

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Moshe Y. Vardi

Rice University, Houston, TX, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Yong Shi Geert Dick van Albada
Jack Dongarra Peter M.A. Sloot (Eds.)

Computational Science – ICCS 2007

7th International Conference
Beijing, China, May 27 - 30, 2007
Proceedings, Part I



Springer

Volume Editors

Yong Shi

Graduate University of the Chinese Academy of Science

Beijing 100080, China

E-mail: yshi@gucas.as.cn

Geert Dick van Albada

Peter M.A. Sloot

University of Amsterdam, Section Computational Science

1098 SJ Amsterdam, The Netherlands

E-mail: {dick, sloot}@science.uva.nl

Jack Dongarra

University of Tennessee, Computer Science Department

Knoxville, TN 37996-3450, USA

E-mail: dongarra@cs.utk.edu

Library of Congress Control Number: 2007927049

CR Subject Classification (1998): F, D, G, H,I,1, I.3. I.6, J, K.3 C.2-3

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

ISSN 0302-9743

ISBN-10 3-540-72583-0 Springer Berlin Heidelberg New York

ISBN-13 978-3-540-72583-1 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springer.com

© Springer-Verlag Berlin Heidelberg 2007

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper SPIN: 12065691 06/3180 5 4 3 2 1 0

Preface

The Seventh International Conference on Computational Science (ICCS 2007) was held in Beijing, China, May 27-30, 2007. This was the continuation of previous conferences in the series: ICCS 2006 in Reading, UK; ICCS 2005 in Atlanta, Georgia, USA; ICCS 2004 in Krakow, Poland; ICCS 2003 held simultaneously at two locations in, Melbourne, Australia and St. Petersburg, Russia; ICCS 2002 in Amsterdam, The Netherlands; and ICCS 2001 in San Francisco, California, USA. Since the first conference in San Francisco, the ICCS series has become a major platform to promote the development of Computational Science. The theme of ICCS 2007 was “Advancing Science and Society through Computation.” It aimed to bring together researchers and scientists from mathematics and computer science as basic computing disciplines, researchers from various application areas who are pioneering the advanced application of computational methods to sciences such as physics, chemistry, life sciences, and engineering, arts and humanitarian fields, along with software developers and vendors, to discuss problems and solutions in the area, to identify new issues, and to shape future directions for research, as well as to help industrial users apply various advanced computational techniques.

During the opening of ICCS 2007, Siwei Cheng (Vice-Chairman of the Standing Committee of the National People’s Congress of the People’s Republic of China and the Dean of the School of Management of the Graduate University of the Chinese Academy of Sciences) presented the welcome speech on behalf of the Local Organizing Committee, after which Hector Ruiz (President and CEO, AMD) made remarks on behalf of international computing industries in China. Seven keynote lectures were delivered by Vassil Alexandrov (Advanced Computing and Emerging Technologies, University of Reading, UK) - Efficient Scalable Algorithms for Large-Scale Computations; Hans Petter Langtangen (Simula Research Laboratory, Lysaker, Norway) - Computational Modelling of Huge Tsunamis from Asteroid Impacts; Jiawei Han (Department of Computer Science, University of Illinois at Urbana-Champaign, USA) - Research Frontiers in Advanced Data Mining Technologies and Applications; Ru-qian Lu (Institute of Mathematics, Chinese Academy of Sciences) - Knowledge Engineering and Knowledge Ware; Alessandro Vespignani (School of Informatics, Indiana University, USA) -Computational Epidemiology and Emergent Disease Forecast; David Keyes (Department of Applied Physics and Applied Mathematics, Columbia University) - Scalable Solver Infrastructure for Computational Science and Engineering; and Yves Robert (Ecole Normale Suprieure de Lyon , France) - Think Before Coding: Static Strategies (and Dynamic Execution) for Clusters and Grids. We would like to express our thanks to all of the invited and keynote speakers for their inspiring talks. In addition to the plenary sessions, the conference included 14 parallel oral sessions and 4 poster sessions. This year, we

received more than 2,400 submissions for all tracks combined, out of which 716 were accepted.

This includes 529 oral papers, 97 short papers, and 89 poster papers, spread over 35 workshops and a main track. For the main track we had 91 papers (80 oral papers and 11 short papers) in the proceedings, out of 360 submissions. We had some 930 people doing reviews for the conference, with 118 for the main track. Almost all papers received three reviews. The accepted papers are from more than 43 different countries and 48 different Internet top-level domains.

The papers cover a large volume of topics in computational science and related areas, from multiscale physics to wireless networks, and from graph theory to tools for program development.

We would like to thank all workshop organizers and the Program Committee for the excellent work in maintaining the conference's standing for high-quality papers. We would like to express our gratitude to staff and graduates of the Chinese Academy of Sciences Research Center on Data Technology and Knowledge Economy and the Institute of Policy and Management for their hard work in support of ICCS 2007. We would like to thank the Local Organizing Committee and Local Arrangements Committee for their persistent and enthusiastic work towards the success of ICCS 2007. We owe special thanks to our sponsors, AMD, Springer; University of Nebraska at Omaha, USA and Graduate University of Chinese Academy of Sciences, for their generous support.

ICCS 2007 was organized by the Chinese Academy of Sciences Research Center on Data Technology and Knowledge Economy, with support from the Section Computational Science at the Universiteit van Amsterdam and Innovative Computing Laboratory at the University of Tennessee, in cooperation with the Society for Industrial and Applied Mathematics (SIAM), the International Association for Mathematics and Computers in Simulation (IMACS), the Chinese Society for Management Modernization (CSMM), and the Chinese Society of Optimization, Overall Planning and Economical Mathematics (CSOOPM).

May 2007

Yong Shi

Organization

ICCS 2007 was organized by the Chinese Academy of Sciences Research Center on Data Technology and Knowledge Economy, with support from the Section Computational Science at the Universiteit van Amsterdam and Innovative Computing Laboratory at the University of Tennessee, in cooperation with the Society for Industrial and Applied Mathematics (SIAM), the International Association for Mathematics and Computers in Simulation (IMACS), and the Chinese Society for Management Modernization (CSMM).

Conference Chairs

Conference Chair - Yong Shi (Chinese Academy of Sciences, China/University of Nebraska at Omaha USA)

Program Chair - Dick van Albada (Universiteit van Amsterdam, The Netherlands)

ICCS Series Overall Scientific Co-chair - Jack Dongarra (University of Tennessee, USA)

ICCS Series Overall Scientific Chair - Peter M.A. Sloot (Universiteit van Amsterdam, The Netherlands)

Local Organizing Committee

Weimin Zheng (Tsinghua University, Beijing, China) – Chair

Hesham Ali (University of Nebraska at Omaha, USA)

Chongfu Huang (Beijing Normal University, Beijing, China)

Masato Koda (University of Tsukuba, Japan)

Heeseok Lee (Korea Advanced Institute of Science and Technology, Korea)

Zengliang Liu (Beijing University of Science and Technology, Beijing, China)

Jen Tang (Purdue University, USA)

Shouyang Wang (Academy of Mathematics and System Science, Chinese Academy of Sciences, Beijing, China)

Weixuan Xu (Institute of Policy and Management, Chinese Academy of Sciences, Beijing, China)

Yong Xue (Institute of Remote Sensing Applications, Chinese Academy of Sciences, Beijing, China)

Ning Zhong (Maebashi Institute of Technology, USA)

Hai Zhuge (Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China)

Local Arrangements Committee

Weixuan Xu, Chair
Yong Shi, Co-chair of events
Benfu Lu, Co-chair of publicity
Hongjin Yang, Secretary
Jianping Li, Member
Ying Liu, Member
Jing He, Member
Siliang Chen, Member
Guanxiong Jiang, Member
Nan Xiao, Member
Zujin Deng, Member

Sponsoring Institutions

AMD
Springer
World Scientific Publishing
University of Nebraska at Omaha, USA
Graduate University of Chinese Academy of Sciences
Institute of Policy and Management, Chinese Academy of Sciences
Universiteit van Amsterdam

Program Committee

J.H. Abawajy, Deakin University, Australia
D. Abramson, Monash University, Australia
V. Alexandrov, University of Reading, UK
I. Altintas, San Diego Supercomputer Center, UCSD
M. Antolovich, Charles Sturt University, Australia
E. Araujo, Universidade Federal de Campina Grande, Brazil
M.A. Baker, University of Reading, UK
B. Balis, Krakow University of Science and Technology, Poland
A. Benoit, LIP, ENS Lyon, France
I. Bethke, University of Amsterdam, The Netherlands
J.A.R. Blais, University of Calgary, Canada
I. Brandic, University of Vienna, Austria
J. Broeckhove, Universiteit Antwerpen, Belgium
M. Bubak, AGH University of Science and Technology, Poland
K. Bubendorfer, Victoria University of Wellington, Australia
B. Cantalupo, DATAMAT S.P.A, Italy
J. Chen Swinburne, University of Technology, Australia
O. Corcho, University of Manchester, UK
J.C. Cunha, Univ. Nova de Lisboa, Portugal

