

THE 2013 INTERNATIONAL CONFERENCE ON HIGH PERFORMANCE COMPUTING & SIMULATION (HPCS 2013)

11th Annual Meeting



**July 1 – July 5, 2013
Helsinki, Finland**

PROGRAM

**In Technical Cooperation with the ACM, IEEE, IEEE Dayton Section,
IEEE Finland Section, IFIP, ASIM, EUROSIM, CASS, JSST, LSS, PTSK, TSS,
Aalto University, University of Turku, CSC – IT Center for Science, Finland,
VTT Technical Research Centre of Finland**



HPCS 2013

In Technical Cooperation with the ACM, IEEE, IEEE Dayton Section, IEEE Finland Section, IFIP, ASIM, EUROSIM, CASS, JSST, LSS, PTSK, TSS, Aalto University, University of Turku, CSC – IT Center for Science, Finland, VTT Technical Research Centre of Finland



**The 2013 International Conference on High Performance Computing & Simulation
(HPCS 2013)
July 1 – July 5, 2013, Helsinki, Finland
11th Annual Meeting**

WELCOME TO HPCS 2013

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8th International Workshop on Security and High Performance Computing Systems (SHPCS 2013)	
4th International Workshop on Cellular Automata, Algorithms & Architectures (CAAA 2013)	
Special Session On High Performance Parallel and Distributed Data Mining (HPPD-DM 2013)	
Special Session on Advances in Computational Methods in Electromagnetics, Antenna Design, and Applications (ACME 2013)	
HPCS 2013 AGENDA	Inside and Outside Back Cover

HPCS 2014

July 7 – 11, 2014

Bologna, Italy

(Tentative)



Come to Bologna, Italy for the 12th Annual HPCS Conference,
the premier international event and forum for all aspects of
high performance computing and simulation

Get Involved

<http://hpcs2014.cisedu.info/>

General Information

- **Venue Information**

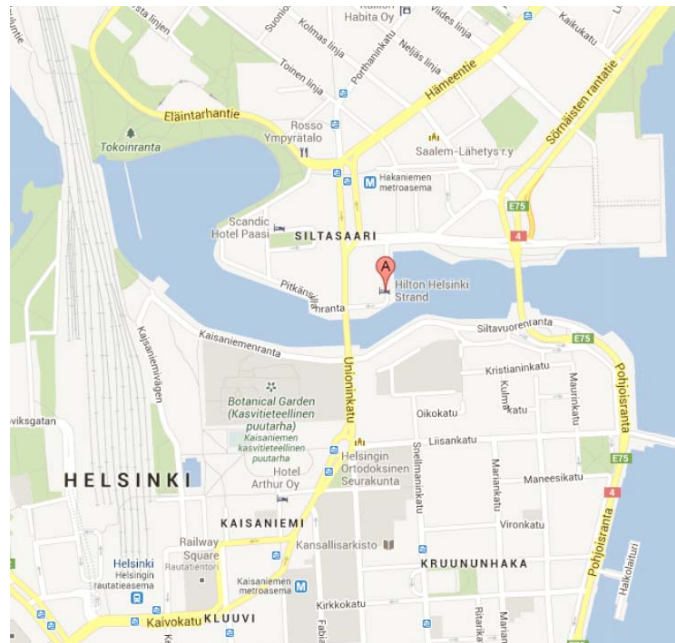
The HPCS 2013 is held at **the Hilton Helsinki Strand, Helsinki, Finland** (<http://www3.hilton.com/en/hotels/finland/hilton-helsinki-strand-HELHIHI/index.html>). See map below. The venue is a modern hotel that represents a state-of-the-art facility and ideal location for an international meeting of this kind. It is a waterfront Helsinki location only half a mile from the city's business and shopping area. It is fully equipped for a meeting of this kind, with many meeting rooms, halls, restaurant, etc.

Hilton Helsinki Strand

John Stenbergin ranta 4

Helsinki, 00530, Finland

Tel: +358-9-393 51 | Fax: +358 (0)9 3935 3255



More information is available on the HPCS 2013 web site. <http://hpcs2013.cisedu.info/>.

- **Internet Access**

There will be wireless internet access throughout the meeting area for HPCS 2013. This service is supplied free of charge by the Hotel and Conference for the guest and participants during the time of the conference.

Please be considerate of your colleagues and limit your time spent online. There are no guarantees of speed and connectivity. Hardware connections and computers are not provided. If your laptop does not have wireless capability, you will need to access the internet through other means on your own. The hotel may provide other access points or facilities, wired or wireless, at their discretion.

- **HPCS 2013 Registration**

Main Lobby

The HPCS 2013 Registration area is located at the Main Lobby entrance on the ground floor. Pre-registered participants must pick up their badges and conference materials in this area. On-site registration for the

Conference (subject to availability) is located here as well. Please make sure to **WEAR YOUR REGISTRATION BADGE AT ALL TIMES** in order to be allowed in various conference events.

Registration Hours:

Monday, July 1, 2013: 8:00 am to 17:00 pm
Wednesday, July 3, 2013: 7:30 am to 17:00 pm

Tuesday, July 2, 2013: 7:30 am to 17:00 pm
Thursday, July 4, 2013: 7:30 am to 16:00 pm

- **Coffee Breaks & Lunches**

Regularly scheduled morning and afternoon coffee breaks are complementary for all registered HPCS 2013 participants. All coffee breaks are held in **The Corner**, unless otherwise noted. This space is the site for all main conference breaks, exhibits, posters, and other interactive activities. It should also be a perfect place to meet with old or new friends, enjoy a refreshing beverage during a coffee break, or just relax between sessions. There is a big cafeteria/restaurant (The Bridges) on the ground floor as well. The area may serve as the Lunch area for the conference participants.

- **HPCS 2013 Information Desk**

Conference information, publications, CDs will be available at the Registration Desk. The desk is staffed by Local Arrangements Members and Student Volunteers who can answer your HPCS 2013 questions and assist with special needs.

- **Special Needs**

Any special requirements you may need should be relayed to the HPCS 2013 Registration Desk at the earliest time possible. Conference meeting space at the Hilton Helsinki Strand has elevators, restrooms, and telephones designed to accommodate the needs of those with physical impairments. Meeting rooms may be equipped with services for the hearing impaired upon request, dependent on the Hotel's inventory.

- **Speakers Meet and Greet**

For each day of the conference (Tuesday, Wednesday and Thursday) all speakers on that day are invited to attend Speaker's Meet and Greet Coffee/Tea at the specified times in the Cafeteria room – **First Floor**. The coffee/tea is complementary to speakers on that day. They may use this opportunity to meet their session chair and presenters and discuss their presentations issues. **The Corner and the Bridges restaurant on First Floor may be used as a central check-in point for speakers and session chairs.** Alternatively, please ask at the Registration Desk if you need help.

- **First Aid / Emergency**

Your safety is our primary concern. In case of an emergency, please contact the conference Registration Desk or the Hotel Registration Desk immediately for assistance. There is also a First Aid office located in the main hallway on the Ground Floor.

- **Lost & Found**

Please turn all lost and found items in to the Conference Registration Desk. HPCS 2013 management will then turn lost and found items over to the building security at the conclusion of the conference, if not claimed.

- **Business & Other Services**

A business center is located at the main level of the Hotel. Please check their web site at <http://www3.hilton.com/en/hotels/finland/hilton-helsinki-strand-HELHIHI/index.html> for more information or for their hours. There are several small business centers just across the streets from the hotel. For other business centers or services, please see conference local arrangements staff or check with your hotel staff.

HPCS 2013 Policies

- **Name Badges**

Your HPCS 2013 name badge serves as **your admission pass** to conference sessions and events. Please wear your name badge **at all times** while inside the conference center. Conference management reserves the right to deny admission to any persons not wearing an HPCS 2013 name badge.

- **Attire**

Attire for HPCS 2013 is business casual, or casual but appropriate.

- **Cell Phone Courtesy**

Please be considerate in your cell phone use. HPCS 2013 requests that all cellular phones, pagers, and other equipment with audible alarms of any kind be **turned off** or be **silenced** at least in all sessions as a courtesy to the presenters and to the attendees.

- **Recording and Photos Prohibited**

The use of any type of audio or video recording device is not permitted during any part of the conference. The use of still cameras at the conference is permissible **only with written permission** by authorized conference organizer. However, reprinting photographs in print or electronic publications of any kind is prohibited without the written permission of the people photographed.

- **Smoking Policy**

HPCS 2013 is smoke-free and the meeting center is a non-smoking facility. Smoking is only permitted outside of the facility in the designated areas.

- **Accompanying Persons**

HPCS 2013 welcomes accompanying persons including children at the conference. Partners, spouses, and significant others may purchase a “partner pass” to gain access to all public social functions, including conference reception, banquet dinner, and luncheon, the exhibits, interactivity, and breaks. Infants are welcome provided they are not a distraction to the other attendees. Children between the ages of 7 and 18 may attend sessions and social activities by purchasing a “partner’s pass” again providing they are not a distraction to the other attendees.

