Big Data Meets Computational Science: preface for ICCS 2014

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DOI
10.1016/j.procs.2014.04.002

Publication date
2014

Document Version
Final published version

Published in
Procedia Computer Science

Procedia Computer Science

Volume 29, 2014, Pages 1–7

ICCS 2014. 14th International Conference on Computational Science

Big Data Meets Computational Science, preface for ICCS 2014

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Welcome to the 14th Annual International conference on Computational Science, to be held 10th-12th June 2014 in Cairns, Australia. Cairns is on the doorstep of Australian jewels including the Great Barrier Reef and the Daintree rainforest. For more information about Cairns and nearby attractions, see our location description. ICCS 2014 is organized by the University of Queensland, Universiteit van Amsterdam, NTU Singapore and the University of Tennessee.

The International Conference on Computational Science is an annual conference that brings together researchers and scientists from mathematics and computer science as basic computing disciplines, researchers from various application areas who are pioneering computational methods in sciences such as physics, chemistry, life sciences, and engineering, as well as in arts and humanitarian fields, to discuss problems and solutions in the area, to identify new issues, and to shape future directions for research.

Since its inception in 2001, ICCS has attracted increasingly higher quality and numbers of attendees and papers and this year is not an exception. This year we expect over 250 participants. The proceedings series have become a major intellectual resource for computational science researchers and serve to both define and advance the state of the art of the field.

ICCS 2014 in Cairns will be the fourteenth in this series of highly successful conferences. For the previous twelve meetings see: http://iccs2014.ivec.org/previous-iccs.html

The theme for ICCS 2014 is Big Data meets Computational Science to mark the increasing importance of data intensive science. In order to extract meaning from the exponentially increasing amounts of data being gathered, it is imperative to both apply current computational science techniques to data sets, and to develop new processes and algorithms. This conference will be a unique

Selection and peer-review under responsibility of the Scientific Programme Committee of ICCS 2014

doi:10.1016/j.procs.2014.04.002

event focusing on recent developments in: data intensive science for diverse areas of science; scalable scientific algorithms; advanced software tools; computational grids; advanced numerical methods; and novel application areas. ICCS2014 will also feature the important advances in computational science towards exascale computing. ICCS includes work focusing on the application of computational methods in diverse areas including, Computational Biology, Computational Finance, Earth Sciences, Social Sciences and complex systems at large.

ICCS is well known for its excellent line up of keynote speakers and this year is no exception. The keynotes for 2014 are:

- Professor **Vassil Alexandrov**, ICREA Research Professor in Computational Science, Barcelona Supercomputing Centre, Spain
- Professor **Dr Luis Bettencourt**, Santa Fe Institute, New Mexico, USA
- Professor **Peter T. Cummings**, Department of Chemical and Biomolecular Engineering, Vanderbilt University, USA
- **Dan Fey**, Director - Earth, Energy, and Environment Microsoft External Research, Microsoft
- Professor **John Mattick**, Garvan Institute of Medical Research, Sydney, Australia
- Professor **Bob Pressey**, Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Australia
- Professor **Mark Ragan**, Institute for Molecular Bioscience, The University of Queensland, Australia

Besides our excellent keynote speakers, out of the submitted papers to main track and workshops, we selected about 230 high-quality papers for presentation at the conference and publication in the proceedings, published by Elsevier in their Procedia Computer Science series. Submission was very competitive this year and the main track accepted 64 papers from 184 submissions (34% acceptance rate)

ICCS relies strongly on the vital contributions of our workshop organizers to attract high quality papers in many subject areas. We would like to thank all committee members for the main track and the workshops for their contribution to ensure a high standard for the accepted papers. As per every year we would like to thank Elsevier, the conference is organized with their financial and administrative support.

We are proud to note that ICCS is an ERA 2010 A-ranked conference series.

We wish you a successful and enjoyable conference in Cairns.

June 2014

The ICCS 2014 Organizers:
David Abramson
Michael Lees
Valeria V. Krzhizhanovskaya
Jack Dongarra
Peter M.A. Sloot

Local organizing committee in Australia

Organizing committee Chair	David Abramson
Organizing committee Members	Jane Carter, Martin Lack, Samantha Hart, Rebecca Moreno

Workshops and Organizers

Multiscale Modelling and Simulation, 11th International Workshop
Valeria Krzhizhanovskaya, Alfons Hoekstra, Derek Groen, Eric Lorenz

5th Workshop on Computational Optimization, Modelling and Simulation
X.S. Yang, S. Koziel, L. Leiffson

Fourth International Workshop on Advances in High-Performance Computational Earth Sciences: Applications and Frameworks
Kengo Nakajima, Huilin Xing

Agent-based simulations, adaptive algorithms and solvers
R. Schaefer, K. Cetnarowicz, V. Calo, D. Pardo, M. Paszynski

Architecture, Languages, Compilation and Hardware support for Emerging ManYcore systems
Loïc Cudennec, Stéphane Louise

Fifth Workshop on Data Mining in Earth System Science
Forrest M. Hoffman, J. Kumar, J. W. Larson, M. D. Mahecha

Dynamic Data Driven Application Systems - DDDAS 2014
C.C. Douglas, A. Patra, A. Cortes

8th Workshop on Computational Chemistry and Its Applications
P. Ramasami

Workshop on Teaching Computational Science
A.B. Shiflet, V. Maxville, Alfredo Tirado-Ramos

Tools for Program Development and Analysis in Computational Science
J. Tao, A. Bode, K. Fürlinger, A. Knüpfer, D. Kranzlmüller, J. Volkert, R. Wismüller

Workshop on Cell Based and Individual Based Modelling
J. M. Osborne

Solving Problems with Uncertainties
Vassil Alexandrov

Modeling and Simulation of Large-scale Complex Urban Systems

H. Aydt, M. Berger, X. Li

Urgent Computing: Computations for Decision Support in Critical Situations
A. V. Boukhanovsky, M. Bubak

Large Scale Computational Physics
E. de Doncker, F. Yuasa

2nd Workshop on Advances in the Kepler Scientific Workflow System and Its Applications
I. Altintas, B. Ludaescher

The Eleventh Workshop on Computational Finance and Business Intelligence
Y. Shi, S.Y. Wang, Y.J. Tian

Bridging the HPC Tallent Gap with Computational Science Research Methods
E.S. Alexandrova, Vassil Alexandrov

Mathematical Methods and Algorithms for Extreme Scale
Vassil Alexandrov, Jack Dongarra

Computational Optimisation in the Real World
Andrew Lewis, Timoleon Kipouros, Marcus Randall

7th Workshop on Biomedical and Bioinformatics Challenges for Computer Science
M. Cannataro, Pietro Hiram Guzzi, Joakim Sundnes, Rodrigo Weber Dos Santos

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