

Keqiu Li
Chris Jesshope
Hai Jin
Jean-Luc Gaudiot (Eds.)

LNCs 4672

Network and Parallel Computing

IFIP International Conference, NPC 2007
Dalian, China, September 2007
Proceedings



ifip

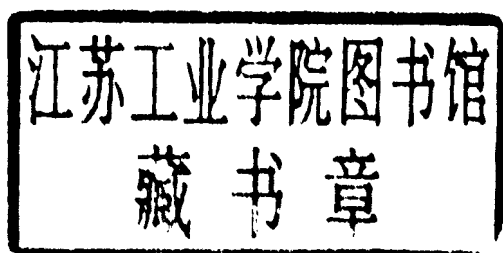


Springer

Keqiu Li Chris Jesshope Hai Jin
Jean-Luc Gaudiot (Eds.)

Network and Parallel Computing

IFIP International Conference, NPC 2007
Dalian, China, September 18-21, 2007
Proceedings



Volume Editors

Keqiu Li
Dalian Maritime University
E-mail: keqiu_01@163.com

Chris Jesshope
University of Amsterdam
E-mail: Jesshope@science.uva.nl

Hai Jin
Huazhong University of Science and Technology
Wuhan, 430074, China
E-mail: hjin@hust.edu.cn

Jean-Luc Gaudiot
University of California
E-mail: gaudiot@uci.edu

Library of Congress Control Number: 2007934763

CR Subject Classification (1998): C.2, F.2, D.2, H.4, H.5, D.4, K.6

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

ISSN 0302-9743
ISBN-10 3-540-74783-4 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-74783-3 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

© IFIP International Federation for Information Processing 2007
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12119219 06/3180 5 4 3 2 1 0

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

Preface

Welcome to the proceedings of the 2007 IFIP International Conference on Network and Parallel Computing (NPC 2007) held in Dalian, China.

NPC has been a premier conference that has brought together researchers and practitioners from academia, industry and governments around the world to advance the theories and technologies of network and parallel computing. The goal of NPC is to establish an international forum for researchers and practitioners to present their excellent ideas and experiences in all system fields of network and parallel computing. The main focus of NPC 2007 was on the most critical areas of network and parallel computing: network applications, network technologies, network and parallel architectures, and parallel and distributed software.

In total, the conference received more than 600 papers from researchers and practitioners from over 20 countries and areas. Each paper was reviewed by at least three internationally renowned referees and selected based on its originality, significance, correctness, relevance, and clarity of presentation. Among the high-quality submissions, only 53 regular papers were accepted by the conference. All of the selected conference papers are included in the conference proceedings. After the conference, some high-quality papers will be recommended to be published in a special issue of several international journals.

We were delighted to host four well-known international scholars offering the keynote speeches: Tharam Dillon from Curtin University of Technology, Australia, Takashi Nanya from University of Tokyo, Japan, Guang R. Gao from University of Delaware, USA, and Zhiwei Xu from Chinese Academy of Sciences, China.

We would like to take this opportunity to thank all the authors for their submissions to NPC 2007. Many of them travelled some distance to participate in the conference. We also thank the Program Committee members and additional reviewers for the efforts in reviewing the large number of papers. Thanks also go to the local conference organizers for their great support.

Last but not least, we would like to express our gratitude to all of the organizations who have supported our efforts to bring the conference and workshops to fruition. We are grateful to IFIP Working Group 10.3 on Concurrent Systems, Institute of Computing Technology of the Chinese Academy of Sciences, Dalian Maritime University, Huazhong University of Science and Technology, and Central Queensland University for their sponsorship and assistance.