The fees for a “partner’s pass” is **\$140** (for one day and will get tickets for that day only) – **\$270** (for the period of the conference), and these passes may be purchased at the HPCS Registration Desk.

- **Electrical Power**

It is the HPCS 2013 policy to use the local power source. Electrical outlets in Finland are 220 volts. If you are traveling from outside Finland, you will need an adaptor to use your small appliances, if they are designed for a different standard. HPCS 2013 does not provide power converters, extension cords, power strips or other electric accessories. However, the staff at the Registration Desk may be able to assist with some needs.

- 8:00 a.m. - 17:00 p.m.** **CONFERENCE REGISTRATION**
Location: Main Lobby – Hilton Helsinki Strand
- 8:30 a.m. - 8:40 a.m.** **Welcome and Introduction**
Conferences Tutorials Co-Chairs
Location: Hilton Ballrooms I and II
- 8:40 a.m. - 10:10 a.m.** **HPCS 2013 TUTORIAL I (T I)**
Title: **PGAS Programming for the Masses**
Speaker: **Jens Breitbart**
EMCL, Karlsruhe Institute of Technology, Germany
Session Chair: **Per Öster**
(CSC – IT Center for Science, Finland)
Location: **Hilton Ballroom I**
- 8:40 a.m. - 10:10 a.m.** **HPCS 2013 TUTORIAL II (T II)**
Title: **State Of The Art In Hardware Accelerators**
Speaker: **Olli-Pekka Lehto**
CSC – IT Center for Science Ltd., Espoo, Finland
Session Chair: **Mads Nygard**
(Norwegian University of Science and Technology, Norway)
Location: **Hilton Ballroom II**
- 10:10 a.m. - 10:30 a.m.** **Coffee Break with Snacks**
Location: **The Corner**
- 10:30 a.m. - 12:00 p.m.** **HPCS 2013 TUTORIAL I (T I) – Cont.**
Title: **PGAS Programming for the Masses**
Speaker: **Jens Breitbart**
EMCL, Karlsruhe Institute of Technology, Germany
Session Chair: **Per Öster**
(CSC – IT Center for Science, Finland)
Location: **Hilton Ballroom I**
- 10:30 a.m. - 12:00 p.m.** **HPCS 2013 TUTORIAL II (T II) – Cont.**
Title: **State Of The Art In Hardware Accelerators**
Speaker: **Olli-Pekka Lehto**
CSC – IT Center for Science Ltd., Espoo, Finland
Session Chair: **Mads Nygard**
(Norwegian University of Science and Technology, Norway)
Location: **Hilton Ballroom II**
- 12:00 p.m. - 13:00 p.m.** **LUNCH (On your own)**
Location: **The Bridges Restaurant (or laternative)**

- 13:00 p.m. - 15:00 p.m. HPCS 2013 TUTORIAL III (T III)**
Title: High Performance Computing and Private/Public Clouds in Biomedical Informatics
Speakers: Hesham Ali
University of Nebraska at Omaha, Nebraska, USA
Session Chair: Vesna Zeljkovic
(New York Institute of Technology - Nanjing campus, China)
Location: Hilton Ballroom I
- 13:00 p.m. - 15:00 p.m. HPCS 2013 TUTORIAL IV (T IV)**
Title: OpenACC Programming on GPGPUs
Speakers: Sandra Wienke
RWTH Aachen University, Germany
Session Chair: Carsten Trinitis
(Technische Universität München, Germany)
Location: Hilton Ballroom II
- 15:00 p.m. - 15:20 p.m. Coffee Break with Snacks**
Location: The Corner
- 15:20 p.m. - 16:20 p.m. HPCS 2013 TUTORIAL III (T III) – Cont.**
Title: High Performance Computing and Private/Public Clouds in Biomedical Informatics
Speakers: Hesham Ali
University of Nebraska at Omaha, Nebraska, USA
Session Chair: Vesna Zeljkovic
(New York Institute of Technology - Nanjing campus, China)
Location: Hilton Ballroom I
- 15:20 p.m. - 16:20 p.m. HPCS 2013 TUTORIAL IV (T IV) – Cont.**
Title: OpenACC Programming on GPGPUs
Speaker: Sandra Wienke
RWTH Aachen University, Germany
Session Chair: Carsten Trinitis
(Technische Universität München, Germany)
Location: Hilton Ballroom II
- 16:20 p.m. - 18:30 p.m. HPCS 2013 TUTORIAL V (T V)**
Title: Usage and Customization of Infrastructure-as-a-Service Cloud Computing Toolkits
Speakers: Hemant Kumar Mehta^{1,2}, Pawan Pawar²
^{1,2}ASCOLA Research Group, Ecole des Mines De Nantes/INRIA/LINA, Nantes, France
² School of Computer Science and IT, Devi Ahilya University, Indore, India
Session Chair: Mohamed Bakhouya
(Aalto University, Finland)
Location: Hilton Ballroom I

16:20 p.m. - 18:30 p.m. **HPCS 2013 TUTORIAL VI (T VI)**

Title: Flash-based Storage Systems Modelling, Simulation and IO Characterization

Speaker: Soraya Zertal¹, Peter G. Harrison²

¹ PRiSM laboratory, University of Versailles, France

² Imperial College London, South Kensington Campus, London, U.K.

Session Chair: Masoud Daneshtalab

(University of Turku, Finland)

Location: Hilton Ballroom II

18:30 p.m. - **Monday's Wrap-up**

Location: Hilton Ballroom

19:00 - **Social Event I: HPCS 2013 WELCOME RECEPTION**
Helsinki City Hall

Event Hosts: Helsinki City Mayor (TBA)
Galina Medyna (Aalto University, Finland)

Location: Vanha Raatihuone (Old City Hall)
located at Aleksanterinkatu 20, Helsinki, Finland

Important Notes:

- All HPCS 2013 tutorials are available to registered attendees of the conference free of charge.
- Please fill out the tutorials and conference evaluation forms, distributed or online at <http://hpcs2013.cisedu.info/6-participants/feedback-forms>. The online access code is: hpcs13hels.
- Papers in the program with * are nominated by the Program Committees for the HPCS 2013 *Outstanding Paper Award*. Poster papers with * are nominated by the Program Committees for the HPCS 2013 *Outstanding Poster Paper Award*. The winners will be announced at the conference.
- Paper presenters are underlined. They are the prime presenters responsible.
- No-Shows will be removed from the proceedings and the IEEE Digital Library as well as flagged in their profiles. Any changes to presenters or times must be approved prior by the Program Chair, apriori and in writing.

7:30 a.m. - 17:00 p.m.

CONFERENCE REGISTRATION

Location: Main Lobby – Hilton Helsinki Strand

7:30 a.m. - 8:30 a.m.

Informal Meet & Greet - Coffee / Tea

Tuesday Presenters and Session Chairs Get-together

Location: Cafeteria Bridges/Ravintola – First Floor

8:30 a.m. - 9:00 a.m.

HPCS 2013 Welcome and Opening Remarks

Juha Plosila, Mads Nygard, and Mohamed Bakhouya

HPCS 2013 General Co-Chairs

(University of Turku, Finland; Norwegian University of Science and Technology, Norway; Aalto University, Finland)

Heikki Mannila

President of the Academy of Finland

(University of Helsinki, Finland)

(Pending)

Per Öster

Director of Research and Technology

(CSC – IT Center for Science, Espoo, Finland)

Waleed W. Smari

HPCS 2013 Program Chair

(Ball Aerospace & Technologies Corp., Ohio, USA)

Location: Hilton Strand Ballroom

9:00 a.m. - 10:30 a.m.

HPCS 2013 Tuesday Keynote Presentation

Title: Big Process for Big Data

Speaker: Ian Foster

Argonne National Laboratory & The University of Chicago, Illinois, USA

Session Chair: David R.C. Hill

(Blaise Pascal University, France)

Location: Hilton Strand Ballroom

10:30 a.m. - 10:50 a.m.

Coffee Break with Snacks

Location: The Corner – First Floor

SESSION 1A:

CLOUD COMPUTING ARCHITECTURES AND SERVICES

Tuesday, July 2, 10:50 a.m. - 12:30 p.m.

Session Chair: Hesham Ali

(University of Nebraska – Omaha, Nebraska, USA)

Location: Hilton Strand Ballroom I

***1. Control-theoretic Adaptation Strategies for Autonomic Reconfigurable Parallel Applications on Cloud Environments**

Gabriele Mencagli, Marco Vanneschi, Emanuele Vespa
(University of Pisa, Italy)

***2. Ray Tracing in the Cloud using MapReduce**

Lesley Northam, Rob Smits, Khuzaima Daudjee, Joe Istead
(University of Waterloo, Ontario, Canada)

***3. Direct Migration of Scientific Computing Experiments to the Cloud**

Satish Narayana Srirama, Vladislav Ivanistsev, Pelle Jakovits, Chris Willmore
(Institute of Computer Science, University of Tartu, Estonia; Institute of Chemistry, University of Tartu, Estonia)

4. A Partial Replication Load Balancing Algorithm for Distributed Data as a Service (DaaS)

Klaithem Al Nuaimi, Nader Mohamed, Jameela Al-Jaroodi, Mariam Al Nuaimi
(United Arab Emirates University - Al Ain, United Arab Emirates)

SESSION 1B:

**THE FOURTH INTERNATIONAL WORKSHOP ON MODELING AND
SIMULATION OF PEER-TO-PEER ARCHITECTURES AND SYSTEMS
(MOSPAS 2013)**

Tuesday, July 2, 10:50 a.m. - 12:30 p.m.