S. Date, Osaka University, Japan
F. Desprez, INRIA, France
T. Dhaene, University of Antwerp, Belgium
I.T. Dimov, ACET, The University of Reading, UK
J. Dongarra, University of Tennessee, USA
F. Donno, CERN, Switzerland
C. Douglas, University of Kentucky, USA
G. Fox, Indiana University, USA
W. Funika, Krakow University of Science and Technology, Poland
H.J. Gardner, Australian National University, Australia
G. Geethakumari, University of Hyderabad, India
Y. Gorbachev, St. Petersburg State Polytechnical University, Russia
A.M. Goscinski, Deakin University, Australia
M. Govindaraju, Binghamton University, USA
G.A. Gravvanis, Democritus University of Thrace, Greece
D.J. Groen, University of Amsterdam, The Netherlands
T. Gubala, ACC CYFRONET AGH, Krakow, Poland
M. Hardt, FZK, Germany
T. Heinis, ETH Zurich, Switzerland
L. Hluchy, Institute of Informatics, Slovak Academy of Sciences, Slovakia
A.G. Hoekstra, University of Amsterdam, The Netherlands
W. Hoffmann, University of Amsterdam, The Netherlands
C. Huang, Beijing Normal University Beijing, China
M. Humphrey, University of Virginia, USA
A. Iglesias, University of Cantabria, Spain
H. Jin, Huazhong University of Science and Technology, China
D. Johnson, ACET Centre, University of Reading, UK
B.D. Kandhai, University of Amsterdam, The Netherlands
S. Kawata, Utsunomiya University, Japan
W.A. Kelly, Queensland University of Technology, Australia
J. Kitowski, Inst.Comp.Sci. AGH-UST, Cracow, Poland
M. Koda, University of Tsukuba Japan
D. Kranzlmüller, GUP, Joh. Kepler University Linz, Austria
B. Kryza, Academic Computer Centre CYFRONET-AGH, Cracow, Poland
M. Kunze, Forschungszentrum Karlsruhe (FZK), Germany
D. Kurzyniec, Emory University, Atlanta, USA
A. Lagana, University of Perugia, Italy
J. Lee, KISTI Supercomputing Center, Korea
C. Lee, Aerospace Corp., USA
L. Lefevre, INRIA, France
A. Lewis, Griffith University, Australia
H.W. Lim, Royal Holloway, University of London, UK
A. Lin, NCMIR/UCSD, USA
P. Lu, University of Alberta, Canada
M. Malawski, Institute of Computer Science AGH, Poland

M. Mascagni, Florida State University, USA
 V. Maxville, Curtin Business School, Australia
 A.S. McGough, London e-Science Centre, UK
 E.D. Moreno, UEA-BENq, Manaus, Brazil
 J.T. Moscicki, Cern, Switzerland
 S. Naqvi, CoreGRID Network of Excellence, France
 P.O.A. Navaux, Universidade Federal do Rio Grande do Sul, Brazil
 Z. Nemeth, Computer and Automation Research Institute, Hungarian Academy of Science, Hungary
 J. Ni, University of Iowa, USA
 G. Norman, Joint Institute for High Temperatures of RAS, Russia
 B. Ó Nualláin, University of Amsterdam, The Netherlands
 C.W. Oosterlee, Centrum voor Wiskunde en Informatica, CWI, The Netherlands
 S. Orlando, Università Ca' Foscari, Venice, Italy
 M. Paprzycki, IBS PAN and SWPS, Poland
 M. Parashar, Rutgers University, USA
 L.M. Patnaik, Indian Institute of Science, India
 C.P. Pautasso, ETH Zürich, Switzerland
 R. Perrott, Queen's University, Belfast, UK
 V. Prasanna, University of Southern California, USA
 T. Priol, IRISA, France
 M.R. Radecki, Krakow University of Science and Technology, Poland
 M. Ram, C-DAC Bangalore Centre, India
 A. Rendell, Australian National University, Australia
 P. Rhodes, University of Mississippi, USA
 M. Riedel, Research Centre Juelich, Germany
 D. Rodríguez García, University of Alcalá, Spain
 K. Rycerz, Krakow University of Science and Technology, Poland
 R. Santinelli, CERN, Switzerland
 J. Schneider, Technische Universität Berlin, Germany
 B. Schulze, LNCC, Brazil
 J. Seo, The University of Manchester, UK
 Y. Shi, Chinese Academy of Sciences, Beijing, China
 D. Shires, U.S. Army Research Laboratory, USA
 A.E. Solomonides, University of the West of England, Bristol, UK
 V. Stankovski, University of Ljubljana, Slovenia
 H. Stockinger, Swiss Institute of Bioinformatics, Switzerland
 A. Streit, Forschungszentrum Jülich, Germany
 H. Sun, Beihang University, China
 R. Tadeusiewicz, AGH University of Science and Technology, Poland
 J. Tang, Purdue University USA
 M. Taufer, University of Texas El Paso, USA
 C. Tedeschi, LIP-ENS Lyon, France
 A. Thandavan, ACET Center, University of Reading, UK
 A. Tirado-Ramos, University of Amsterdam, The Netherlands

P. Tvrdik, Czech Technical University Prague, Czech Republic
 G.D. van Albada, Universiteit van Amsterdam, The Netherlands
 F. van Lingen, California Institute of Technology, USA
 J. Vigo-Aguiar, University of Salamanca, Spain
 D.W. Walker, Cardiff University, UK
 C.L. Wang, University of Hong Kong, China
 A.L. Wendelborn, University of Adelaide, Australia
 Y. Xue, Chinese Academy of Sciences, China
 L.T. Yang, St. Francis Xavier University, Canada
 C.T. Yang, Tunghai University, Taichung, Taiwan
 J. Yu, The University of Melbourne, Australia
 Y. Zheng, Zhejiang University, China
 W. Zheng, Tsinghua University, Beijing, China
 L. Zhu, University of Florida, USA
 A. Zomaya, The University of Sydney, Australia
 E.V. Zudilova-Seinstra, University of Amsterdam, The Netherlands

Reviewers

J.H. Abawajy	B. Autin	J.A.R. Blais
D. Abramson	M. Babik	A. Bode
A. Abran	G. Bai	B. Boghosian
P. Adriaans	E. Baker	S. Bolboaca
W. Ahn	M.A. Baker	C. Bothorel
R. Akbani	S. Balfe	A. Bouteiller
K. Akkaya	B. Balis	I. Brandic
R. Albert	W. Banzhaf	S. Branford
M. Aldinucci	D. Bastola	S.J. Branford
V.N. Alexandrov	S. Battiato	R. Braungarten
B. Alidaee	M. Baumgarten	R. Briggs
I. Altintas	M. Baumgartner	J. Broeckhove
K. Altmanninger	P. Beckaert	W. Bronsvoot
S. Aluru	A. Belloum	A. Bruce
S. Ambroszkiewicz	O. Belmonte	C. Brugha
L. Anido	A. Belyaev	Y. Bu
K. Anjyo	A. Benoit	K. Bubendorfer
C. Anthes	G. Bergantz	I. Budinska
M. Antolovich	J. Bernsdorf	G. Buemi
S. Antonioti	J. Berthold	B. Bui
G. Antoniu	I. Bethke	H.J. Bungartz
H. Arabnia	I. Bhana	A. Byrski
E. Araujo	R. Bhowmik	M. Cai
E. Ardeleanu	M. Bickelhaupt	Y. Cai
J. Aroba	J. Bin Shyan	Y.Q. Cai
J. Astalos	J. Birkett	Z.Y. Cai