September 2007

Keqiu Li
Chris Jesshope
Hai Jin
Jean-Luc Gaudiotium

Organization

Honorary Chair

Zuwen Wang, Dalian Maritime University (DLMU), China

General Co-chairs

Jean-Luc Gaudiot, University of California, Irvine, USA

Hai Jin, Huazhong University of Science and Technology, China

Steering Committee Chair

Kemal Ebcioglu, Global Supercomputing Corporation, USA

Program Co-chairs

Chris Jesshope, University of Amsterdam, Netherlands

Keqiu Li, DLMU, China

Program Vice-Chairs

Rudolf Eigenmann, Purdue University, USA

Skevos Evripidou, University of Cyprus, Cyprus

Susumu Horiguchi, Tohoku University, Japan

Zhaohui Wu, Zhejiang University, China

Publication Co-chairs

Minyi Guo, University of Aizu, Japan

Mingyu Lu, DLMU, China

Publicity Co-chairs

Wenbin Jiang, Huazhong University of Science and Technology, China

Alex Shafarenko, University of Hertfordshire, UK

Organization Co-chairs

Yuqing Sun, DLMU, China

Weishi Zhang, DLMU, China

Bo Jiang, DLMU, China

Workshop Chair

Yang Xiang, Central Queensland University, Australia

Finance Chair

Ruixue Xu, DLMU, China

Registration Co-chairs

Zhenjun Du, DLMU, China

Chunli Wang, DLMU, China

Industry Sponsorship Chair

Bo Jiang, DLMU, China

Local Arrangement Chair

Guanyu Li, DLMU, China

Internet Chairs

Zhihuai Li, DLMU, China

Jianping Jiang, DLMU, China

Conference Secretariat

Zhiying Cao, DLMU, China

Hong Ye, DLMU, China

Program Committee Members

Ajith Abraham, Chun-Ang University, Korea

Ishfaq Ahmad, University of Texas at Arlington, USA

Shoukat Ali, University of Missouri-Rolla, USA

Makoto Amamiya, Kyushu University, Japan

Ramon Beivide, University of Cantabria, Spain

Jacir L. Bordim, University of Brasilia, Brazil

Luc Bouge, IRISA/ENS Cachan, France

Pascal Bouvry, University of Luxembourg, Luxembourg

Wentong Cai, Nanyang Technological University, Singapore

Jiannong Cao, Hong Kong Polytechnic University, Hong Kong

Ralph Castain, Los Alamos National Laboratory, USA

Rong Chen, DLMU, China

Xueqi Cheng, Institute of Computing Technology, CAS, China

Zhongxian Chi, Dalian University of Technology, China

Jong-Deok Choi, IBM T. J. Watson Research Center, USA

Yeh-Ching Chung, National Tsing Hua University, Taiwan
Alain Darte, LIP, France
Xavier Defago, JAIST, Japan
Chen Ding, University of Rochester, USA
Xiaoyong Du, Renmin University of China, China
Susan Eisenbach, Imperial College, UK
Christine Eisenbeis, INRIA, France
Jianping Fan, University of North Carolina at Charlotte, USA
Dan Feng, Huazhong University of Science and Technology, China
Renato J. Figueiredo, University of Florida, USA
Bjoern Franke, University of Edinburgh, UK
Kei Hiraki, University of Tokyo, Japan
Wen Gao, Institute of Computing Technology, CAS, China
Cecile Germain, University of Paris Sud, France
Ching-Hsien Hsu, Chuang Hua University, Taiwan
Zhiyi Huang, The University of Otago, New Zealand
Mary Jane Irwin, Penn State University, USA
Cruz Izu, Adelaide University, Australia
Anura Jayasumana, Colorado State Univeristy, USA
Weijia Jia, City University of Hong Kong, Hong Kong
Yong-kee Jun, Gyeongsang National University, Korea
Paul H. J. Kelly, Imperial College, UK
Jin Suk Kim, University of Seoul, Korea
Mario Koppen, Fraunhofer IPK, Germany
Viktor Korneev, R&D Institute "Kvant", Russia
Gabriele Kotsis, Johannes Kepler University Linz, Austria
Ricky Kwok, The University of Hong Kong, Hong Kong
Francis Lau, The University of Hong Kong, Hong Kong
Myungho Lee, Myongji University, Korea
Deok-Gyu Lee, Soonchunhyang University, Korea
Deying Li, Renmin University of China, China
Jianzhong Li, Harbin Institute of Technology, China
Jie Li, University of Tsukuba, Japan
Keqin Li, State University of New York at New Paltz, USA
Kuan-Ching Li, Providence University, Taiwan
Minglu Li, Shanghai Jiao Tong University, China
Xingsi Li, Dalian University of Technology, China
Xiuqi Li, Florida Atlantic University, USA
Zhoujun Li, Beihang University, China
Baolin Liu, Tsing Hua University, China
Fangai Liu, Shan Dong Normal University, China
Jianxun Liu, Hunan University of Science and Technology, China
Ling Liu, Georgia Institute of Technology, USA
Weijiang Liu, DLMU, China
Junzhou Luo, Southeast University, China
Geyong Min, University of Bradford, UK
Soo-Mook Moon, Seoul National University, Korea