Workshop Chair: **Michele Amoretti**
(University of Parma, Italy)

Location: Hilton Strand Ballroom II

1. Performing Accurate Simulations for Deadline-aware Applications

Guthemberg Silvestre, Sébastien Monnet
(LIP6/UPMC/CNRS/INRIA, France)

2. Autonomic Scheduling of Tasks from Data Parallel Patterns to CPU/GPU Core Mixes

Tudor Serban, Marco Danelutto, Peter Kilpatrick
(University of Pisa, Italy; Queen's University - Belfast, Northern Ireland)

3. PeerfactSim.KOM: Take it Back to the Streets

Dominik Stingl, Björn Richerzhagen, Fabio Zöllner, Christian Gross, Ralf Steinmetz
(Technische Universität Darmstadt, Darmstadt, Germany)

4. A Study on ALTO-assisted P2P Live Video Streaming Systems

Yagiz Kaymak, Kemal Deniz Teket, Muge Sayit
(International Computer Institute, Ege University - Izmir, Turkey ; University of Stuttgart, Stuttgart, Germany)

SESSION 1C:

INTERNET AND WEB COMPUTING AND SERVICES

Tuesday, July 2, 10:50 a.m. - 12:30 p.m.

Session Chair: **Claudio Sartori** (DISI-UNIBO, Bologna, Italy)

Location: Ariadne I

1. An Efficient Algorithm for Temporal Financial Information Monitoring

Jameela Al-Jaroodi, Nader Mohamed, Klaithem Al Nuaimi
(United Arab Emirates University - Al Ain, UAE; Middleware Technologies Lab., Bahrain)

2. Performance Evaluation of an Automatic Web Service Composition Architecture

Bruno Tardiole Kuehne, Regina Helena Carlucci Santana, Volker Linnemann, Marcos José Santana
(University of São Paulo, LaSDPC, São Carlos, Brazil; University of Lübeck, IFIS, Lübeck, Germany)

3. Hardware-accelerated Join Processing in Large Semantic Web Databases with FPGAs

Stefan Werner, Sven Groppe, Volker Linnemann, Thilo Pionteck
(Institute of Information Systems, University of Luebeck; Institute for Computer Engineering, University of Technology Dresden, Germany)

4. Adapting the Contract Net Protocol for Publish/Subscribe Messaging

W. L. Yeung

(Lingnan University, Hong Kong)

12:30 p.m. - 13:30 p.m.

LUNCH (Own Your Own)

Location: The Bridges Restaurant (or lalternative)

SESSION 2A:

CLOUD COMPUTING AND SERVICES FOR HIGH PERFORMANCE COMPUTING SYSTEMS

Tuesday, July 2, 13:30 p.m. - 14:50 p.m.

Session Chair: **Gabriele Mencagli**
(University of Pisa, Italy)

Location: Hilton Strand Ballroom I

1. Viability of the Bulk Synchronous Parallel Model for Science on Cloud

Pelle Jakovits, Satish Narayana Srirama, Ilja Kromonov

(Institute of Computer Science, University of Tartu, Estonia)

2. Access Control for Untrusted Content Distribution Clouds using Unidirectional Re-encryption

Zachary Kissel, Jie Wang

(University of Massachusetts - Lowell, Massachusetts, USA)

3. Accountable Proof of Ownership for Data using Timing Element in Cloud Services

Mainul Mizan, Md Lutfor Rahman, Rasib Khan, Munirul Haque, Ragib Hasan

(University of Alabama at Birmingham, Alabama, USA)

SESSION 2B:

PEER TO PEER ARCHITECTURES, NETWORKS AND PROTOCOLS

Tuesday, July 2, 13:30 p.m. - 14:50 p.m.

Session Chair: **Marco Danelutto**
(University of Pisa, Italy)

Location: Hilton Strand Ballroom II

1. Exploring Heterogeneity of Unreliable Machines for P2P Backup

Piotr Skowron, Krzysztof Rzadca

(University of Warsaw, Poland)

2. Comparative Evaluation of Peer-to-Peer Systems using PeerfactSim.KOM

Matthias Feldotto, Kalman Graffi

(University of Paderborn, Germany; University of Dusseldorf, Germany)

3. Simulating Mobile and Distributed Systems with DEUS and ns-3

Michele Amoretti, Marco Picone, Francesco Zanichelli, Gianluigi Ferrari

(Universita degli Studi di Parma, Parma, Italy)

SESSION 2C:

SPECIAL SESSION ON HIGH PERFORMANCE PARALLEL AND DISTRIBUTED DATA MINING (HPPD-DM 2013)

Tuesday, July 2, 13:30 p.m. - 14:50 p.m.

Session Chair: **Yong Tang** (National University of Defense Technology, Changsha, Hunan, China)

Location: Ariadne I

1. TBA

TBA
(TBA)

2. Fast Outlier Detection Using a GPU

Fabrizio Angiulli, Stefano Basta, Stefano Lodi, Claudio Sartori
(DIMES-UNICAL, Rende (CS), Italy; ICAR-CNR, Rende (CS), Italy; DISI-UNIBO, Bologna, Italy)

3. Robust Ensemble Feature Selection for High Dimensional Data Sets

Afef Ben Brahim, Mohamed Limam
(University of Tunis, Tunisia; Dhofar University, Sultanate of Oman)

SESSION 3A:

POSTERS AND WORK-IN-PROGRESS SESSION

Tuesday, July 2, 14:50 p.m. - 15:30 p.m.

Session Chairs: **Gao Xiaozhi** (Aalto University, Finland)
Seppo Virtanen (University of Turku, Finland)

Location: Ariadne Room

POSTER PAPERS:

***1. Dynamic Node Allocation in Network Virtualization**

M. Said Seddiki, Ye-Qiong Song, Mounir Frikha
(Higher School of Communications of Tunis, University of Carthage, Tunis, Tunisia; LORIA Research Laboratory, University of Lorraine, Nancy, France)

***2. Self-Configuration Model based neural prediction and Agent Technology for Cloud Infrastructure**

Hanen Chihi, Walid Chainbi, Khaled Ghedira
(SOIE, University of Tunis, Tunisia; University of Sousse, Tunisia)

***3. Applying Hadoop's MapReduce Framework on Clustering the GPS Signals through Cloud Computing**

Wichian Premchaiswadi, Walisa Romsaiyud, Sarayut Intarasema, Nutcharee Premchaiswadi
(Siam University - Bangkok, Thailand; Dhurakij Pundit University - Bangkok, Thailand)

***4. Hijacker: Efficient Static Software Instrumentation with Applications in High Performance Computing**

Alessandro Pellegrini
(University of Rome, Italy)

***5. Reengineering the Undergraduate Core Computer Science Curricula for the new Era of Parallelism**

Hoda El-Sayed
(Bowie State University, Maryland, USA)

TECHNICAL POSTERS:

1. A Mathematical Model for Empowerment of Beowulf Clusters for Exascale Computing

Seyedeh Leili Mirtaheri, Ehsan Mousavi Khaneghah, Lucio Grandinetti, Mohsen Sharifi
(University of Calabria, Italy; Iran University of Science and Technology, Iran)

2. Intel Xeon Phi: Various HPC Aspects

Kapil Mathur, Sandeep Agrawal, Shraddha Desai, Deepti Malav, Deepu C.V., Goldi Misra
(HPCS Group, C-DAC, Pune, India)

3. Exploiting Hardware Reconfigurability on Window Join

Eric Shun Fukuda, Hideyuki Kawashima, Hiroaki Inoue, Tetsuya Asai, Masato Motomura
(Hokkaido University - Sapporo, Hokkaido Japan; University of Tsukuba, Japan; NEC Corporation - Kawasaki, Kanagawa, Japan)

INDUSTRY POSTERS:

1. TBA

TBA
(TBA)

15:30 p.m. - 15:50 p.m.

Coffee Break with Snacks

Location: The Corner – First Floor

15:50 p.m. - 19:00 p.m.

Session 4A HPCS 2013 TUTORIAL VII (T VII) – Invited

Title: Globus Online: Research Data Management as a Service

Speaker: Ian Foster

**University of Chicago & Argonne National Laboratory
Illinois, USA**

Session Chair: Pasi Liljeberg

(University of Turku, Finland)

Location: Hilton Strand Ballroom

19:00 p.m. -

Tuesday's Wrap-up

Location: Hilton Strand Ballroom

19:30 p.m. -

Social Event II: Guided, Bus City Tour

(Leave from venue at 19:20 p.m.)