- | | | |
|----------------------|-----------------------|--------------------|
| B. Cantalupo | E. Coutinho | C. Earley |
| K. Cao | J.J. Cuadrado-Gallego | P. Edmond |
| M. Cao | Y.F. Cui | T. Eitrich |
| F. Capkovic | J.C. Cunha | A. El Rhalibi |
| A. Cepulkauskas | V. Curcin | T. Ernst |
| K. Cetnarowicz | A. Curioni | V. Ervin |
| Y. Chai | R. da Rosa Righi | D. Estrin |
| P. Chan | S. Dalai | L. Eyraud-Dubois |
| G.-L. Chang | M. Daneva | J. Falcou |
| S.C. Chang | S. Date | H. Fang |
| W.A. Chaovalitwongse | P. Dazzi | Y. Fang |
| P.K. Chattaraj | S. de Marchi | X. Fei |
| C.-K. Chen | V. Debelov | Y. Fei |
| E. Chen | E. Deelman | R. Feng |
| G.Q. Chen | J. Della Dora | M. Fernandez |
| G.X. Chen | Y. Demazeau | K. Fisher |
| J. Chen | Y. Demchenko | C. Fittschen |
| J. Chen | H. Deng | G. Fox |
| J.J. Chen | X.T. Deng | F. Freitas |
| K. Chen | Y. Deng | T. Friesz |
| Q.S. Chen | M. Mat Deris | K. Fuerlinger |
| W. Chen | F. Desprez | M. Fujimoto |
| Y. Chen | M. Dewar | T. Fujinami |
| Y.Y. Chen | T. Dhaene | W. Funika |
| Z. Chen | Z.R. Di | T. Furumura |
| G. Cheng | G. di Biasi | A. Galvez |
| X.Z. Cheng | A. Diaz Guilera | L.J. Gao |
| S. Chiu | P. Didier | X.S. Gao |
| K.E. Cho | I.T. Dimov | J.E. Garcia |
| Y.-Y. Cho | L. Ding | H.J. Gardner |
| B. Choi | G.D. Dobrowolski | M. Garre |
| J.K. Choi | T. Dokken | G. Garsva |
| D. Choinski | J.J. Dolado | F. Gava |
| D.P. Chong | W. Dong | G. Geethakumari |
| B. Chopard | Y.-L. Dong | M. Geimer |
| M. Chover | J. Dongarra | J. Geiser |
| I. Chung | F. Donno | J.-P. Gelas |
| M. Ciglan | C. Douglas | A. Gerbessiotis |
| B. Cogan | G.J. Garcke | M. Gerndt |
| G. Cong | R.P. Mundani | S. Gimelshein |
| J. Corander | R. Drezewski | S.G. Girdzijauskas |
| J.C. Corchado | D. Du | S. Girtelschmid |
| O. Corcho | B. Duan | Z. Gj |
| J. Cornil | J.F. Dufourd | C. Glasner |
| H. Cota de Freitas | H. Dun | A. Goderis |

D. Godoy	D. Horvath	M.J. Jiang
J. Golebiowski	F. Hu	P. Jiang
S. Gopalakrishnan	L. Hu	W. Jiang
Y. Gorbachev	X. Hu	Y. Jiang
A.M. Goscinski	X.H. Hu	H. Jin
M. Govindaraju	Z. Hu	J. Jin
E. Grabska	K. Hua	L. Jingling
G.A. Gravvanis	H.W. Huang	G.-S. Jo
C.H. Grelck	K.-Y. Huang	D. Johnson
D.J. Groen	L. Huang	J. Johnstone
L. Gross	L. Huang	J.J. Jung
P. Gruer	M.S. Huang	K. Juszczyszyn
A. Grzech	S. Huang	J.A. Kaandorp
J.F. Gu	T. Huang	M. Kabelac
Y. Guang Xue	W. Huang	B. Kadlec
T. Gubala	Y. Huang	R. Kakkar
V. Guevara-Masis	Z. Huang	C. Kameyama
C.H. Guo	Z. Huang	B.D. Kandhai
X. Guo	B. Huber	S. Kandler
Z.Q. Guo	E. Hubo	K. Kang
L. Guohui	J. Hulliger	S. Kato
C. Gupta	M. Hultell	S. Kawata
I. Gutman	M. Humphrey	T. Kegl
A. Haffeegee	P. Hurtado	W.A. Kelly
K. Han	J. Huysmans	J. Kennedy
M. Hardt	T. Ida	G. Khan
A. Hasson	A. Iglesias	J.B. Kido
J. He	K. Iqbal	C.H. Kim
J. He	D. Ireland	D.S. Kim
K. He	N. Ishizawa	D.W. Kim
T. He	I. Lukovits	H. Kim
J. He	R. Jamieson	J.G. Kim
M.R. Head	J.K. Jan	J.H. Kim
P. Heinzlreiter	P. Janderka	M. Kim
H. Chojnacki	M. Jankowski	T.H. Kim
J. Heo	L. Jäntschi	T.W. Kim
S. Hirokawa	S.J.K. Jensen	P. Kiprof
G. Hliniak	N.J. Jeon	R. Kirner
L. Hluchy	T.H. Jeon	M. Kisiel-Dorohinicki
T.B. Ho	T. Jeong	J. Kitowski
A. Hoekstra	H. Ji	C.R. Kleijn
W. Hoffmann	X. Ji	M. Kluge
A. Hoheisel	D.Y. Jia	A. Knüpfer
J. Hong	C. Jiang	I.S. Ko
Z. Hong	H. Jiang	Y. Ko

R. Kobler	A. Li	Y.Z. Liu
B. Koblitz	D. Li	Z.J. Liu
G.A. Kochenberger	D. Li	S.-C. Lo
M. Koda	E. Li	R. Loogen
T. Koeckerbauer	J. Li	B. López
M. Koehler	J. Li	A. López García de
I. Kolingerova	J.P. Li	Lomana
V. Korkhov	M. Li	F. Loulergue
T. Korkmaz	P. Li	G. Lu
L. Kotulski	X. Li	J. Lu
G. Kou	X.M. Li	J.H. Lu
J. Kozlak	X.S. Li	M. Lu
M. Krafczyk	Y. Li	P. Lu
D. Kranzlmüller	Y. Li	S. Lu
B. Kryza	J. Liang	X. Lu
V.V. Krzhizhanovskaya	L. Liang	Y.C. Lu
M. Kunze	W.K. Liao	C. Lursinsap
D. Kurzyniec	X.F. Liao	L. Ma
E. Kusmieriek	G.G. Lim	M. Ma
S. Kwang	H.W. Lim	T. Ma
Y. Kwok	S. Lim	A. Macedo
F. Kyriakopoulos	A. Lin	N. Maillard
H. Labiod	I.C. Lin	M. Malawski
A. Lagana	I-C. Lin	S. Maniccam
H. Lai	Y. Lin	S.S. Manna
S. Lai	Z. Lin	Z.M. Mao
Z. Lan	P. Lingras	M. Mascagni
G. Le Mahec	C.Y. Liu	E. Mathias
B.G. Lee	D. Liu	R.C. Maurya
C. Lee	D.S. Liu	V. Maxville
H.K. Lee	E.L. Liu	A.S. McGough
J. Lee	F. Liu	R. Mckay
J. Lee	G. Liu	T.-G. MCKenzie
J.H. Lee	H.L. Liu	K. Meenal
S. Lee	J. Liu	R. Mehrotra
S.Y. Lee	J.C. Liu	M. Meneghin
V. Lee	R. Liu	F. Meng
Y.H. Lee	S.Y. Liu	M.F.J. Meng
L. Lefevre	W.B. Liu	E. Merkevicius
L. Lei	X. Liu	M. Metzger
F. Lelj	Y. Liu	Z. Michalewicz
A. Lesar	Y. Liu	J. Michopoulos
D. Lesthaeghe	Y. Liu	J.-C. Mignot
Z. Levnajic	Y. Liu	R. mikusauskas
A. Lewis	Y.J. Liu	H.Y. Ming

G. Miranda Valladares	F.R. Ornellas	H. Qin
M. Mirua	A. Ortiz	K. Qin
G.P. Miscione	S. Ouyang	R.X. Qin
C. Miyaji	T. Owens	X. Qin
A. Miyoshi	S. Oyama	G. Qiu
J. Monterde	B. Ozisikyilmaz	X. Qiu
E.D. Moreno	A. Padmanabhan	J.Q. Quinqueton
G. Morra	Z. Pan	M.R. Radecki
J.T. Moscicki	Y. Papegay	S. Radhakrishnan
H. Moshkovich	M. Paprzycki	S. Radharkrishnan
V.M. Moskaliowa	M. Parashar	M. Ram
G. Mounie	K. Park	S. Ramakrishnan
C. Mu	M. Park	P.R. Ramasami
A. Muraru	S. Park	P. Ramsamy
H. Na	S.K. Pati	K.R. Rao
K. Nakajima	M. Pauley	N. Ratnakar
Y. Nakamori	C.P. Pautasso	T. Recio
S. Naqvi	B. Payne	K. Regenauer-Lieb
S. Naqvi	T.C. Peachey	R. Rejas
R. Narayanan	S. Pelagatti	F.Y. Ren
A. Narjess	F.L. Peng	A. Rendell
A. Nasri	Q. Peng	P. Rhodes
P. Navaux	Y. Peng	J. Ribelles
P.O.A. Navaux	N. Petford	M. Riedel
M. Negoita	A.D. Pimentel	R. Rioboo
Z. Nemeth	W.A.P. Pinheiro	Y. Robert
L. Neumann	J. Pisharath	G.J. Rodgers
N.T. Nguyen	G. Pitel	A.S. Rodionov
J. Ni	D. Plemenos	D. Rodríguez García
Q. Ni	S. Pllana	C. Rodriguez Leon
K. Nie	S. Ploux	F. Rogier
G. Nikishkov	A. Podoleanu	G. Rojek
V. Nitica	M. Polak	L.L. Rong
W. Nocon	D. Prabu	H. Ronghuai
A. Noel	B.B. Prahalada Rao	H. Rosmanith
G. Norman	V. Prasanna	F.-X. Roux
B. Ó Nualláin	P. Praxmarer	R.K. Roy
N. O'Boyle	V.B. Priezhev	U. Rüde
J.T. Oden	T. Priol	M. Ruiz
Y. Ohsawa	T. Prokosch	T. Ruofeng
H. Okuda	G. Pucciani	K. Rycerz
D.L. Olson	D. Puja	M. Ryoke
C.W. Oosterlee	P. Puschner	F. Safaei
V. Oravec	L. Qi	T. Saito
S. Orlando	D. Qin	V. Sakalauskas