John Morris, Auckland University, New Zealand
 John Morrison, University College Cork, Ireland
 Yoichi Muraoka, Waseda University, Japan
 Koji Nakano, Hiroshima University, Japan
 Jun Ni, The University of Iowa, USA
 Lionel Ni, Hong Kong University of Science and Technology, Hong Kong
 Stephan Olariu, Old Dominion University, USA
 Jong Hyuk Park, Hanwha S&C Co., Ltd., Korea
 Andy Pimentel, University of Amsterdam, Netherlands
 Depei Qian, Xi'an Jiaotong University, China
 Wenyu Qu, University of Tokyo, Japan
 Felix Rauch, NICTA and University of New South Wales, Australia
 Wolfgang Rehm, TU Chemnitz, Germany
 Arnold Rosenberg, University of Massachusetts at Amherst, USA
 Ulrich Rude, University Erlangen-Nuremberg, Germany
 Frode Eika Sandnes, Oslo University College, Norway
 Stanislav G. Sedukhin, University of Aizu, Japan
 Selvakennedy Selvadurai, University of Sydney, Australia
 Franciszek Seredynski, Polish Academy of Sciences, Poland
 Xiaowei Shen, IBM T.J. Watson Research Center, USA
 Sven-bodo Sholz, Hertfordshire University, UK
 Ivan Stojmenovic, University of Ottawa, Canada
 Yutaka Takahashi, Kyoto University, Japan
 Makoto Takizawa, Tokyo Denki University, Japan
 El-Ghazali Talbi, University of Lille, France
 Domenico Talia, University of Calabria, Italy
 Guozhen Tan, Dalian University of Technology, China
 David Taniar, Monash University, Australia
 Guoku Teng, DLMU, China
 Mitchell D. Theys, University of Illinois at Chicago, USA
 Xinmin Tian, Intel Corporation, USA
 Theo Ungerer, University of Augsburg, Germany
 Cho-Li Wang, The University of Hong Kong, Hong Kong
 Guojun Wang, Central South University, China
 Hongjun Wang, Dalian Naval Academy, China
 Xiangyang Wang, Liaoning Normal University, China
 Xicheng Wang, Dalian University of Technology, China
 Xingwei Wang, Northeastern University, China
 Xingyuan Wang, Dalian University of Technology, China
 Ian Watson, Manchester University, UK
 Paul Werstein, The University of Otago, New Zealand
 Weng-Fai Wong, National University of Singapore, Singapore
 Di Wu, Dalian University of Technology, China
 Nong Xiao, National University of Defense Technology, China
 Qin Xin, The University of Bergen, Norway
 Cheng-Zhong Xu, Wayne State University, USA
 Deqin Yan, Liaoning Normal University, China

Chao-Tung Yang, Tunghai University, Taiwan
 Laurence T. Yang, St. Francis Xavier University, Canada
 Qing Yang, University of Rhode Island, USA
 Xun Yue, Shandong Agricultural University, China
 Lixin Zhang, IBM Austin Research Laboratory, USA
 Zixiang Zhao, DLMU, China
 Weimin Zheng, Tsinghua University, China
 Si Qing Zheng, University of Texas at Dallas, USA
 Bing Bing Zhou, University of Sydney, Australia
 Hai Zhuge, Institute of Computing Technology, CAS, China
 Albert Y. Zomaya, The University of Sydney, Australia

Additional Reviewers

Christopher Ang	Sung Hyun Hong
Alvaro Arenas	Qihang Huang
Faruk Bagci	Ka-Shun Hung
Ayon Basumallik	Satoko Itaya
Sourav S. Bhowmick	XiaoHong Jiang
Gavin Brown	Dong Heon Jung
Bernd Burgstaller	Tomasz Kaszuba
Tom Cai	Ashok Argent Katwala
Linchun Cao	Kirk Kelsey
Eugenio Cesario	Chris Kirkham
Jed Kao-Tung Chang	Florian Kluge
Sanjay Chawla	Irena Koprinska
Hanhua Chen	Dominique Lavenier
KaiKai Chi	Je-Hyung Lee
Hyung-Kyu Choi	Jaemok Lee
Youngkyu Choi	Seyong Lee
Chun-Tung Chou	Bo Li
Carmela Comito	Xiaofei Liao
Luke Dalessandro	Godfrey van der Linden
Gregoire Danoy	Kai Liu
Ali Elghirani	Na Liu
Markus Esch	Ren Ping Liu
Katrina Falkner	Shaoshan Liu
Alan Fekete	Yi Liu
Jacek Gajc	Zhi Liu
Qi Ge	Malcolm Yoke Hean Low
Patrick Gratz	Mikel Lujan
Jose Angel Gregorio	Guangyu Ma
Clemens Grelck	Kevin Maciunas
Xiaoming Gu	Omer Mahmood
Faisal Hasan	Virendra Marathe
Luc Hogie	Carmen Martinez