Event Hosts: Pasi Liljeberg (University of Turku, Finland)

Mohamed Bakhouya (Aalto University, Finland)

Location:

**Meet at the Hilton Strand Hotel Lobby for the
hosts and tour guide. Includes visiting some of
the most popular sites in the City of Helsinki.**



7:30 a.m. - 17:00 p.m.

CONFERENCE REGISTRATION

Location: Main Lobby – Hilton Helsinki Strand

7:00 a.m. - 8:00 a.m.

Informal Meet & Greet - Coffee / Tea

Wednesday Presenters and Session Chairs Get-together

Location: Cafeteria Bridges/Ravintola – First Floor

SESSION 5A:

ENERGY-AWARE, ENERGY-EFFICIENT, AND GREEN COMPUTING

Wednesday, July 3, 08:00 a.m. - 10:10 a.m.

Workshop Chair: **Thilo Pionteck**

(Technische Universität Dresden, Germany)

Location: Hilton Strand Ballroom I

- 1. Using Data-Flow Analysis in MAS for Power-Aware HPC Runs** (Invited)
Sébastien Varrette, Grégoire Danoy, Mateusz Guzek, Pascal Bouvry
(University of Luxembourg, Luxembourg)
- 2. Roadmap Towards Ultimately-Efficient Zeta-Scale Datacenters** (Invited)
Patrick Ruch, Thomas Brunschweiler, Stephan Paredes, Ingmar Meijer, Bruno Michel
(IBM Zurich Research Laboratory, Zurich, Switzerland)
- 3. On the Energy Footprint of Task Based Parallel Applications**
Alexandru C. Iordan, Magnus Jahre, Lasse Natvig
(Norwegian University of Science and Technology - Trondheim, Norway)
- 4. High-Efficiency Power Supply System for Server Machines in Data Center**
Yuki Kuroda, Akihito Akai, Yasuyuki Kudo, Takeshi Kato
(Central Research Laboratory, Hitachi, Ltd., Tokyo, Japan)
- 5. Opportunistic Energy-Aware Rescheduling in Desktop Grid Environments**
Luis Tomas, Blanca Caminero, Carmen Carrion
(Umea University, Sweden; University of Castilla–La Mancha, Albacete, Spain)

SESSION 5B:

**INTERNATIONAL WORKSHOP ON HIGH PERFORMANCE
INTERCONNECTION NETWORKS (HPIN 2013)**

Wednesday, July 3, 08:00 a.m. - 10:10 a.m.

Workshop Chairs: **Jouni Isoaho and Masoud Daneshtalab**

(University of Turku, Finland)

Location: Hilton Strand Ballroom II

- 1. Analysing the Influence of InfiniBand Choice on OpenMPI Memory Consumption**
O. Perks, D.A. Beckingsale, A.S. Dawes, J.A. Herdman, C. Mazauric, S.A Jarvis
(University of Warwick, U.K.; AWE plc, Aldermaston, Reading, U.K.; Bull Information Systems, Grenoble, France)
- 2. Towards Balanced Traffic Distribution in NoCs using a Highly Adaptive Path-based Routing Algorithm**
Poona Bahrebar, Dirk Stroobandt
(Ghent University, Belgium)

3. Parallel Decoder for Low Density Parity Check Codes: A MPSoC study

Sudeep Kanur Chandra Shekar, Georgios Georgakarakos, Antti Siirilä, Jérémie Lagravière, Kristian Nybom, Sébastien Lafond, Johan Lilius
(Abo Akademi University, Turku, Finland; Turun Yliopisto, Turku, Finland)

4. Efficient Application Mapping in Resource Limited Homogeneous NoC-based Manycore Systems

Georgios Georgakarakos, Masoud Daneshtalab, Juha Plosila
(University of Turku, Finland)

5. FracNoC: a Fractal On-Chip Interconnect Architecture For System-on-Chip

Abderrahim Chariete, Mohamed Bakhouya, Jaafar Gaber, Maxime Wack
(Universite de Technologie de Belfort-Montbéliard, France; Aalto University, Aalto, Finland)

SESSION 5C:

HIGH PERFORMANCE COMPUTING SYSTEMS FOR BIOINFORMATICS AND LIFE SCIENCES

Wednesday, July 3, 08:00 a.m. - 10:10 a.m.

Session Chair: **W. L. Yeung**, (Lingnan University, Hong Kong)

Location: **Ariadne I**

1. High-Performance Computing in Biomedicine

(Invited)

Sampsa Hautaniemi, Marko Laakso
(Institute of Biomedicine, University of Helsinki, Finland)

2. Next-Generation Human Brain Neuroimaging and the Role of High-Performance Computing

Adnan Salman, Allen Malony, Sergei Turovets, Vasily Volkov, David Ozog, Don Tucker
(University of Oregon, Oregon, USA; Belarusian State University, Belarus; Electrical Geodesics, Incorporated, Oregon, USA)

3. A Structure-preserving Hybrid-chordal Filter for Sampling in Correlation Networks

Kathryn Dempsey, Tzu-Yi Chen, Sriram Srinivasan, Sanjukta Bhowmick, Hesham Ali
(University of Nebraska at Omaha, Nebraska, USA; University of Nebraska Medical Center, Nebraska, USA; Pomona College, California, USA)

4. Fast Distributed Computing for Complete Large Scale Backtranslation of Oligopeptides:

Application to Probe Design

Faouzi Jaziri, Eric Peyretaillade, Pierre Peyret, David R.C. Hill
(Clermont Université, Université Blaise Pascal, France; CNRS, UMR 6158, ISIMA / LIMOS, France; Université d'Auvergne, Aubière, France)

5. Ultra-fast Multiple Genome Sequence Matching Using GPU

Gang Liao, Qi Sun, Longfei Ma, Sha Ding, Wen Xie
(Sichuan University Jinjiang College, Pengshan, China; Sichuan University, Chengdu, China)

SESSION 5D:

THE EIGHTTH INTERNATIONAL WORKSHOP ON SECURITY AND HIGH PERFORMANCE COMPUTING SYSTEMS (SHPCS 2013)

Wednesday, July 3, 08:00 a.m. - 10:10 a.m.

Workshop Chair: **Luca Spalazzi**
(Università Politecnica delle Marche, Ancona, Italy)

Location: **Ariadne II**

1. Generating Malware Signature using Transcoding from Sequential Data to Amino Acid Sequence

Yue Zhao, Yong Tang, Yijie Wang, Shuhui Chen
(National University of Defense Technology, Changsha, Hunan, China)

2. PIGA-Cluster: A Distributed Architecture Integrating a Shared and Resilient Reference Monitor to Enforce Mandatory Access Control in the HPC Environment

Damien Gros, Mathieu Blanc, Briffaut Jeremy, Christian Toinard
(CEA, France; ENSI De Bourges/LIFO – Bourges, France)

3. Security Issues Relating to Inadequate Authentication in MapReduce Applications

James Dyer, Ning Zhang
(University of Manchester, U.K.)

4. Towards Energy-based Intrusion Detection Systems on Mobile Devices

Monica Curti, Alessio Merlo, Mauro Migliardi, Simone Schiappacasse
(University of Genova, Italy; E-Campus University, Nvedrate, Italy; University of Padua, Italy)

5. A Robust Data Hiding Algorithm for H.264/AVC Video Streams without Intra-frame Distortion Drift

Yunxia Liu, Zhitang Li, Xiaojing Ma, Hongguo Zhao
(Huazhong Univ. of Science and Technology, Wuhan, China; Zhoukou Normal Univ., Zhoukou, China)

10:10 a.m. - 10:30 a.m. Coffee Break with Snacks
Location: The Corner – First Floor

SESSION 6A: 10:30 a.m. – 11:00 a.m. HPCS 2013 DEMO I

Seamless Access to Compute and Storage Resources

André Giesler

(Forschungszentrum Jülich GmbH, Germany)

Session Chair: Thomas Canhao Xu (University of Turku, Finland)

Location: Hilton Strand Ballroom

11:00 a.m. - 12:30 p.m. HPCS 2013 Wednesday Keynote Presentation I
Title: Killer-Mobiles: The Way Towards Energy Efficient High Performance Computers?
Speaker: Mateo Valero
Barcelona Supercomputing Center, Spain
Session Chair: Ian Foster
(Argonne National Laboratory & The University of Chicago, Illinois, USA)
Location: Hilton Strand Ballroom

12:30 p.m. - 13:30 p.m. LUNCH (Own Your Own)
Location: The Bridges Restaurant (or latervative)

13:30 p.m. - 14:00 p.m. Session 7A HPCS 2013 Wednesday Plenary Presentation
Title: EUDAT – European Data Services
Speaker: Per Öster
CSC – IT Center for Science, Espoo, Finland
Session Chair: Kalman Graffi
(University of Dusseldorf, Germany)
Location: Hilton Strand Ballroom I

SESSION 7B: 13:30 p.m. – 14:00 p.m.

