ISC High Performance		Frankfurt, Germany
27-Jun-16	International Conference on Distributed Computing Systems		Nara, Japan
18-Jul-16	International Conference on High Performance Computing & Simulation (HPCS)		Innsbruck, Austria
	Paper submission	22-Feb-16	
	Other tracks submission deadline varies	22-Feb-16 and after	
	Acceptance notification	7-Apr-16	
	Camera Ready	1-May-16	
26-Jul-16	The IEEE 802.16 Working Group on Broadband Wireless Access Standards		San Diego, CA USA
13-Aug-16	International Conference on Embedded Software and Systems		Chengdu, China
16-Aug-16	Sixth International Workshop on Parallel Software Tools and Tool Infrastructures (PSTI)		Philadelphia, PA USA
16-Aug-16	5th International Workshop on Power-aware Algorithms, Systems, and Architectures.		Philadelphia, PA USA
16-Aug-16	International Conference on Parallel Processing		Philadelphia, PA USA
	Paper submission	26-Feb-16	
	Author notification	6-May-16	
	Camera Ready	3-Jun-16	
22-Aug-16	Euro-Par 2016, 22nd International European Conference on Parallel and Distributed Computing		Grenoble, France
	Abstracts due	9-Feb-16	
	Paper submission	16-Feb-16	
	Author notification	24-Apr-16	
	Camera Ready	3-Jun-16	
22-Aug-16	The International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms (HeteroPar)		Grenoble, France
22-Aug-16	The IEEE 4th International Conference on Future Internet of Things and Cloud		Vienna, Austria
22-Aug-16	Third International Workshop on Energy Management for Sustainable Internet-of-Things and Cloud Computing		Vienna, Austria
24-Aug-16	The 6th International Workshop on Embedded Multi-core Computing and Applications		Paris, France
24-Aug-16	19th IEEE International Conference on Computational Science and Engineering (CSE)		Paris, France
	Paper submission	31-May-16	
	Author notification	23-Jun-16	
	Camera Ready	15-Jul-16	
24-Aug-16	1st International Symposium on High-Fidelity, Reproducibility and Data Analysis in Numerical Simulation		Paris, France
24-Aug-16	1st International Workshop on Distributed Environments for Computational Science (DECS)		Paris, France
5-Sep-16	5th European Conference on Service-Oriented and Cloud Computing		Vienna, Austria
	Paper submission	1-Jul-16	
	Author notification	1-Aug-16	
	Camera Ready	8-Aug-16	
11-Sep-16	11th Workshop on Agent Based Computing: from Model to Implementation		Gdansk, Poland
	Paper submission	30-May-16	
	Author notification	13-Jun-16	
	Camera Ready	4-Jul-16	

## Upcoming TCPP sponsored and related meetings (Contd.)

11-Sep-16	International Conference on Parallel Architectures and Compilation Techniques		Haifa, Israel
	Abstract deadline	12-Mar-16	
	Paper submission	18-Mar-16	
	Author notification	28-Jun-16	
	Camera Ready	1-Aug-16	
	Workshopts + Tutorials		
	Proposal deadline	8-Apr-16	
	Acceptance notification	22-Apr-16	
	ACM Student Research Competition		
	Abstract deadline	17-Jun-16	
	Author notification	15-Jul-16	
12-Sep-16	International Conference on Cluster Computing		Taipei, Taiwan
	Paper submission	14-May-16	
	Author notification	1-Jul-16	
	Camera Ready	TBD	
	Workshop/Tutorial Proposals Submission Deadline	9-May-16	
	Workshop/Tutorial Proposals Acceptance Notification	9-Jun-16	
	Posters submission	8-Jun-16	
	Posters acceptance notification	22-Jul-16	
12-Sep-16	International Conference on Cloud and Autonomic Computing (ICCAC)		Augsburg, Germany
	Posters and Demos submission	10-Jun-16	
	Doctoral Symposium paper - Abstract	29-May-16	
	Doctoral Symposium paper - Full	12-Jun-16	
	Workshop paper submission	5-Jul-16	
	Camera Ready		
14-Sep-16	International Conference on e-Health Networking, Application & Services		Munic, Germany
	Workshop Submission	15-Jan-16	
	Workshop Notification	10-Feb-16	
	Paper submission	30-Apr-16	
	90 seconds video submission	30-May-16	
	3-2-1-Flash competition submission	30-May-16	
	Author notification	1-Jul-16	
	Camera ready	13-Jul-16	
15-Sep-16	45th SPEEDUP Workshop on High-Performance Computing		Basel, Switzerland
	Submission date	15-Jul-16	
	Author notification	22-Aug-16	
	Due date for presentation slides	5-Sep-16	
21-Sep-16	International Symposium on Distributed Simulation and Real Time Applications (DS-RT)		London, England
	Paper submission	16-May-16	
	Paper registration	12-May-16	
	Posters/Demos/Industrial Cases submission	23-May-16	
	Author notification	16-Jun-16	
	Camera ready	16-Jul-16	
	Author registration	16-Jul-16	