Andrea Matsunaga
 Torsten Mehlan
 Rodrigo Mello
 Stefan Metzlauff
 Frank Mietke
 Jose Miguel-Alonso
 Jörg Mische
 Hong Son Ngo
 Xiaomin Ning
 Marek Ostaszewski
 Linfeng Pan
 Xuan-Hieu Phan
 Marek Pilski
 Apivadee Piyatumrong
 Cheryl Pope
 Louis-Noël Pouchet
 Li Qi
 Weizhong Qiang
 Philippe Robert
 Nathan Rountree
 Sergio Ruocco
 Krzysztof Rzadca
 Liria Matsumoto Sato
 Christoph Schommer
 Seung-Woo Seo
 Marcin Seredynski
 Zhiyuan Shao
 Ke Shi
 Xuanhua Shi
 Jeremy Singer
 Jaroslaw Skaruz
 Meiping Song
 Samia Souissi
 Christopher Stewart
 Thomas Stricker
 Masaya Sugawara
 Piotr Switalski
 Mirosław Szaban
 Andrea Tagarelli
 Javid Taheri
 Jiakui Tang
 Huan-ling Tang
 Cuihua Tian

Yuchu Tong
 Sid Touati
 Ken C.K. Tsang
 Sascha Uhrig
 Jothi vasudevan Nathella Vijayakumar
 Bao-feng Wang
 Hsiao-His Wang
 Qiang Wang
 Tao Wang
 Kan Watanabe
 Ulf WEHLING
 Tien-Hsiung Weng
 Adam Wierzbicki
 Bryan Wong
 Zhengyu Wu
 Jun Wu
 Song Wu
 ChangMing Xing
 Naixue Xiong
 Ye Yan
 Weiyu Yang
 Chao-Tung Yang
 Qinyun Yang
 Yan Yang
 Yanqin Yang
 Kazuto Yano
 Rami Yared
 Yijiao Yu
 Yong Yu
 Zhihang Yu
 Pingpeng Yuan
 Aijun Zhang
 Chengliang Zhang
 Daqiang Zhang
 Gw Zhang
 Jian Zhang
 Jun Zhang
 Li Zhang
 Ming Zhao
 Yuanzhen Zhao
 Huiyuan Zheng
 Tanveer Zia
 Deqing Zou

Lecture Notes in Computer Science

Sublibrary 1: Theoretical Computer Science and General Issues

For information about Vols. 1–4424
please contact your bookseller or Springer

Vol. 4743: P. Thulasiraman, X. He, T.L. Xu, M.K. Denko, R.K. Thulasiram, L.T. Yang (Eds.), *Frontiers of High Performance Computing and Networking ISPA 2007 Workshops*. XXIX, 536 pages. 2007.

Vol. 4742: I. Stojmenovic, R.K. Thulasiram, L.T. Yang, W. Jia, M. Guo, R.F. de Mello (Eds.), *Parallel and Distributed Processing and Applications*. XX, 995 pages. 2007.

Vol. 4736: S. Winter, M. Duckham, L. Kulik, B. Kuipers (Eds.), *Spatial Information Theory*. XV, 455 pages. 2007.

Vol. 4732: K. Schneider, J. Brandt (Eds.), *Theorem Proving in Higher Order Logics*. IX, 401 pages. 2007.

Vol. 4708: L. Kučera, A. Kučera (Eds.), *Mathematical Foundations of Computer Science 2007*. XVIII, 764 pages. 2007.

Vol. 4707: O. Gervasi, M.L. Gavrilova (Eds.), *Computational Science and Its Applications – ICCSA 2007*, Part III. XXIV, 1205 pages. 2007.

Vol. 4706: O. Gervasi, M.L. Gavrilova (Eds.), *Computational Science and Its Applications – ICCSA 2007*, Part II. XXIII, 1129 pages. 2007.

Vol. 4705: O. Gervasi, M.L. Gavrilova (Eds.), *Computational Science and Its Applications – ICCSA 2007*, Part I. XLIV, 1169 pages. 2007.

Vol. 4703: L. Caires, V.T. Vasconcelos (Eds.), *CONCUR 2007 – Concurrency Theory*. XIII, 507 pages. 2007.

Vol. 4697: L. Choi, Y. Paek, S. Cho (Eds.), *Advances in Computer Systems Architecture*. XIII, 400 pages. 2007.