HPCS 2013 DEMO II

Acoustic Simulations in the Cloud

Antti Vanne, Tomi Huttunen

(Kuava OY, Kuopio, Finland)

Session Chair: Jarkko Kari (University of Turku, Finland)

Location: Hilton Strand Ballroom II

14:00 p.m. - 15:30 p.m. HPCS 2013 Wednesday Keynote Presentation II

Title: The UberCloud HPC Experiment - Paving the Way to HPC as a Service

Speaker: Wolfgang Gentzsch
European EUDAT project and the UberCloud HPC Experiment, Germany

Session Chair: Mateo Valero
(Barcelona Supercomputing Center, Spain)

Location: Hilton Strand Ballroom

15:30 p.m. - 15:50 p.m. Coffee Break with Snacks

Location: The Corner – First Floor

SESSION 8A:

THE FOURTH INTERNATIONAL WORKSHOP ON CELLULAR AUTOMATA ALGORITHMS & ARCHITECTURES (CAAA 2013)

Wednesday, July 3, 15:50 p.m. - 18:20 p.m.

Workshop Chairs: Dominique Désérable, Rolf Hoffmann, Genaro Juarez Martinez
(LGCGM/ INSA - Institut National des Sciences Appliquées, Rennes, France; Technische Universität Darmstadt, Germany; University of the West of England, Bristol, United Kingdom)

Location: Hilton Strand Ballroom I

1. Universal Pattern Generation by Cellular Automata

(Invited)

Jarkko Kari

(University of Turku, Finland)

2. Modeling of Asynchronous Cellular Automata with Fixed-Point Attractors for Pattern Classification

Biswanath Sethi, Sukanta Das

(Presented by Mousumi Saha)

(Bengal Engineering and Science University, Shibpur, Howrah, West Bengal, India)

3. Implementation of Large-Scale Cellular-Automata Models on Multi-Core Computers and Clusters

Olga Bandman

(Institute of Computational Mathematics and Mathematical Geophysics SBAS, Novosibirsk, Russia)

4. Design of Directory Based Cache Coherence Protocol Verification Logic in CMPs around TACA

Mamata Dalui, Biplab K. Sikdar

(National Institute of Technology, Durgapur, West Bengal, India; Bengal Engineering and Science University, West Bengal, India)

5. Evaluating Conflicts Impact over Shared Low Level Cache using Public Goods Game on Cellular Automata

Michail-Antisthenis I. Tsompanas, Christoforos Kachris, Georgios Ch. Sirakoulis
(Democritus University of Thrace, DUTH Xanthi, Greece)

6. A Cellular Automata Based Design of Self Testable Hardware For March C-

Mousumi Saha, Biplab K Sikdar

(National Institute of Technology, Durgapur, India; Bengal Engineering and Science University, West Bengal, India)

SESSION 8B:

DYNAMIC RECONFIGURABLE NETWORK-ON-CHIP AND HIGH PERFORMANCE APPLICATION SPECIFIC ARCHITECTURES

Wednesday, July 3, 15:50 p.m. - 17:05 p.m.

Session Chair: **Hoda El-Sayed** (Bowie State University, Maryland, USA)

Location: **Hilton Strand Ballroom II**

1. GSNoC - The Comprehensive Design Platform for 3-Dimensional Networks-on-Chip based Many Core Embedded Systems

Haoyuan Ying, Thomas Hollstein, Klaus Hofmann

(Darmstadt Technical University (DUT), Germany; Tallinn University of Technology, Estonia)

2. A Buffer Size Customization Approach for Application-Specific NoC Design

A. Chariete, M. Bakhouya, J. Gaber, M. Wack

(Universite de Technologie de Belfort Montbeliard, France; Aalto University, Finland)

3. Prioritizing Semi-Static Data Streams in Network-on-Chips for Runtime Reconfigurable Systems

Thilo Pionteck, Christoph Osterloh

(Technische Universitat Dresden, Germany; Dräger Medical GmbH, Lübeck, Germany)

SESSION 8C:

SPECIAL SESSION ON ADVANCES IN COMPUTATIONAL METHODS IN ELECTROMAGNETICS, ANTENNA DESIGN, AND APPLICATIONS (ACME 2013)

Wednesday, July 3, 15:50 p.m. - 18:20 p.m.

Workshop Chair: **Karim Y. Kabalan** (American University of Beirut, Lebanon)

Location: **Ariadne I**

1. A Comparison of Computing Architectures and Parallelization Frameworks based on a Two-dimensional FDTD

Lidia Kuan, Pedro Tomas, Leonel Sousa

(INESC-ID/TU Lisbon, Lisboa, Portugal)

2. Enhanced Performance of Blind and Non-Blind Adaptive Arrays using Wavelet Beamforming

Said E. El-Khamy, Mohamed Shokry

Presented by Roshdy K. Korayem

(Alexandria University, Egypt; Telecom Egypt Co., Alexandria, Egypt)

3. Design and Measurement of Compact Dual-Band MSRR-Loaded PCB Antennas

H. Ayad, A. Khalil, M. Fadlallah, F. Ndagijimana, J. Jomaah

(IMEP-LHAC, Grenoble INP, Grenoble, France; Lebanese University, Beirut, Lebanon)

4. UWB Antennas: Mathematical Presentation, Impulse Response Simulation and Electromagnetic Modeling

Mohamed El-Hadidy

(CST - Middle East, Sheraton Heliopolis, Cairo, Egypt)

5. Improved Vlasov Antenna with Curved Cuts for High Power Microwaves

Hilal El-Misilmani, Mohammed Al-Husseini, Karim Kabalan, Ali El-Hajj

(American University of Beirut, Lebanon; Lebanese Center for Studies and Research, Beirut, Lebanon)

6. Fuzzy Inference Based Wavelet Robust Sidelobe Canceller

Said E. El-Khamy, M.R.M. Rizk, Roshdy K. Korayem

(Alexandria University, Egypt)

SESSION 8D:

DOCTORAL DISSERTATION COLLOQUIUM 2013

Wednesday, July 3, 15:50 p.m. - 18:20 p.m.

Session Chairs: **David R.C. Hill** (Blaise Pascal University, France)

Tomi Westerlund (University of Turku, Finland)

Location: Ariadne II

1. Classification of Diseases using Fast Learning Neuroevolutionary Algorithm

Arbab Masood Ahmad

(University of Engineering and Technology, Peshawar, Pakistan)

Dissertation Adviser: Dr. Gul Muhammad Khan

Discussant and Respondent: TBA

2. Kiwano: A Scalable Distributed Infrastructure for Virtual Worlds

Raluca Diaconu

(Laboratoire d'Informatique de Paris 6, UPMC, France)

Dissertation Adviser: Professor Joaquin Keller

Discussant and Respondent: TBA

3. Evolutionary Inference of Biochemical Interaction Networks Accelerated on Graphics Processing Units

Marco S. Nobile

(Università degli Studi di Milano-Bicocca, Italy)

Dissertation Adviser: Dr. Giancarlo Mauri

Discussant and Respondent: TBA

4. Improving the Performance of CAR Systems Based on Mobile Phones

Victor Fernandez Bauset

(University of Valencia, Spain)

Dissertation Advisers: Dr. Juan M. Orduna, Dr. Pedro Morillo

Discussant and Respondent: TBA

5. Power-Performance of Multi-threaded Multi-Core Processor: Analysis, Optimization and Simulation

Vijayalakshmi Saravanan

(WINCORE Lab, Ryerson University, Canada)

Dissertation Advisers: Dr. A. Anpalagan, Dr. D.P. Kothari

Discussant and Respondent: TBA

6. P2P Architectures for Distributed Online Social Networks

Barbara Guidi

(University of Pisa, Italy)

Dissertation Advisers: Prof. Marco Conti, Prof. Laura Ricci

Discussant and Respondent: TBA

SESSION 9B:

**DISTRIBUTED STORAGE AND HIGH PERFORMANCE
MEMORY SYSTEMS**

Wednesday, July 3, 17:05 p.m. - 18:20 p.m.

Session Chair: **Allen Malony**
(University of Oregon, Oregon, USA)

Location: Hilton Strand Ballroom II

1. Effect of Data Placement on the Reliability of Data Storage Systems (Invited)

Vinodh Venkatesan

(IBM Research - Zurich, Switzerland)

2. Reducing Wasteful Recurrence of Aborts in Hardware Transactional Memory

Koshiro Hashimoto, Masamichi Eto, Shoichiro Horiba, Tomoaki Tsumura, Hiroshi Matsuo

(Nagoya Institute of Technology, Gokiso, Showa, Nagoya, Japan; Central Japan Railway Company, Nagoya, Japan)

3. A New Dynamic IPC-Memory Allocator Based on a Paging Approach

Ridha Benosman, Kamel Barkaoui, Yves Albrieux

(CEDRIC Laboratory, CNAM, Paris, France)

SESSION 10A: 18:20 p.m. – 18:50 p.m.

