

e-Science 2010

Sixth IEEE International Conference on e-Science
Proceedings of Workshops



Conference Information
Papers by Session
Papers by Author
Getting Started
Search
Trademarks

Brisbane, Australia
7-10 December 2010

Sponsors:



Published by
IEEE
 **computer
society**

PROCEEDINGS

SIXTH IEEE INTERNATIONAL CONFERENCE ON E-SCIENCE WORKSHOPS

7-10 DECEMBER 2010 / BRISBANE, QUEENSLAND, AUSTRALIA



Los Alamitos, California
Washington • Tokyo



All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number E4295
BMS Part Number: CFP1017J-CDR
ISBN 978-0-7695-4295-9

Additional copies may be ordered from:

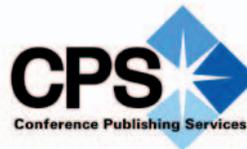
IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, CA 90720-1314
Tel: + 1 800 272 6657
Fax: + 1 714 821 4641
<http://computer.org/cspress>
csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: + 1 732 981 0060
Fax: + 1 732 981 9667
[http://shop.ieee.org/store/
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: + 81 3 3408 3118
Fax: + 81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: <reprints@computer.org>

Editorial production by Bob Werner
Cover art production by Joe Daigle / Studio Productions



**IEEE Computer Society
Conference Publishing Services (CPS)**

<http://www.computer.org/cps>

2010 Sixth IEEE International Conference on e-Science Workshops

e-ScienceW 2010

Table of Contents

Message from the Workshop Chair.....	viii
e-Science Challenges in Astronomy and Astrophysics.....	ix
Computational Science and Engineering Workshop.....	x
High-Performance Computing in the Life Sciences.....	xi
Parallel Optimisation and Parameter Fitting.....	xii
Public Access to Data and the Use of Web-Enabled Tools.....	xiii
Reviewers.....	xiv

Sixth IEEE International Conference on e-Science Workshops

e-Science Challenges in Astronomy and Astrophysics

The Application of Cloud Computing to Astronomy: A Study of Cost and Performance	1
<i>G. Bruce Berriman, Gideon Juve, Ewa Deelman, Moira Regelson, and Peter Plavchan</i>	
Federating Access to Small-aperture Telescopes	8
<i>A.R. Duncan</i>	
Visualisation and Analysis Challenges for WALLABY	15
<i>Christopher J. Fluke, David G. Barnes, and Amr H. Hassan</i>	
Data Challenges for Next-generation Radio Telescopes	21
<i>Ray P. Norris</i>	

Computational Science and Engineering Workshop

Application of the OpenCL API for Implementation of the NIPALS Algorithm for Principal Component Analysis of Large Data Sets	25
<i>Joshua C. Bowden</i>	
A JEE-based Architecture for Distributed Multi-Domain Resource Accounting	31
<i>Michael Brenner, Jan Wiebelitz, and Matthew Smith</i>	
Haemodynamic Effect of Coronary Angulations on Subsequent Development of Coronary Artery Disease: A Preliminary Study	39
<i>Thanapong Chaichana, Zhonghua Sun, and James Jewkes</i>	

Large Scale Atomistic Simulation with Electrostatics: The Case of Cation Impurity Segregation Along an Edge Dislocation Line	44
<i>Feiwu Zhang, Kate Wright, Julian D. Gale, and Andrew M. Walker</i>	
High-Performance Computing in the Life Sciences	
Extending the Data Model for Data-Centric Metagenomics Analysis Using Scientific Workflows in CAMERA	49
<i>Ilkay Altintas, Jing Chen, Mayya Sedova, Amarnath Gupta, Shulei Sun, Abel W. Lin, Madhusudan Gujral, Manish K. Anand, Weizhong Li, Jeffrey S. Grethe, and Mark Ellisman</i>	
Blast Atlas: A Virtual Observatory for Genomes	57
<i>Lawrence Buckingham and James Hogan</i>	
A Patch Model for Pandemic Influenza Simulation in Korea	65
<i>Hoon Choi and Dong-In Park</i>	
A Data Management Framework for Distributed Biomedical Research Environments	72
<i>Rajkumar Kettimuthu, Robert Schuler, David Keator, Martin Feller, Dingying Wei, Michael Link, John Bresnahan, Lee Liming, Joseph Ames, Ann Chervenak, Ian Foster, and Carl Kesselman</i>	
Evaluation of Visualization Approaches in a Biomedical Grid Environment	80
<i>Benjamin Löhnhardt, Sabrina Heppner, Frank Dickmann, Mathias Kaspar, Matthias Quade, Daniela Skrowny, Nick Kepper, Dagmar Krefting, Thomas Steinke, and Ulrich Sax</i>	
Parallel Optimisation and Parameter Fitting	
Feature Selection for Classification Using an Ant Colony System	86
<i>Nadia Abd-Alsabour and Marcus Randall</i>	
Gene Expression Classification with a Novel Coevolutionary Based Learning Classifier System on Public Clouds	92
<i>Christian Vecchiola, Mani Abedini, Michael Kirley, Xingchen Chu, and Rajkumar Buyya</i>	
Automated, Parallel Optimization of Stochastic Functions Using a Modified Simplex Algorithm	98
<i>Dheeraj Chahal, Steven J. Stuart, Sebastian Goasguen, and Colin J. Trout</i>	
Parallel Constraint Handling in a Multiobjective Evolutionary Algorithm for the Automotive Deployment Problem	104
<i>James Montgomery and Irene Moser</i>	
Modifications and Additions to Ant Colony Optimisation to Solve the Set Partitioning Problem	110
<i>Marcus Randall and Andrew Lewis</i>	
Logical Optimization of Dataflows for Data Mining and Integration Processes	117
<i>Alexander Wöhrer, Eduard Mehofer, and Peter Brezany</i>	

Public Access to Data and the Use of Web-Enabled Tools

Reverse Engineering Europe’s PSI Re-use Rules - Towards an Integrated Conceptual Framework for PSI Re-use	123
<i>Marc de Vries</i>	
Applying Social Networking to Construct an Elementary Science Learning Community	130
<i>Hsu-Wan Chen</i>	
NONUS: A No-Onus Platform for Generating Grant Reports	136
<i>Tanu Malik, Ian Foster, Andrey Rzhetsky, Jacob Foster, and James Evans</i>	
E-Government: Making Australia’s E-conveyancing System a Reality	141
<i>E. Eugene Clark</i>	
Facilitating Malaysia Towards Innovative Society: Arguing the Case for Open Access Policy	148
<i>Haswira Nor and Mohamad Hashim</i>	
Review of Regulatory Framework for Environmental Information	154
<i>Anne Fitzgerald, Neale Hooper, and Cheryl Foong</i>	
Author Index	160