## Upcoming TCPP sponsored and related meetings (Contd.)

17-Oct-16	Third International Workshop on Cooperative Wireless Networks (CWN)		New York, USA
	Paper submission	15-Jul-16	
	Author notification	8-Aug-16	
	Camera Ready	1-Sep-16	
25-Oct-16	EuroMPI		Edinburgh
	Tutorials and workshops		
	Tutorial/workshop proposal deadline	8-Apr-16	
	Tutorial/workshop notification	29-Apr-16	
	Papers and Posters		
	Submission	1-May-16	
	Author notification	22-Jun-16	
	Camera ready	20-Jul-16	
1-Nov-16	18th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)		Lyon, France
5-Nov-16	The 11th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing		Asan, Korea
	Paper submission	15-Jul-16	
	Author notification	25-Aug-16	
	Camera ready	10-Sep-16	
	Author registration	10-Sep-16	
5-Nov-16	The 11th International Conference on Broad-Band Wireless Computing, Communication and Applications		Asan, Korea
	Paper submission	15-Jul-16	
	Authors Notification	25-Aug-16	
	Author Registration	10-Sep-16	
	Camera ready	10-Sep-16	
6-Nov-16	International Conference on Smart Grid Communications		Sydney, Australia
	Paper submission	6-Jun-16	
	Authors Notification	24-Jun-16	
	Camera ready	24-Jun-16	
	Author registration	1-Oct-16	
	Early bird registration		
7-Nov-16	The Seventh International Green and Sustainable Computing Conference (IGSC/GSC)		Hangzhou, China
	Paper submission	3-Jun-16	
	Author notification	8-Jul-16	
	Camera ready	22-Jul-16	
13-Nov-16	SC: International Conference for High Performance Computing, Networking, Storage and Analysis		Salt Lake City, UT USA
14-Dec-16	The 15th IEEE International Conference on Ubiquitous Computing and Communications		Granada, Spain
14-Dec-16	16th International Conference on Algorithms and Architectures for Parallel Processing		Granada, Spain
	Paper submission	7-Jun-16	
	Authors Notification	15-Sep-16	
	Camera ready	15-Oct-16	
12-Dec-16	18th IEEE International Conference on High Performance Computing and Communications (HPCC)		Sydney, Australia
	Paper submission	20-Jul-16	
	Authors Notification	25-Sep-16	
	Camera ready	15-Oct-16	