L. Santillo	A.E. Solomonides	F. Terpstra
R. Santinelli	C. Song	C. Te-Yi
K. Sarac	L.J. Song	A.Y. Teymorian
H. Sarafian	S. Song	D. Thalmann
M. Sarfraz	W. Song	A. Thandavan
V.S. Savchenko	J. Soto	L. Thompson
M. Sbert	A. Sourin	S. Thurner
R. Schaefer	R. Srinivasan	F.Z. Tian
D. Schmid	V. Srovnal	Y. Tian
J. Schneider	V. Stankovski	Z. Tianshu
M. Schoeberl	P. Sterian	A. Tirado-Ramos
S.-B. Scholz	H. Stockinger	A. Tirumala
B. Schulze	D. Stokic	P. Tjeerd
S.R. Seelam	A. Streit	W. Tong
B. Seetharamanjaneyalu	B. Strug	A.S. Tosun
J. Seo	P. Stuedi	A. Tropsha
K.D. Seo	A. Stümpel	C. Troyer
Y. Seo	S. Su	K.C.K. Tsang
O.A. Serra	V. Subramanian	A.C. Tsipis
A. Sfarti	P. Suganthan	I. Tsutomu
H. Shao	D.A. Sun	A. Turan
X.J. Shao	H. Sun	P. Tvrdik
F.T. Sheldon	S. Sun	U. Ufuktepe
H.Z. Shen	Y.H. Sun	V. Uskov
S.L. Shen	Z.G. Sun	B. Vaidya
Z.H. Sheng	M. Suvakov	E. Valakevicius
H. Shi	H. Suzuki	I.A. Valuev
Y. Shi	D. Szczierba	S. Valverde
S. Shin	L. Szecsi	G.D. van Albada
S.Y. Shin	L. Szirmay-Kalos	R. van der Sman
B. Shirazi	R. Tadeusiewicz	F. van Lingen
D. Shires	B. Tadic	A.J.C. Varandas
E. Shook	T. Takahashi	C. Varotsos
Z.S. Shuai	S. Takeda	D. Vasyunin
M.A. Sicilia	J. Tan	R. Veloso
M. Simeonidis	H.J. Tang	J. Vigo-Aguiar
K. Singh	J. Tang	J. Villà i Freixa
M. Siqueira	S. Tang	V. Vivacqua
W. Sit	T. Tang	E. Vumar
M. Skomorowski	X.J. Tang	R. Walentkynski
A. Skowron	J. Tao	D.W. Walker
P.M.A. Slood	M. Taufer	B. Wang
M. Smolka	S.F. Tayyari	C.L. Wang
B.S. Sniezynski	C. Tedeschi	D.F. Wang
H.Z. Sojka	J.C. Teixeira	D.H. Wang

F. Wang	Y. Wu	P.-W. Yau
F.L. Wang	Z. Wu	M.J. Ye
H. Wang	B. Wylie	G. Yen
H.G. Wang	M. Xavier Py	R. Yi
H.W. Wang	Y.M. Xi	Z. Yi
J. Wang	H. Xia	J.G. Yim
J. Wang	H.X. Xia	L. Yin
J. Wang	Z.R. Xiao	W. Yin
J. Wang	C.F. Xie	Y. Ying
J.H. Wang	J. Xie	S. Yoo
K. Wang	Q.W. Xie	T. Yoshino
L. Wang	H. Xing	W. Youmei
M. Wang	H.L. Xing	Y.K. Young-Kyu Han
M.Z. Wang	J. Xing	J. Yu
Q. Wang	K. Xing	J. Yu
Q.Q. Wang	L. Xiong	L. Yu
S.P. Wang	M. Xiong	Z. Yu
T.K. Wang	S. Xiong	Z. Yu
W. Wang	Y.Q. Xiong	W. Yu Lung
W.D. Wang	C. Xu	X.Y. Yuan
X. Wang	C.-H. Xu	W. Yue
X.J. Wang	J. Xu	Z.Q. Yue
Y. Wang	M.W. Xu	D. Yuen
Y.Q. Wang	Y. Xu	T. Yuizono
Z. Wang	G. Xue	J. Zambreno
Z.T. Wang	Y. Xue	P. Zarzycki
A. Wei	Z. Xue	M.A. Zatevakhin
G.X. Wei	A. Yacizi	S. Zeng
Y.-M. Wei	B. Yan	A. Zhang
X. Weimin	N. Yan	C. Zhang
D. Weiskopf	N. Yan	D. Zhang
B. Wen	W. Yan	D.L. Zhang
A.L. Wendelborn	H. Yanami	D.Z. Zhang
I. Wenzel	C.T. Yang	G. Zhang
A. Wibisono	F.P. Yang	H. Zhang
A.P. Wierzbicki	J.M. Yang	H.R. Zhang
R. Wismüller	K. Yang	H.W. Zhang
F. Wolf	L.T. Yang	J. Zhang
C. Wu	L.T. Yang	J.J. Zhang
C. Wu	P. Yang	L.L. Zhang
F. Wu	X. Yang	M. Zhang
G. Wu	Z. Yang	N. Zhang
J.N. Wu	W. Yanwen	P. Zhang
X. Wu	S. Yarasi	P.Z. Zhang
X.D. Wu	D.K.Y. Yau	Q. Zhang

S. Zhang	Z. Zhao	L.G. Zhou
W. Zhang	L. Zhen	X.J. Zhou
W. Zhang	B. Zheng	X.L. Zhou
Y.G. Zhang	G. Zheng	Y.T. Zhou
Y.X. Zhang	W. Zheng	H.H. Zhu
Z. Zhang	Y. Zheng	H.L. Zhu
Z.W. Zhang	W. Zhenghong	L. Zhu
C. Zhao	P. Zhigeng	X.Z. Zhu
H. Zhao	W. Zhihai	Z. Zhu
H.K. Zhao	Y. Zhixia	M. Zhu.
H.P. Zhao	A. Zhmakin	J. Zivkovic
J. Zhao	C. Zhong	A. Zomaya
M.H. Zhao	X. Zhong	E.V. Zudilova-Seinstra
W. Zhao	K.J. Zhou	

Workshop Organizers

Sixth International Workshop on Computer Graphics and Geometric Modelling

A. Iglesias, University of Cantabria, Spain

Fifth International Workshop on Computer Algebra Systems and Applications

A. Iglesias, University of Cantabria, Spain,
A. Galvez, University of Cantabria, Spain

PAPP 2007 - Practical Aspects of High-Level Parallel Programming (4th International Workshop)

A. Benoit, ENS Lyon, France
F. Loulerge, LIFO, Orleans, France

International Workshop on Collective Intelligence for Semantic and Knowledge Grid (CISKGrid 2007)

N.T. Nguyen, Wroclaw University of Technology, Poland
J.J. Jung, INRIA Rhône-Alpes, France
K. Juszczyszyn, Wroclaw University of Technology, Poland

Simulation of Multiphysics Multiscale Systems, 4th International Workshop

V.V. Krzhizhanovskaya, Section Computational Science, University of Amsterdam, The Netherlands
A.G. Hoekstra, Section Computational Science, University of Amsterdam, The Netherlands

S. Sun, Clemson University, USA

J. Geiser, Humboldt University of Berlin, Germany

2nd Workshop on Computational Chemistry and Its Applications (2nd CCA)

P.R. Ramasami, University of Mauritius

Efficient Data Management for HPC Simulation Applications

R.-P. Mundani, Technische Universität München, Germany

J. Abawajy, Deakin University, Australia

M. Mat Deris, Tun Hussein Onn College University of Technology, Malaysia

Real Time Systems and Adaptive Applications (RTSAA-2007)

J. Hong, Soongsil University, South Korea

T. Kuo, National Taiwan University, Taiwan

The International Workshop on Teaching Computational Science (WTCS 2007)