HPCS 2013 DEMO III

The iGrid P2P Information Service

Maria Mirto[^], Massimo Cafaro^{*^}, Giovanni Aloisio^{*^}

(*University of Salento, [^]Euro-Mediterranean Center on Climate Change (CMCC), Italy)

Session Chair: Luis Tomas (Umea University, Sweden)

Location: Hilton Strand Ballroom

18:50 p.m. - Wednesday's Wrap-up
Location: Hilton Strand Ballroom

19:30 p.m. - Social Event III

HPCS 2013 DINNER BANQUET

MASTERS OF CEREMONY: Barbara Frantom and Mads Nygård

(Air Force Research Laboratory, Ohio, USA; Norwegian
University of Science and Technology, Trondheim, Norway)

Location: Bridges Ravintola / Restaurant

7:30 a.m. - 16:00 p.m.

CONFERENCE REGISTRATION

Location: Main Lobby – Hilton Helsinki Strand

7:00 a.m. - 8:00 a.m.

Informal Meet & Greet - Coffee / Tea

Thursday Presenters and Session Chairs Get-together

Location: Cafeteria Bridges/Ravintola – First Floor

SESSION 11A:

MANYCORE COMPUTING, ARCHITECTURES, ALGORITHMS AND SUPPORT

Thursday, July 4, 8:00 a.m. - 10:10 a.m.

Session Chair: **Olga Bandman**

(Institute of Computational Mathematics and Mathematical Geophysics SBRAS, Novosibirsk, Russia)

Location: Hilton Strand Ballroom I

1. One-sided Communication and Synchronization for Non-Coherent Memory-Coupled Cores

Pablo Reble, Carsten Clauss, Stefan Lankes

(RWTH Aachen University, Germany)

2. Modular Design of Data-parallel Graph Algorithms

Santanu Kumar Dash, Sven-Bodo Scholz, Bruce Christianson

(University of Hertfordshire - Hatfield, U.K.; Heriot-Watt University, Edinburgh, U.K.)

3. Prototyping Parallel Simulations on Manycore Architectures Using Scala: A Case Study

Jonathan Passerat-Palmbach, Romain Reuillon, Claude Mazel, David R.C. Hill

(Clermont Université, Clermont-Ferrand, France; CNRS, UMR 6158, Université Blaise Pascal, LIMOS, France; ISIMA, Institut Supérieur d'Informatique, de Modélisation et de leurs Applications, France; Institut des Systèmes Complexes, Paris, France)

4. Robust Conservative Parallel HDL Simulation on Multi-Core CPUs

Lingfeng Wang, Hong Chen, Yangdong Steve Deng

(Tsinghua University, Beijing, China)

5. Evaluate and Optimize Parallel Barnes-Hut Algorithm for Emerging Many-Core Architectures

Thomas Canhao Xu, Pasi Liljeberg, Juha Plosila, Hannu Tenhunen

(University of Turku, Finland; Turku Center for Computer Science (TUCS), Turku, Finland)

SESSION 11B:

GENERAL PURPOSE GRAPHICS PROCESSING UNITS (GPGPU) AND CUDA: ACCELERATION, ALGORITHMS AND PERFORMANCE

Thursday, July 4, 8:00 a.m. - 10:10 a.m.

Workshop Chair: **Bruno Michel**

(IBM Zurich Research Laboratory, Zurich, Switzerland)

Location: Hilton Strand Ballroom II

1. Accelerators, Quo Vadis? Performance vs. Productivity

(Invited)

Sandra Wienke, Christian Terboven, Dieter an Mey, Matthias S. Müller

(Center for Computing and Communication, RWTH Aachen University, Germany)

***2. GPU-ASIFT: A Fast Fully Affine-Invariant Feature Extraction Algorithm**

Valeriu Codreanu, Feng Dong, Baoquan Liu, Jos B.T.M. Roerdink, David Williams, Po Yang, Burhan Yasar
(Rijksuniversiteit Groningen, Groningen, The Netherlands; University of Bedfordshire, U.K.; Rotasoft Inc., Turkey)

***3. An Investigation into the Feasibility and Benefits of Hardware Acceleration of the Weather Research and Forecasting Model**

Wim Vanderbauwhede, Tetsuya Takemi

(University of Glasgow, U.K.; Disaster Prevention Research Institute, University of Kyoto, Japan)

4. Exponential Integrators on Graphic Processing Units

Lukas Einkemmer, Alexander Ostermann

(University of Innsbruck, Austria)

5. 2D Triangulation of Polygons on CUDA

Shadi Alawneh, Dennis Peters

(Memorial University of Newfoundland, St. Johns NL, Canada)

SESSION 11C:

HPC BENCHMARKING, MONITORING, PROFILING, AND EVALUATION

Thursday, July 4, 8:00 a.m. - 8:50 a.m.

Session Chair: **Alexander Heinecke**
(Technische Universität München, Germany)

Location: **Ariadne I**

***1. Evaluating Architecture and Compiler Design through Static Loop Analysis**

Yuriy Kashnikov, Pablo de Oliveira Castro, Emmanuel Oseret, William Jalby

(Exascale Computing Research – University of Versailles, France)

2. Development of a Virtual Cluster

Robert L. Warrender, John Tindle, David Nelson

(University of Sunderland, St Peter's Campus, Sunderland, U.K.)

SESSION 11D:

**IMAGE PROCESSING, MACHINE LEARNING,
PATTERN RECOGNITION & APPLICATIONS**

Thursday, July 4, 8:00 a.m. - 10:10 a.m.

Session Chairs: **Zeljén Trpovski** (University of Novi Sad, Serbia)
Vesna Zeljković (New York Institute of Technology -
Nanjing Campus, China)

Location: **Ariadne II**

1. HDR Overview and Potentials

Zeljén Trpovski, Alan Chalmers

(University of Novi Sad, Serbia; University of Warwick, U.K.)

(Invited)

2. Sparse Support Vector Machine for Pattern Recognition

Guangyi Chen, Tien. D. Bui, Adam Krzyżak

(Concordia University - Montreal, Quebec, Canada)

(Invited)

3. Pre-Ictal Phase Detection Algorithm Based on One Dimensional EEG Signals and Two Dimensional Formed Images Analysis

Vesna Zeljković, Ventzeslav Valev, Claude Tameze, Milena Bojic

(New York Institute of Technology - Nanjing Campus, China; Bulgarian Academy of Sciences, Sofia, Bulgaria; Lincoln University, Pennsylvania, USA; University Clinic for Internal Diseases, Clinical Hospital Center "Dr. Dragisa Misovic - Dedinje", Belgrade, Serbia)

4. Improving Performance of Content-Based Image Retrieval Schemes using Hadoop MapReduce

Wichian Premchaiswadi, Sarayut Intarasema, Anucha Tungkatsathan, Nucharee Premchaiswadi

(Siam University - Bangkok, Thailand; Dhurakij Pundit University - Bangkok, Thailand)

5. A Framework For TV Logos Learning Using Linear Inverse Diffusion Filters For Noise Removal

Julián R. Cózar, Vesna Zeljković, José M^a González-Linares, Nicolás Guil, Claude Tameze, Ventzeslav Valev
(University of Málaga, Málaga, Spain; New York Institute of Technology - Nanjing Campus, China; Lincoln University, Pennsylvania, USA; Bulgarian Academy of Sciences, Sofia, Bulgaria)

SESSION 12C:

RESILIENT, FAULT TOLERANT, AND RELIABLE SYSTEMS AND SOLUTION FOR HIGH PERFORMANCE COMPUTING

Thursday, July 4, 8:50 a.m. - 10:10 a.m.

Session Chair: **Vinodh Venkatesan**
(IBM Research - Zurich, Switzerland)

Location: **Ariadne I**

1. Taming the Beast Some Thoughts On Exascale Resiliency (Invited)

Peter Troeger
(Hasso-Platter-Institute at Potsdam, Germany)

2. Performance Challenge to Resilience: a Formal View (Invited)

Elena Troubitsyna
(Åbo Akademi University, Finland)

3. Fault Detection and Tolerance Mechanisms for Future 1000 Core Systems (Invited)

Bernhard Fechner, Arne Garbade, Sebastian Weis, Theo Ungerer
(Institut für Informatik, Universität Augsburg, Germany)

10:10 a.m. - 10:30 a.m. **Coffee Break with Snacks**
Location: **The Corner – First Floor**

10:30 a.m. - 12:00 p.m. **HPCS 2013 Thursday Keynote Presentation**
Title: **High Performance Fault Tolerance / Resilience at Extreme Scale**
Speaker: **Franck Cappello**
INRIA-Illinois Joint Laboratory on PetaScale Computing, France and USA
Session Chair: **Wolfgang Gentzsch**
(European EUDAT project and the UberCloud HPC Experiment, Germany)
Location: **Hilton Strand Ballroom**

SESSION 13A: **12:00 p.m. – 12:30 p.m.** **HPCS 2013 DEMO IV**

The PROGENIA Workflow Management System

Maria Mirto[^], Giovanni Aloisio^{*^}

(*University of Salento, [^]Euro-Mediterranean Center for Climate Change (CMCC), Italy)

Session Chair: **Peter Troeger** (Hasso-Platter-Institute at Potsdam, Germany)

Location: **Hilton Strand Ballroom**

12:30 p.m. - 13:30 p.m. **LUNCH (Own Your Own)**
Location: **The Bridges Restaurant (or lalternative)**

13:30 p.m. - 14:00 p.m. **Session 14A HPCS 2013 Thursday Plenary Presentation**
Title: **Eliminating Bottle-necks in Large Scale Computations in Elmer Finite Elements Software**
Speaker: **Peter Råback**
CSC – IT Center for Science, Espoo, Finland
Session Chair: **Houssam Ayad**
(IMEP-LHAC, Grenoble INP, Grenoble, France and Lebanese University, Beirut, Lebanon)
Location: **Hilton Strand Ballroom I**

SESSION 14B: 13:30 p.m. – 14:00 p.m. HPCS 2013 DEMO V

The Scalasca Performance Analysis Toolset

Marc Schlütter

(Jülich Supercomputing Centre, Germany)

Session Chair: **Wim Vanderbauwhede (University of Glasgow, U.K.)**

Location: **Hilton Strand Ballroom II**

HPCS 2013 PANEL SESSION - S15A 14:00 p.m. – 15:30 p.m.