## Upcoming TCPP sponsored and related meetings (Contd.)

12-Dec-16	The 16th International Symposium on Signal Processing and Information Technology		Limassol, Cyprus
	Proposal for Tutorials & Special Sessions	5-Aug-16	
	Paper submission	15-Sep-16	
	Authors Notification	20-Oct-16	
	Camera ready	10-Nov-16	
13-Dec-16	The 22nd International Conference on Parallel and Distributed Systems (ICPADS)		Wuhan, China
	Paper submission	1-Jul-16	
	Authors Notification	1-Sep-16	
	Camera ready	1-Oct-16	
	Author registration	1-Oct-16	
19-Dec-16	International Conference on High Performance Computing, Data and Analytics		Hyderabad, India
	Workshop Proposals Due	31-Mar-16	
	Abstract Due	1-Jun-16	
	Paper submission	5-Jun-16	
	Reviews for Rebuttal	15-Aug-16	
	Rebuttals Due	20-Aug-16	
	Author Notification	6-Sep-16	
	Camera ready	3-Oct-16	
4-Jan-17	18th International Conference on Distributed Computing and Networking (ICDCN)		Hyderabad, India
	Paper submission	22-Jul-16	
	Author Notification	16-Sep-16	
	Camera ready	14-Oct-16	
5-Jan-17	7th IEEE International Advanced Computing Conference		Hyderabad, India
	Paper submission	1-Aug-16	
	Author Notification	7-Oct-17	
	Camera ready	7-Nov-16	
12-Jan-17	High-Assurance Systems Engineering		Singapore
	Paper submission	12-Sep-16	
	Author Notification	10-Oct-16	
	Camera ready	7-Nov-16	
13-Jan-17	International Conference on Distributed Computing and Internet Technology		Bhubaneswar, Odisha, India
	Abstract submission	1-Aug-16	
	Paper submission	8-Aug-16	
	Author Notification	29-Sep-16	
	Camera ready	6-Oct-16	
22-Jan-17	The 22nd Pacific Rim International Symposium on Dependable Computing		Christchurch, New Zealand
	Paper submission	30-Jun-16	
	Author Notification	10-Sep-16	
23-Jan-17	International Conference on High-Performance Embedded Architectures and Compilers		Stockholm, Sweden
	Paper submission	1-Jun-16	
4-Feb-17	22nd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming		Austin, TX USA
	Paper submission	1-Aug-16	
	Author Notification	12-Nov-16	
	Camera ready	15-Dec-16	

## Upcoming TCPP sponsored and related meetings (Contd.)

4-Feb-17	International Symposium on High-Performance Computer Architecture (HPCA)		Austin, TX USA
	Abstract submission	25-Jul-16	
	Paper submission	1-Aug-16	
	Author Notification	12-Oct-16	
23-Feb-17	National Conference on Parallel Computing Technologies PARCOMPTECH		Bangalore, India
	Paper submission	15-Oct-16	
	Author Notification	30-Nov-16	
	Camera ready	30-Dec-16	
13-Mar-17	International Conference on Pervasive Computing and Communications		Kona, Hawaii, USA
	Abstract submission	23-Sep-16	
	Paper submission	30-Sep-16	
	Author Notification	12-Dec-16	
	Camera ready	13-Jan-17	
26-May-17	19th International Conference on Distributed Computing and Networking		Barcelona, Spain
	Paper submission	26-Nov-16	
	Author Notification	26-Dec-16	
	Camera ready	26-Jan-17	
29-May-17	International Parallel & Distributed Processing Symposium		Orlando, Florida USA
	Call for workshops	29-Jul-16	

## Invitation for articles

As a continual effort to improve the newsletter content we are thinking to include technical articles related to parallel processing and high performance computing. In this effort we are inviting all of you to contribute to the TCPP newsletter by submitting good, informative articles that you come across or short write-ups on the latest trends and technologies. These can be distributed with both the monthly newsletter and the forum section on the TCPP website.

### Technical Committee on Parallel Processing

#### TCPP Chair

Ümit V. Çatalyürek

Professor and Vice Chair, Biomedical Informatics  
Professor, Electrical & Computer Engineering  
The Ohio State University  
250 Lincoln Tower, 1800 Cannon Dr., Columbus, OH 43210

Tel: 614-292-0914

Fax: 614-688-6600

E-mail: [catalyurek.l@osu.edu](mailto:catalyurek.l@osu.edu)

Website: <http://go.osu.edu/umit>

Website

<http://tcpp.computer.org>

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