L. Qi, Department of Information and Technology, Central China Normal University, China

W. Yanwen, Department of Information and Technology, Central China Normal University, China

W. Zhenghong, East China Normal University, School of Information Science and Technology, China

GeoComputation

Y. Xue, IRSA, China

Risk Analysis

C.F. Huang, Beijing Normal University, China

Advanced Computational Approaches and IT Techniques in Bioinformatics

M.A. Pauley, University of Nebraska at Omaha, USA

H.A. Ali, University of Nebraska at Omaha, USA

Workshop on Computational Finance and Business Intelligence

Y. Shi, Chinese Academy of Sciences, China

S.Y. Wang, Academy of Mathematical and System Sciences, Chinese Academy of Sciences, China

X.T. Deng, Department of Computer Science, City University of Hong Kong, China

Collaborative and Cooperative Environments

C. Anthes, Institute of Graphics and Parallel Processing, JKU, Austria

V.N. Alexandrov, ACET Centre, The University of Reading, UK

D. Kranzlmüller, Institute of Graphics and Parallel Processing, JKU, Austria

J. Volkert, Institute of Graphics and Parallel Processing, JKU, Austria

Tools for Program Development and Analysis in Computational Science

A. Knüpfer, ZIH, TU Dresden, Germany

A. Bode, TU Munich, Germany

D. Kranzlmüller, Institute of Graphics and Parallel Processing, JKU, Austria

J. Tao, CAPP, University of Karlsruhe, Germany

R. Wissmüller FB12, BSVS, University of Siegen, Germany

J. Volkert, Institute of Graphics and Parallel Processing, JKU, Austria

Workshop on Mining Text, Semi-structured, Web or Multimedia Data (WMTSWMD 2007)

G. Kou, Thomson Corporation, R&D, USA

Y. Peng, Omnium Worldwide, Inc., USA

J.P. Li, Institute of Policy and Management, Chinese Academy of Sciences, China

2007 International Workshop on Graph Theory, Algorithms and Its Applications in Computer Science (IWGA 2007)

M. Li, Dalian University of Technology, China

2nd International Workshop on Workflow Systems in e-Science (WSES 2007)

Z. Zhao, University of Amsterdam, The Netherlands

A. Belloum, University of Amsterdam, The Netherlands

2nd International Workshop on Internet Computing in Science and Engineering (ICSE 2007)

J. Ni, The University of Iowa, USA

Workshop on Evolutionary Algorithms and Evolvable Systems (EAES 2007)

B. Zheng, College of Computer Science, South-Central University for Nationalities, Wuhan, China

Y. Li, State Key Lab. of Software Engineering, Wuhan University, Wuhan, China

J. Wang, College of Computer Science, South-Central University for Nationalities, Wuhan, China

L. Ding, State Key Lab. of Software Engineering, Wuhan University, Wuhan, China

Wireless and Mobile Systems 2007 (WMS 2007)

H. Choo, Sungkyunkwan University, South Korea

WAFTS: WAvelets, FracTals, Short-Range Phenomena — Computational Aspects and Applications

C. Cattani, University of Salerno, Italy

C. Toma, Polytechnica, Bucharest, Romania

Dynamic Data-Driven Application Systems - DDDAS 2007

F. Darema, National Science Foundation, USA

The Seventh International Workshop on Meta-synthesis and Complex Systems (MCS 2007)

X.J. Tang, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, China

J.F. Gu, Institute of Systems Science, Chinese Academy of Sciences, China

Y. Nakamori, Japan Advanced Institute of Science and Technology, Japan

H.C. Wang, Shanghai Jiaotong University, China

The 1st International Workshop on Computational Methods in Energy Economics

L. Yu, City University of Hong Kong, China

J. Li, Chinese Academy of Sciences, China

D. Qin, Guangdong Provincial Development and Reform Commission, China

High-Performance Data Mining

Y. Liu, Data Technology and Knowledge Economy Research Center, Chinese Academy of Sciences, China

A. Choudhary, Electrical and Computer Engineering Department, Northwestern University, USA

S. Chiu, Department of Computer Science, College of Engineering, Idaho State University, USA

Computational Linguistics in Human–Computer Interaction

H. Ji, Sungkyunkwan University, South Korea

Y. Seo, Chungbuk National University, South Korea

H. Choo, Sungkyunkwan University, South Korea

Intelligent Agents in Computing Systems

K. Cetnarowicz, Department of Computer Science, AGH University of Science and Technology, Poland

R. Schaefer, Department of Computer Science, AGH University of Science and Technology, Poland

Networks: Theory and Applications

B. Tadic, Jozef Stefan Institute, Ljubljana, Slovenia

S. Thurner, COSY, Medical University Vienna, Austria

Workshop on Computational Science in Software Engineering

D. Rodriguez, University of Alcala, Spain

J.J. Cuadrado-Gallego, University of Alcala, Spain

International Workshop on Advances in Computational Geomechanics and Geophysics (IACGG 2007)

H.L. Xing, The University of Queensland and ACcESS Major National Research Facility, Australia

J.H. Wang, Shanghai Jiao Tong University, China

2nd International Workshop on Evolution Toward Next-Generation Internet (ENGI)

Y. Cui, Tsinghua University, China

Parallel Monte Carlo Algorithms for Diverse Applications in a Distributed Setting

V.N. Alexandrov, ACET Centre, The University of Reading, UK

The 2007 Workshop on Scientific Computing in Electronics Engineering (WSCEE 2007)

Y. Li, National Chiao Tung University, Taiwan

High-Performance Networked Media and Services 2007 (HiNMS 2007)

I.S. Ko, Dongguk University, South Korea

Y.J. Na, Honam University, South Korea

Table of Contents – Part I

A Composite Finite Element-Finite Difference Model Applied to Turbulence Modelling	1
<i>Lale Balas and Asu Inan</i>	
Vortex Identification in the Wall Region of Turbulent Channel Flow	9
<i>Giancarlo Alfonsi and Leonardo Primavera</i>	
Numerical Solution of a Two-Class LWR Traffic Flow Model by High-Resolution Central-Upwind Scheme	17
<i>Jianzhong Chen, Zhongke Shi, and Yanmei Hu</i>	
User-Controllable GPGPU-Based Target-Driven Smoke Simulation	25
<i>Jihyun Ryu and Sanghun Park</i>	
Variable Relaxation Solve for Nonlinear Thermal Conduction	30
<i>Jin Chen</i>	
A Moving Boundary Wave Run-Up Model	38
<i>Asu Inan and Lale Balas</i>	
Enabling Very-Large Scale Earthquake Simulations on Parallel Machines	46
<i>Yifeng Cui, Reagan Moore, Kim Olsen, Amit Chourasia, Philip Maechling, Bernard Minster, Steven Day, Yuanfang Hu, Jing Zhu, Amitava Majumdar, and Thomas Jordan</i>	
Fast Insolation Computation in Large Territories	54
<i>Siham Tabik, Jesús M. Vías, Emilio L. Zapata, and Luis F. Romero</i>	
Non-equilibrium Thermodynamics, Thermomechanics, Geodynamics	62
<i>Klaus Regenauer-Lieb, Bruce Hobbs, Alison Ord, and Dave A. Yuen</i>	
A Finite Element Model for Epidermal Wound Healing	70
<i>F.J. Vermolen and J.A. Adam</i>	
Predicting Binding Sites of Hepatitis C Virus Complexes Using Residue Binding Propensity and Sequence Entropy	78
<i>Guang-Zheng Zhang, Chirag Nepal, and Kyungsook Han</i>	
Use of Parallel Simulated Annealing for Computational Modeling of Human Head Conductivity	86
<i>Adnan Salman, Allen Malony, Sergei Turovets, and Don Tucker</i>	

Mining Molecular Structure Data for the Patterns of Interactions Between Protein and RNA	94
<i>Kyungsook Han and Chirag Nepal</i>	
Detecting Periodically Expression in Unevenly Spaced Microarray Time Series	102
<i>Jun Xian, Jinping Wang, and Dao-Qing Dai</i>	
Creating Individual Based Models of the Plankton Ecosystem	111
<i>Wes Hinsley, Tony Field, and John Woods</i>	
A Hybrid Agent-Based Model of Chemotaxis	119
<i>Zaiyi Guo and Joc Cing Tay</i>	
Block-Based Approach to Solving Linear Systems	128
<i>Sunil R. Tiyyagura and Uwe Küster</i>	
Numerical Tests with Gauss-Type Nested Implicit Runge-Kutta Formulas.....	136
<i>Gennady Yu. Kulikov and Sergey K. Shindin</i>	
An Efficient Implementation of the Thomas-Algorithm for Block Penta-diagonal Systems on Vector Computers	144
<i>Katharina Benkert and Rudolf Fischer</i>	
Compatibility of Scalapack with the Discrete Wavelet Transform	152
<i>Liesner Acevedo, Victor M. Garcia, and Antonio M. Vidal</i>	
A Model for Representing Topological Relations Between Simple Concave Regions	160
<i>Jihong Ou Yang, Qian Fu, and Dayou Liu</i>	
Speech Emotion Recognition Based on a Fusion of All-Class and Pairwise-Class Feature Selection	168
<i>Jia Liu, Chun Chen, Jiajun Bu, Mingyu You, and Jianhua Tao</i>	
Regularized Knowledge-Based Kernel Machine	176
<i>Olutayo O. Oladunni and Theodore B. Trafalis</i>	
Three-Phase Inverse Design Stefan Problem	184
<i>Damian Słota</i>	
Semi-supervised Clustering Using Incomplete Prior Knowledge.....	192
<i>Chao Wang, Weijun Chen, Peipei Yin, and Jianmin Wang</i>	
Distributed Reasoning with Fuzzy Description Logics	196
<i>Jianjiang Lu, Yanhui Li, Bo Zhou, Dazhou Kang, and Yafei Zhang</i>	