The Era of Exascale Sciences: Challenges, Needs and Requirements

MODERATOR: Mads Nygård
(Norwegian University of Science and Technology, Trondheim, Norway)

PANELISTS:

Franck Cappello	(INRIA-Illinois Joint Laboratory on PetaScale Computing, France and USA)
Wolfgang Gentzsch	(European EUDAT project and the UberCloud HPC Experiment, Germany)
Mateo Valero	(Barcelona Supercomputing Center, Spain)

Location: **Hilton Strand Ballroom**

15:30 p.m. - 15:50 p.m. **Coffee Break with Snacks**
Location: **The Corner – First Floor**

SESSION 16A:

LIBRARIES, SOFTWARE INFRASTRUCTURE, AND PROGRAMMING ENVIRONMENTS

Thursday, July 4, 15:50 p.m. - 18:00 p.m.

Session Chair: **Bernhard Fechner**
(Institut für Informatik, Universität Augsburg, Germany)

Location: **Hilton Strand Ballroom I**

*1. Algorithmic Skeleton Library for Scientific Simulations : SkelGIS

Helene Coullon, Sebastien Limet

(LIFO, University of Orleans & Geo-Hyd, Olivet, France; LIFO, University of Orleans, France)

*2. Managing Arbitrary Distributions of Arrays in Orleans Skeleton Library

Joeffrey Legaux, Frederic Loulergue, Sylvain Jubertie

(LIFO, University of Orleans, France)

3. Model-guided Performance Analysis of the Sparse Matrix-Matrix Multiplication

Tobias Scharpf, Klaus Iglberger, Georg Hager, Ulrich Rude

(University Erlangen-Nuremberg, Erlangen, Germany)

4. Content-Aware Precision Control on a Real-Time Video Processing Library

Takuya Matsunaga, Shinji Ohira, Tomoaki Tsumura, Hiroshi Matsuo

(Nagoya Institute of Technology, Gokiso, Showa, Nagoya, Japan)

5. A Flexible Shared Library Profiler for Early Estimation of Performance Gains in Heterogeneous Systems

Adrian Matoga, Ricardo Chaves, Pedro Tomás, Nuno Roma

(INESC-ID, Lisboa, Portugal)

SESSION 16B:

GPGPU, PARALLELIZATION, AND HIGH PERFORMANCE COMPUTATIONAL ALGORITHMS AND TECHNIQUES

Thursday, July 4, 15:50 p.m. - 18:00 p.m.

Session Chair: **Valeriu Codreanu**
(Rijksuniversiteit Groningen, Groningen, The Netherlands)

Location: **Hilton Strand Ballroom II**

1. Accelerators in Scientific Computing Is It Worth the Effort?

(Invited)

Alexander Heinecke

(Technische Universität München, Germany)

2. A New GPU-based Approach to the Shortest Path Problem

Hector Ortega-Arranz, Yuri Torres, Diego R. Llanos, Arturo Gonzalez-Escribano

(Universidad de Valladolid, Spain)

3. Implementing Data Parallelisation in a Nested-Sampling Monte Carlo Algorithm

Wim Vanderbauwhede, Stefanie Lewis, David Ireland

(University of Glasgow, U.K.)

4. Proper Parallel Monte Carlo for Computed Tomography of Volcanoes

Pierre Schweitzer, Claude Mazel, Felix Fehr, Cristina Cârloganu, David R.C. Hill

(LIMOS, Université Blaise Pascal, Aubière, France; Clermont Université, Université Blaise Pascal, CNRS/IN2P, Clermont-Ferrand, France)

*5. Data Layout Inference for Code Vectorisation

Artjoms Šinkarovs, Sven-Bodo Scholz

(Heriot-Watt University - Edinburgh, U.K.)

SESSION 16C:

**PARTITIONING, MAPPING, SCHEDULING, LOAD BALANCING
IN HPC SYSTEMS**

Thursday, July 4, 15:50 p.m. - 18:00 p.m.

Session Chair: **Yuriy Kashnikov**

(Exascale Computing Research – University of Versailles, France)

Location: Ariadne I

1. The Development of a Scheduling System GPUSched for Graphics Processing Units

Ayman Tarakji, Maximillian Marx, Stefan Lankes
(RWTH Aachen University, Germany)

2. Dynamic Work-unit Slicing for Time-Constrained Job Execution in P2P Environments

Malik Shahzad K. Awan, Stephen A. Jarvis
(University of Warwick, Coventry, U.K.)

3. Scheduling Algorithms for Opportunistic Computational Grid Based on Television Digital Receivers

Bruno G. Batista, Fabiano C. Teixeira, Marcos J. Santana, Regina H. C. Santana
(Institute of Mathematics and Computer Science, University of Sao Paulo, USP, Sao Carlos, Brazil)

4. Job Scheduling in a High Performance Computing Environment

Robert L. Warrender, John Tindle, David Nelson
(University of Sunderland, St Peter's Campus, Sunderland, U.K.)

5. An Application-level Priority Scheduling for Many-Task Computing in Multi-user Heterogeneous Environment

Shuwei Chen, Yu Zhang, Ziqian Hu, Huashan Yu
(Peking University, Beijing, P.R. China)

SESSION 16D:

**HIGH PERFORMANCE MOBILE SYSTEMS, LOCATION-BASED
SERVICES, AND APPLICATIONS IN UBIQUITOUS COMPUTING**

Thursday, July 4, 15:50 p.m. - 18:00 p.m.

Session Chair: **Alessio Merlo**

(E-Campus University and DIST, University of Genova, Italy)

Location: Ariadne II

1. Modeling Dynamics of Complex Wireless Networks

(Invited)

Savo G. Glisic, Beatriz Lorenzo, Ivana Kovacevic, Yuguang Fang
(Telecommunications Laboratory, University of Oulu, Finland; University of Florida, Florida, USA)

2. Location-Aware Resource Availability

(Invited)

Luigia Petre, Kaisa Sere
(Åbo Akademi University - Turku, Finland)

3. TBA

TBA
(TBA)

4. An Application Towards the Combination of Augment Reality and Mobile Guidance

Da-You Huang, Kuo-Hsun Hsu
(National Taichung University, Taiwan)

5. A Secant Location Estimation Scheme in Error-prone Channel Condition for Wireless Sensor Networks

Tsung-Han Lee, Yu-Jhong Fu, Lin-huang Chang
(National Taichung University, Taiwan)

HPCS 2013 FORUM AND CLOSING SESSION - S17A

The Past, The Present, and The Future: Final Remarks

Session Chairs: HPCS 2013 Organizers

18:00 p.m. – 18:40 p.m.

Location: Hilton Strand Ballroom

19:30 p.m. -

Social Event IV: Helsinki Sightseeing Cruise

(Leave from venue at 19:20 p.m.)