Effective Pattern Similarity Match for Multidimensional Sequence Data Sets	204
<i>Seok-Lyong Lee and Deok-Hwan Kim</i>	
GPU-Accelerated Montgomery Exponentiation	213
<i>Sebastian Fleissner</i>	
Hierarchical-Matrix Preconditioners for Parabolic Optimal Control Problems	221
<i>Suely Oliveira and Fang Yang</i>	
Searching and Updating Metric Space Databases Using the Parallel EGNAT	229
<i>Mauricio Marin, Roberto Uribe, and Ricardo Barrientos</i>	
An Efficient Algorithm and Its Parallelization for Computing PageRank	237
<i>Jonathan Qiao, Brittany Jones, and Stacy Thrall</i>	
A Query Index for Stream Data Using Interval Skip Lists Exploiting Locality	245
<i>Jun-Ki Min</i>	
Accelerating XML Structural Matching Using Suffix Bitmaps	253
<i>Feng Shao, Gang Chen, and Jinxiang Dong</i>	
Improving XML Querying with Maximal Frequent Query Patterns	261
<i>Yijun Bei, Gang Chen, and Jinxiang Dong</i>	
A Logic-Based Approach to Mining Inductive Databases	270
<i>Hong-Cheu Liu, Jeffrey Xu Yu, John Zeleznikow, and Ying Guan</i>	
An Efficient Quantum-Behaved Particle Swarm Optimization for Multiprocessor Scheduling	278
<i>Xiaohong Kong, Jun Sun, Bin Ye, and Wenbo Xu</i>	
Toward Optimizing Particle-Simulation Systems	286
<i>Hai Jiang, Hung-Chi Su, and Bin Zhang</i>	
A Modified Quantum-Behaved Particle Swarm Optimization	294
<i>Jun Sun, C.-H. Lai, Wenbo Xu, Yanrui Ding, and Zhilei Chai</i>	
Neural Networks for Predicting the Behavior of Preconditioned Iterative Solvers	302
<i>America Holloway and Tzu-Yi Chen</i>	
On the Normal Boundary Intersection Method for Generation of Efficient Front	310
<i>Pradyumn Kumar Shukla</i>	

An Improved Laplacian Smoothing Approach for Surface Meshes	318
<i>Ligang Chen, Yao Zheng, Jianjun Chen, and Yi Liang</i>	
Red-Black Half-Sweep Iterative Method Using Triangle Finite Element Approximation for 2D Poisson Equations	326
<i>J. Sulaiman, M. Othman, and M.K. Hasan</i>	
Optimizing Surface Triangulation Via Near Isometry with Reference Meshes	334
<i>Xiangmin Jiao, Narasimha R. Bayyana, and Hongyuan Zha</i>	
Efficient Adaptive Strategy for Solving Inverse Problems	342
<i>M. Paszyński, B. Barabasz, and R. Schaefer</i>	
Topology Preserving Tetrahedral Decomposition of Trilinear Cell	350
<i>Bong-Soo Sohn</i>	
FITTING: A Portal to Fit Potential Energy Functionals to <i>ab initio</i> Points	358
<i>Leonardo Pacifici, Leonardo Arteconi, and Antonio Laganà</i>	
Impact of QoS on Replica Placement in Tree Networks	366
<i>Anne Benoit, Veronika Rehn, and Yves Robert</i>	
Generating Traffic Time Series Based on Generalized Cauchy Process . . .	374
<i>Ming Li, S.C. Lim, and Huamin Feng</i>	
Reliable and Scalable State Management Using Migration of State Information in Web Services	382
<i>Jongbae Moon, Hyungil Park, and Myungho Kim</i>	
Efficient and Reliable Execution of Legacy Codes Exposed as Services	390
<i>Bartosz Baliś, Marian Bubak, Kamil Sterna, and Adam Bemben</i>	
Provenance Provisioning in Mobile Agent-Based Distributed Job Workflow Execution	398
<i>Yuhong Feng and Wentong Cai</i>	
EPLAS: An Epistemic Programming Language for All Scientists	406
<i>Isao Takahashi, Shinsuke Nara, Yuichi Goto, and Jingde Cheng</i>	
Translation of Common Information Model to Web Ontology Language	414
<i>Marta Majewska, Bartosz Kryza, and Jacek Kitowski</i>	
XML Based Semantic Data Grid Service	418
<i>Hui Tan and Xinmeng Chen</i>	

Communication-Aware Scheduling Algorithm Based on Heterogeneous Computing Systems	426
<i>Youlin Ruan, Gan Liu, Jianjun Han, and Qinghua Li</i>	
Macro Adjustment Based Task Scheduling in Hierarchical Grid Market	430
<i>Peijie Huang, Hong Peng, and Xuezheng Li</i>	
DGSS: A Dependability Guided Job Scheduling System for Grid Environment	434
<i>Yongcai Tao, Hai Jin, and Xuanhua Shi</i>	
An Exact Algorithm for the Servers Allocation, Capacity and Flow Assignment Problem with Cost Criterion and Delay Constraint in Wide Area Networks.....	442
<i>Marcin Markowski and Andrzej Kasprzak</i>	
Adaptive Divisible Load Model for Scheduling Data-Intensive Grid Applications.....	446
<i>M. Othman, M. Abdullah, H. Ibrahim, and S. Subramaniam</i>	
Providing Fault-Tolerance in Unreliable Grid Systems Through Adaptive Checkpointing and Replication	454
<i>Maria Chtepen, Filip H.A. Claeys, Bart Dhoedt, Filip De Turck, Peter A. Vanrolleghem, and Piet Demeester</i>	
A Machine-Learning Based Load Prediction Approach for Distributed Service-Oriented Applications	462
<i>Jun Wang, Yi Ren, Di Zheng, and Quan-Yuan Wu</i>	
A Balanced Resource Allocation and Overload Control Infrastructure for the Service Grid Environment	466
<i>Jun Wang, Yi Ren, Di Zheng, and Quan-Yuan Wu</i>	
Recognition and Optimization of Loop-Carried Stream Reusing of Scientific Computing Applications on the Stream Processor	474
<i>Ying Zhang, Gen Li, and Xuejun Yang</i>	
A Scalable Parallel Software Volume Rendering Algorithm for Large-Scale Unstructured Data	482
<i>Kangjian Wang and Yao Zheng</i>	
Geometry-Driven Nonlinear Equation with an Accelerating Coupled Scheme for Image Enhancement	490
<i>Shujun Fu, Qiuqi Ruan, Chengpo Mu, and Wenqia Wang</i>	
A Graph Clustering Algorithm Based on Minimum and Normalized Cut	497
<i>Jiabing Wang, Hong Peng, Jingsong Hu, and Chuangxin Yang</i>	

A-PARM: Adaptive Division of Sub-cells in the PARM for Efficient Volume Ray Casting	505
<i>Sukhyun Lim and Byeong-Seok Shin</i>	
Inaccuracies of Shape Averaging Method Using Dynamic Time Warping for Time Series Data	513
<i>Vit Niennattrakul and Chotirat Ann Ratanamahatana</i>	
An Algebraic Substructuring Method for High-Frequency Response Analysis of Micro-systems	521
<i>Jin Hwan Ko and Zhaojun Bai</i>	
Multilevel Task Partition Algorithm for Parallel Simulation of Power System Dynamics	529
<i>Wei Xue and Shanxiang Qi</i>	
An Extended Implementation of the Great Deluge Algorithm for Course Timetabling	538
<i>Paul McMullan</i>	
Cubage-Weight Balance Algorithm for the Scattered Goods Loading with Two Aims	546
<i>Liu Xiao-qun, Ma Shi-hua, and Li Qi</i>	
Modeling VaR in Crude Oil Market: A Multi Scale Nonlinear Ensemble Approach Incorporating Wavelet Analysis and ANN	554
<i>Kin Keung Lai, Kaijian He, and Jerome Yen</i>	
On the Assessment of Petroleum Corporation's Sustainability Based on Linguistic Fuzzy Method	562
<i>Li-fan Zhang</i>	
A Multiagent Model for Supporting Tourism Policy-Making by Market Simulations	567
<i>Arnaldo Cecchini and Giuseppe A. Trunfio</i>	
An Improved Chaos-Based Image Encryption Scheme.....	575
<i>Chong Fu, Zhen-chuan Zhang, Ying Chen, and Xing-wei Wang</i>	
A Factory Pattern in Fortran 95	583
<i>Viktor K. Decyk and Henry J. Gardner</i>	
Mapping Pipeline Skeletons onto Heterogeneous Platforms	591
<i>Anne Benoit and Yves Robert</i>	
On the Optimal Object-Oriented Program Re-modularization	599
<i>Saeed Parsa and Omid Bushehrian</i>	

A Buffered-Mode MPI Implementation for the Cell BE TM Processor	603
<i>Arun Kumar, Ganapathy Senthilkumar, Murali Krishna, Naresh Jayam, Pallav K. Baruah, Raghunath Sharma, Ashok Srinivasan, and Shakti Kapoor</i>	
Implementation of the Parallel Superposition in Bulk-Synchronous Parallel ML	611
<i>Frédéric Gava</i>	
Parallelization of Generic Libraries Based on Type Properties	620
<i>Prabhanjan Kambadur, Douglas Gregor, and Andrew Lumsdaine</i>	
Traffic Routing Through Off-Line LSP Creation	628
<i>Srecko Krile and Djuro Kuzumilovic</i>	
Simulating Trust Overlay in P2P Networks	632
<i>Yan Zhang, Wei Wang, and Shunying Lü</i>	
Detecting Shrew HTTP Flood Attacks for Flash Crowds	640
<i>Yi Xie and Shun-Zheng Yu</i>	
A New Fault-Tolerant Routing Algorithm for m -ary n -cube Multi-computers and Its Performance Analysis	648
<i>Liu Hongmei</i>	
CARP: Context-Aware Resource Provisioning for Multimedia over 4G Wireless Networks	652
<i>Navrati Saxena, Abhishek Roy, and Jitae Shin</i>	
Improved Fast Handovers for Mobile IPv6 over IEEE 802.16e Network	660
<i>Sukyoungh Ahn and Youngsong Mun</i>	
Advanced Bounded Shortest Multicast Algorithm for Delay Constrained Minimum Cost	668
<i>Moonseong Kim, Gunu Jho, and Hyunseung Choo</i>	
Efficient Deadlock Detection in Parallel Computer Systems with Wormhole Routing	676
<i>Soojung Lee</i>	
Type-Based Query Expansion for Sentence Retrieval	684
<i>Keke Cai, Chun Chen, Jiajun Bu, and Guang Qiu</i>	
An Extended R-Tree Indexing Method Using Selective Prefetching in Main Memory	692
<i>Hong-Koo Kang, Joung-Joon Kim, Dong-Oh Kim, and Ki-Joon Han</i>	

Single Data Copying for MPI Communication Optimization on Shared Memory System	700
<i>Qiankun Miao, Guangzhong Sun, Jiulong Shan, and Guoliang Chen</i>	
Adaptive Sparse Grid Classification Using Grid Environments	708
<i>Dirk Pflüger, Ioan Lucian Muntean, and Hans-Joachim Bungartz</i>	
Latency-Optimized Parallelization of the FMM Near-Field Computations	716
<i>Ivo Kabadshow and Bruno Lang</i>	
Efficient Generation of Parallel Quasirandom Faure Sequences Via Scrambling	723
<i>Hongmei Chi and Michael Mascagni</i>	
Complexity of Monte Carlo Algorithms for a Class of Integral Equations	731
<i>Ivan Dimov and Rayna Georgieva</i>	
Modeling of Carrier Transport in Nanowires	739
<i>T. Gurov, E. Atanassov, M. Nedjalkov, and I. Dimov</i>	
Monte Carlo Numerical Treatment of Large Linear Algebra Problems...	747
<i>Ivan Dimov, Vassil Alexandrov, Rumyana Papancheva, and Christian Weihrauch</i>	
Simulation of Multiphysics Multiscale Systems: Introduction to the ICCS'2007 Workshop	755
<i>Valeria V. Krzhizhanovskaya and Shuyu Sun</i>	
Simulating Weed Propagation Via Hierarchical, Patch-Based Cellular Automata	762
<i>Adam G. Dunn and Jonathan D. Majer</i>	
A Multiscale, Cell-Based Framework for Modeling Cancer Development	770
<i>Yi Jiang</i>	
Stochastic Modelling and Simulation of Coupled Autoregulated Oscillators in a Multicellular Environment: The her1/her7 Genes	778
<i>André Leier, Kevin Burrage, and Pamela Burrage</i>	
Multiscale Modeling of Biopolymer Translocation Through a Nanopore	786
<i>Maria Fyta, Simone Melchionna, Efthimios Kaxiras, and Sauro Succi</i>	

Multi-physics and Multi-scale Modelling in Cardiovascular Physiology: Advanced User Methods for Simulation of Biological Systems with ANSYS/CFX.....	794
<i>V. Díaz-Zuccarini, D. Rafirou, D.R. Hose, P.V. Lawford, and A.J. Narracott</i>	
Lattice Boltzmann Simulation of Mixed Convection in a Driven Cavity Packed with Porous Medium	802
<i>Zhenhua Chai, Zhaoli Guo, and Baochang Shi</i>	
Numerical Study of Cross Diffusion Effects on Double Diffusive Convection with Lattice Boltzmann Method	810
<i>Xiaomei Yu, Zhaoli Guo, and Baochang Shi</i>	
Lattice Boltzmann Simulation of Some Nonlinear Complex Equations...	818
<i>Baochang Shi</i>	
A General Long-Time Molecular Dynamics Scheme in Atomistic Systems: Hyperdynamics in Entropy Dominated Systems	826
<i>Xin Zhou and Yi Jiang</i>	
A New Constitutive Model for the Analysis of Semi-flexible Polymers with Internal Viscosity	834
<i>Jack Xiao-Dong Yang and Roderick V.N. Melnik</i>	
Coupled Navier-Stokes/DSMC Method for Transient and Steady-State Gas Flows	842
<i>Giannandrea Abbate, Barend J. Thijssen, and Chris R. Kleijn</i>	
Multi-scale Simulations of Gas Flows with Unified Flow Solver	850
<i>V.V. Aristov, A.A. Frolova, S.A. Zabelok, V.I. Kolobov, and R.R. Arslanbekov</i>	
Coupling Atomistic and Continuum Models for Multi-scale Simulations of Gas Flows	858
<i>Vladimir Kolobov, Robert Arslanbekov, and Alex Vasenkov</i>	
Modelling Macroscopic Phenomena with Cellular Automata and Parallel Genetic Algorithms: An Application to Lava Flows	866
<i>Maria Vittoria Avolio, Donato D'Ambrosio, Salvatore Di Gregorio, Rocco Rongo, William Spataro, and Giuseppe A. Trunfio</i>	
Acceleration of Preconditioned Krylov Solvers for Bubbly Flow Problems	874
<i>J.M. Tang and C. Vuik</i>	

An Efficient Characteristic Method for the Magnetic Induction Equation with Various Resistivity Scales	882
<i>Jiangguo (James) Liu</i>	
Multiscale Discontinuous Galerkin Methods for Modeling Flow and Transport in Porous Media	890
<i>Shuyu Sun and Jürgen Geiser</i>	
Fourier Spectral Solver for the Incompressible Navier-Stokes Equations with Volume-Penalization	898
<i>G.H. Keetels, H.J.H. Clercx, and G.J.F. van Heijst</i>	
High Quality Surface Mesh Generation for Multi-physics Bio-medical Simulations	906
<i>Dominik Szczerba, Robert McGregor, and Gábor Székely</i>	
Macro-micro Interlocked Simulation for Multiscale Phenomena.....	914
<i>Kanya Kusano, Shigenobu Hirose, Toru Sugiyama, Shinichiro Shima, Akio Kawano, and Hiroki Hasegawa</i>	
Towards a Complex Automata Framework for Multi-scale Modeling: Formalism and the Scale Separation Map	922
<i>Alfons G. Hoekstra, Eric Lorenz, Jean-Luc Falcone, and Bastien Chopard</i>	
Multilingual Interfaces for Parallel Coupling in Multiphysics and Multiscale Systems	931
<i>Everest T. Ong, J. Walter Larson, Boyana Norris, Robert L. Jacob, Michael Tobis, and Michael Steder</i>	
On a New Isothermal Quantum Euler Model: Derivation, Asymptotic Analysis and Simulation	939
<i>Pierre Degond, Samy Gallego, and Florian Méhats</i>	
Grate Furnace Combustion: A Submodel for the Solid Fuel Layer	947
<i>H.A.J.A. van Kuijk, R.J.M. Bastiaans, J.A. van Oijen, and L.P.H. de Goey</i>	
Introduction to the ICCS 2007 Workshop on Dynamic Data Driven Applications Systems	955
<i>Frederica Darema</i>	
Pharmaceutical Informatics and the Pathway to Personalized Medicines	963
<i>Sangtae Kim and Venkat Venkatasubramanian</i>	