Event Hosts: Juha Plosila (University of Turku, Finland)
Amir-Mohammad Rahmani (University of Turku, Finland)

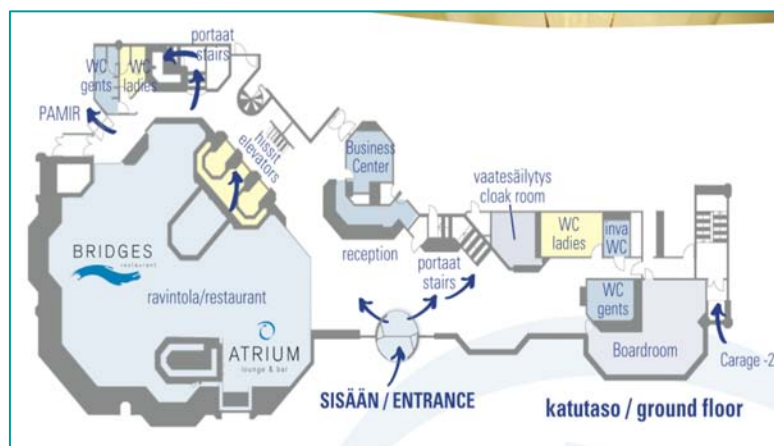
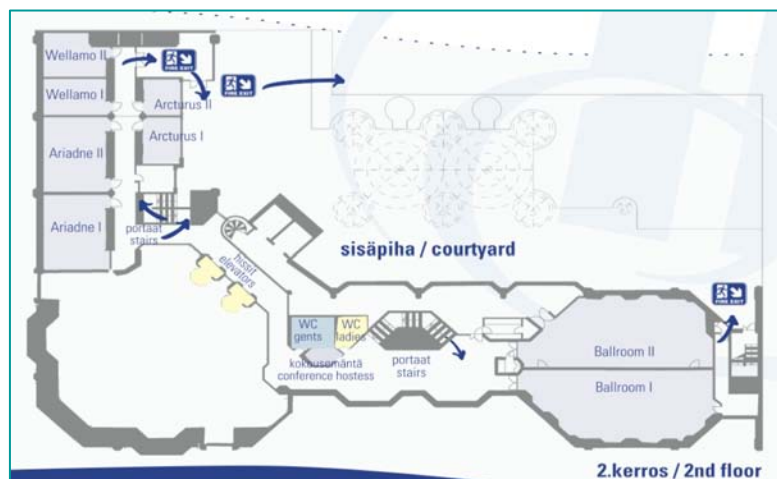
Locations: Helsinki City Center
(See the most beautiful shorelines in Helsinki and many fabulous sights in the City)



IMPORTANT NOTES:

- ◆ Most Presentations are scheduled for a maximum time of **20-25 minutes**, including Q&A.
- ◆ Presentations can be in electronic (Power Point) or overhead transparencies formats.
- ◆ There will be a laptop and an LCD as well as overhead projector available for all presenters in the conference rooms.
- ◆ **All presenters are requested** to upload their presentations upon arrival at the Registration Desk. There will be a laptop available for this purpose. Please have your presentation file named using session no. and paper code (**S-xx, HP-yyyy**). You may bring your file on a CD or a USB flash stick.
- ◆ On each conference day, ***presenters and sessions chairs*** on that day are invited to **Speaker Meet & Greet** usually between 7:00 a.m. - 8:00 a.m (unless otherwise noted). Attending this meeting is highly recommended. Please use this opportunity to meet each other and clarify/resolve any issues that you may have in preparation for the session. We hope that all sessions and presentations will go very smoothly.
- ◆ Exhibits will be held in **the Lobby and/or the Corner – First Floor**. Exhibits open Tuesday, July 2, 10:00 a.m. - 18:00 p.m., Wednesday, July 3, 10:00 a.m. - 18:00 p.m., and Thursday, July 4, 10:00 a.m. - 16:00 p.m. Exhibits set-up, Monday, July 1, 13:00 p.m. - 17:00 p.m. Tear-down is Thursday, July 4, after 16:00 p.m.

Venue Floor Plans:



HPCS 2013 SOCIAL EVENTS

<http://hpcs2013.cisedu.info/4-program/social-events>

MONDAY, JULY 1, 2013

19:00 p.m. -

Social Event I

HPCS 2013 Welcome Reception Helsinki City Hall

Leaving Venue at 18:45 p.m.



TUESDAY, JULY 2, 2013

19:30 p.m. -

Social Event II

Ice Breaker Social with a Guide Guided Bus City Tour



WEDNESDAY, JULY 3, 2013

19:30 p.m. -

Social Event III

HPCS 2013 Dinner Banquet - Gala

Hilton Strand Hotel

Including Awards Ceremony

Masters of Ceremony and Event Hosts: Professor Mads Nygård and Ms. Barbara Frantom



THURSDAY, JULY 4, 2013

19:30 p.m. -

Social Event IV

**Social Time with a Guide
Helsinki Sightseeing Cruise**



9:30 a.m. –

Social Event V

Full Day Excursions

Join us as we experience a wonderful tour of the great city of **Helsinki**! Sign up for one of the tours on the conference website ...

Friday Excursion I: Trip to Suomenlinna Sea Fortress

Depart on a guided tour to **Suomenlinna Sea Fortress** (<http://www.suomenlinna.fi/en>) by public ferry.

Suomenlinna, at the mouth of Helsinki Harbor, is a sea fortress and naval base for the archipelago fleet and was built in the 18th century. It is one of the items on the UNESCO World Heritage List and a major Finnish tourist attraction. Also a Helsinki suburb, it is the home of 850 permanent residents.

A guided walking tour to the Sea Fortress of Suomenlinna gives you an overview of several centuries of Finnish history under Swedish and Russian rule and then as an independent state.

Short time for lunch at Suomenlinna (http://www.suomenlinna.fi/en/visitors_guide/restaurants_and_cafes). On your own.

Return by ferry to the *Market Square* where the tour ends. Duration of the tour ca. 2-4 hours.

Prices in a group of 20 persons or more. On first-come-first-serve basis.

Guided Trip to Suomenlinna Sea Fortress Fees: **€25** per person. Lunch is not included.

- Minimum attendees: **20**.
- Please make your reservation as soon as possible.



Friday Excursion II: Old Wooden Town of Porvoo

A visit to the idyllic town of **Porvoo** with well-preserved wooden houses (<http://tourism.porvoo.fi/en>). See the red warehouses on the riverbank and the beautiful medieval cathedral.

A town plan from the Middle Ages, the low small houses, picturesque yards, and narrow streets form a historically unique wooden town milieu. The symbols of Porvoo – the red warehouses on the riverbanks – tell the story of seafaring and trading.

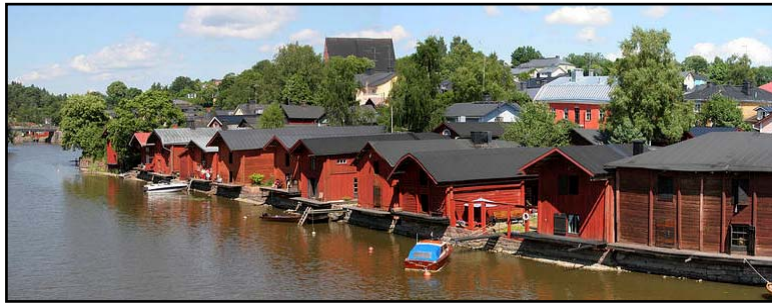
The tour includes a guided walk in Porvoo. During the walk you will see the *Old Town* and the beautiful medieval *Cathedral*. There will be some free time for a walk in the Old Town with delightful shops and artisans' workshops. Time for lunch.

Duration ca. 5 hours. The tour ends back at Helsinki city center ca. 14.00.

Prices in a group of 30 persons. On first-come-first-serve basis.

Guided Trip to Old Wooden Town of Porvoo Fees: **€56** per person. Lunch is not included.

- Minimum attendees: **30**.
- Please make your reservation as soon as possible.



Friday Excursions - Others

Full day excursions at own cost. Arrangements can be made by the Travel Agency.

- Nuuksio National Park (http://wikitravel.org/en/Nuuksio_National_Park)
- Fiskars Village (<http://www.fiskarsvillage.fi/en>)
- Tallinn day cruise (<http://www.tourism.tallinn.ee/eng>)



See Social Events page on the HPCS 2013 website for more detailed information.

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Federation of Finnish Learned Societies (TSV)

<http://www.tsv.fi/engl/>

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<http://www.utu.fi/en/Pages/home.aspx>



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July 01 – July 05, 2013
Helsinki, Finland

11th Annual Meeting

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SPECIAL SESSION ON HIGH PERFORMANCE PARALLEL AND DISTRIBUTED DATA MINING (HPPD-DM 2013)

SPECIAL SESSION ORGANIZER:

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HPPD-DM 2013 Technical Program Committee:

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Bruno Cremilleux, Université de Caen, France
Claudio Lucchese, ISTI-CNR, Italy
Hassan Malik, Columbia University, New York, USA

Carlo Mastroianni, ICAR-CNR, Italy
Andrea Pietracaprina, University of Padova, Italy
Domenico Talia, University of Calabria – ICAR CNR, Italy
Alexandre Termier, Universite Joseph Fourier, France
Paolo Trunfio, University of Calabria, Italy

SPECIAL SESSION ON ADVANCES IN COMPUTATIONAL METHODS IN ELECTROMAGNETICS, ANTENNA DESIGN, AND APPLICATIONS (ACME 2013)

SPECIAL SESSION ORGANIZERS:

Karim Y. Kabalan, American University of Beirut, Beirut, Lebanon
Mohammed Al-Husseini, Beirut Research and Innovation Center, Beirut, Lebanon

ACME 2013 Technical Program Committee:

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Hervé Aubert, LAAS - Centre National de la Recherche Scientifique and Institut National Polytechnique de Toulouse, France
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Yahya Khraisat, Al-Huson University College/ Al-Balqa' Applied University, Jordan
Elias Nassar, Notre Dame University, Lebanon
Omar M. Ramahi, University of Waterloo, Canada
Sawsan Sadek, Lebanese University, Lebanon
Levent Sevgi, Dogus University, Istanbul, Turkey
Jose Felix Vega Stavro, Universidad Nacional de Colombia, Colombia
Asim Egemen Yilmaz, Ankara University, Turkey



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