Towards Real-Time Distributed Signal Modeling for Brain-Machine Interfaces	964
<i>Jack DiGiovanna, Loris Marchal, Prapaporn Rattanatamrong, Ming Zhao, Shalom Darmanjian, Babak Mahmoudi, Justin C. Sanchez, José C. Príncipe, Linda Hermer-Vazquez, Renato Figueiredo, and Jos A.B. Fortes</i>	
Using Cyber-Infrastructure for Dynamic Data Driven Laser Treatment of Cancer	972
<i>C. Bajaj, J.T. Oden, K.R. Diller, J.C. Browne, J. Hazle, I. Babuška, J. Bass, L. Bidaut, L. Demkowicz, A. Elliott, Y. Feng, D. Fuentes, B. Kwon, S. Prudhomme, R.J. Stafford, and Y. Zhang</i>	
Grid-Enabled Software Environment for Enhanced Dynamic Data-Driven Visualization and Navigation During Image-Guided Neurosurgery	980
<i>Nikos Chrisochoides, Andriy Fedorov, Andriy Kot, Neculai Archip, Daniel Goldberg-Zimring, Dan Kacher, Stephen Whalen, Ron Kikinis, Ferenc Jolesz, Olivier Clatz, Simon K. Warfield, Peter M. Black, and Alexandra Golby</i>	
From Data Reverence to Data Relevance: Model-Mediated Wireless Sensing of the Physical Environment	988
<i>Paul G. Flikkema, Pankaj K. Agarwal, James S. Clark, Carla Ellis, Alan Gelfand, Kamesh Munagala, and Jun Yang</i>	
AMBROSia: An Autonomous Model-Based Reactive Observing System	995
<i>David Caron, Abhimanyu Das, Amit Dhariwal, Leana Golubchik, Ramesh Govindan, David Kempe, Carl Oberg, Abhishek Sharma, Beth Stauffer, Gaurav Sukhatme, and Bin Zhang</i>	
Dynamically Identifying and Tracking Contaminants in Water Bodies...	1002
<i>Craig C. Douglas, Martin J. Cole, Paul Dostert, Yalchin Efendiev, Richard E. Ewing, Gundolf Haase, Jay Hatcher, Mohamed Iskandarani, Chris R. Johnson, and Robert A. Lodder</i>	
Hessian-Based Model Reduction for Large-Scale Data Assimilation Problems	1010
<i>Omar Bashir, Omar Ghattas, Judith Hill, Bart van Bloemen Waanders, and Karen Willcox</i>	
Localized Ensemble Kalman Dynamic Data Assimilation for Atmospheric Chemistry	1018
<i>Adrian Sandu, Emil M. Constantinescu, Gregory R. Carmichael, Tianfeng Chai, John H. Seinfeld, and Dacian Dăescu</i>	

Data Assimilation in Multiscale Chemical Transport Models	1026
<i>Lin Zhang and Adrian Sandu</i>	
Building a Dynamic Data Driven Application System for Hurricane Forecasting	1034
<i>Gabrielle Allen</i>	
A Dynamic Data Driven Wildland Fire Model	1042
<i>Jan Mandel, Jonathan D. Beezley, Lynn S. Bennethum, Soham Chakraborty, Janice L. Coen, Craig C. Douglas, Jay Hatcher, Minjeong Kim, and Anthony Vodacek</i>	
Ad Hoc Distributed Simulation of Surface Transportation Systems	1050
<i>R.M. Fujimoto, R. Guensler, M. Hunter, K. Schwan, H.-K. Kim, B. Seshasayee, J. Sirichoke, and W. Suh</i>	
Cyberinfrastructure for Contamination Source Characterization in Water Distribution Systems	1058
<i>Sarat Sreepathi, Kumar Mahinthakumar, Emily Zechman, Ranji Ranjithan, Downey Brill, Xiaosong Ma, and Gregor von Laszewski</i>	
Integrated Decision Algorithms for Auto-steered Electric Transmission System Asset Management	1066
<i>James McCalley, Vasant Honavar, Sarah Ryan, William Meeker, Daji Qiao, Ron Roberts, Yuan Li, Jyotishman Pathak, Mujing Ye, and Yili Hong</i>	
DDDAS for Autonomic Interconnected Systems: The National Energy Infrastructure	1074
<i>C. Hoffmann, E. Swain, Y. Xu, T. Downar, L. Tsoukalas, P. Top, M. Senel, M. Bell, E. Coyle, B. Loop, D. Aliprantis, O. Wasynczuk, and S. Meliopoulos</i>	
Implementing Virtual Buffer for Electric Power Grids	1083
<i>Rong Gao and Lefteri H. Tsoukalas</i>	
Enhanced Situational Awareness: Application of DDDAS Concepts to Emergency and Disaster Management	1090
<i>Gregory R. Madey, Albert-László Barabási, Nitesh V. Chawla, Marta Gonzalez, David Hachen, Brett Lantz, Alec Pawling, Timothy Schoenharl, Gábor Szabó, Pu Wang, and Ping Yan</i>	
AIMSS: An Architecture for Data Driven Simulations in the Social Sciences	1098
<i>Catriona Kennedy, Georgios Theodoropoulos, Volker Sorge, Edward Ferrari, Peter Lee, and Chris Skelcher</i>	

Bio-terror Preparedness Exercise in a Mixed Reality Environment	1106
<i>Alok Chaturvedi, Chih-Hui Hsieh, Tejas Bhatt, and Adam Santone</i>	
Dynamic Tracking of Facial Expressions Using Adaptive, Overlapping Subspaces	1114
<i>Dimitris Metaxas, Atul Kanaujia, and Zhiguo Li</i>	
Realization of Dynamically Adaptive Weather Analysis and Forecasting in LEAD: Four Years Down the Road	1122
<i>Lavanya Ramakrishnan, Yogesh Simmhan, and Beth Plale</i>	
Active Learning with Support Vector Machines for Tornado Prediction	1130
<i>Theodore B. Trafalis, Indra Adrianto, and Michael B. Richman</i>	
Adaptive Observation Strategies for Forecast Error Minimization	1138
<i>Nicholas Roy, Han-Lim Choi, Daniel Gombos, James Hansen, Jonathan How, and Sooho Park</i>	
Two Extensions of Data Assimilation by Field Alignment	1147
<i>Sai Ravela</i>	
A Realtime Observatory for Laboratory Simulation of Planetary Circulation	1155
<i>S. Ravela, J. Marshall, C. Hill, A. Wong, and S. Stransky</i>	
Planet-in-a-Bottle: A Numerical Fluid-Laboratory System	1163
<i>Chris Hill, Bradley C. Kuszmaul, Charles E. Leiserson, and John Marshall</i>	
Compressed Sensing and Time-Parallel Reduced-Order Modeling for Structural Health Monitoring Using a DDDAS	1171
<i>J. Cortial, C. Farhat, L.J. Guibas, and M. Rajashekhar</i>	
Multi-level Coupling of Dynamic Data-Driven Experimentation with Material Identification	1180
<i>John G. Michopoulos and Tomonari Furukawa</i>	
Evaluation of Fluid-Thermal Systems by Dynamic Data Driven Application Systems - Part II	1189
<i>D. Knight, Q. Ma, T. Rossman, and Y. Jaluria</i>	
Dynamic Data-Driven Fault Diagnosis of Wind Turbine Systems	1197
<i>Yu Ding, Eunshin Byon, Chiwoo Park, Jiong Tang, Yi Lu, and Xin Wang</i>	
Building Verifiable Sensing Applications Through Temporal Logic Specification	1205
<i>Asad Awan, Ahmed Sameh, Suresh Jagannathan, and Ananth Grama</i>	

Dynamic Data-Driven Systems Approach for Simulation Based Optimizations	1213
<i>Tahsin Kurc, Xi Zhang, Manish Parashar, Hector Klie, Mary F. Wheeler, Umit Catalyurek, and Joel Saltz</i>	
DDDAS/ITR: A Data Mining and Exploration Middleware for Grid and Distributed Computing	1222
<i>Jon B. Weissman, Vipin Kumar, Varun Chandola, Eric Eilertson, Levent Ertoz, Gyorgy Simon, Seonho Kim, and Jinoh Kim</i>	
A Combined Hardware/Software Optimization Framework for Signal Representation and Recognition	1230
<i>Melina Demertzi, Pedro Diniz, Mary W. Hall, Anna C. Gilbert, and Yi Wang</i>	
Validating Evolving Simulations in COERCE	1238
<i>Paul F. Reynolds Jr., Michael Spiegel, Xinyu Liu, and Ross Gore</i>	
Equivalent Semantic Translation from Parallel DEVS Models to Time Automata	1246
<i>Shoupeng Han and Kedi Huang</i>	
Author Index	1255