Vol. 4688: K. Li, M. Fei, G.W. Irwin, S. Ma (Eds.), *Bio-Inspired Computational Intelligence and Applications*. XIX, 805 pages. 2007.

Vol. 4684: L. Kang, Y. Liu, S. Zeng (Eds.), *Evolvable Systems: From Biology to Hardware*. XIV, 446 pages. 2007.

Vol. 4683: L. Kang, Y. Liu, S. Zeng (Eds.), *Intelligence Computation and Applications*. XVII, 663 pages. 2007.

Vol. 4681: D.-S. Huang, L. Heutte, M. Loog (Eds.), *Advanced Intelligent Computing Theories and Applications*. XXVI, 1379 pages. 2007.

Vol. 4672: K. Li, C. Jesshope, H. Jin, J.-L. Gaudiot (Eds.), *Network and Parallel Computing*. XVIII, 558 pages. 2007.

Vol. 4671: V. Malyshev (Ed.), *Parallel Computing Technologies*. XIV, 635 pages. 2007.

Vol. 4669: J.M. de Sá, L.A. Alexandre, W. Duch, D. Mandic (Eds.), *Artificial Neural Networks – ICANN 2007*, Part II. XXXI, 990 pages. 2007.

Vol. 4668: J.M. de Sá, L.A. Alexandre, W. Duch, D. Mandic (Eds.), *Artificial Neural Networks – ICANN 2007*, Part I. XXXI, 978 pages. 2007.

Vol. 4666: M.E. Davies, C.J. James, S.A. Abdallah, M.D. Plumley (Eds.), *Independent Component Analysis and Blind Signal Separation*. XIX, 847 pages. 2007.

Vol. 4665: J. Hromkovič, R. Kráľovič, M. Nunkesser, P. Widmayer (Eds.), *Stochastic Algorithms: Foundations and Applications*. X, 167 pages. 2007.

Vol. 4664: J. Durand-Lose, M. Margenstern (Eds.), *Machines, Computations, and Universality*. X, 325 pages. 2007.

Vol. 4649: V. Diekert, M.V. Volkov, A. Voronkov (Eds.), *Computer Science – Theory and Applications*. XIII, 420 pages. 2007.

Vol. 4647: R. Martin, M. Sabin, J. Winkler (Eds.), *Mathematics of Surfaces XII*. IX, 509 pages. 2007.

Vol. 4646: J. Duparc, T.A. Henzinger (Eds.), *Computer Science Logic*. XIV, 600 pages. 2007.

Vol. 4644: N. Azemard, L. Svensson (Eds.), *Integrated Circuit and System Design*. XIV, 583 pages. 2007.

Vol. 4641: A.-M. Kermarrec, L. Bougé, T. Priol (Eds.), *Euro-Par 2007 Parallel Processing*. XXVII, 974 pages. 2007.

Vol. 4639: E. Csuhaj-Varjú, Z. Ésik (Eds.), *Fundamentals of Computation Theory*. XIV, 508 pages. 2007.

Vol. 4638: T. Stützle, M. Birattari, H.H. Hoos (Eds.), *Engineering Stochastic Local Search Algorithms*. X, 223 pages. 2007.

Vol. 4628: L.N. de Castro, F.J. Von Zuben, H. Knidel (Eds.), *Artificial Immune Systems*. XII, 438 pages. 2007.

Vol. 4627: M. Charikar, K. Jansen, O. Reingold, J.D.P. Rolim (Eds.), *Approximation, Randomization, and Combinatorial Optimization*. XII, 626 pages. 2007.

Vol. 4624: T. Mossakowski, U. Montanari, M. Haveranen (Eds.), *Algebra and Coalgebra in Computer Science*. XI, 463 pages. 2007.

Vol. 4619: F. Dehne, J.-R. Sack, N. Zeh (Eds.), *Algorithms and Data Structures*. XVI, 662 pages. 2007.

Vol. 4618: S.G. Akl, C.S. Calude, M.J. Dinneen, G. Rozenberg, H.T. Wareham (Eds.), *Unconventional Computation*. X, 243 pages. 2007.

Vol. 4616: A. Dress, Y. Xu, B. Zhu (Eds.), *Combinatorial Optimization and Applications*. XI, 390 pages. 2007.

Vol. 4613: F.P. Preparata, Q. Fang (Eds.), *Frontiers in Algorithmics*. XI, 348 pages. 2007.

Vol. 4600: H. Comon-Lundh, C. Kirchner, H. Kirchner (Eds.), *Rewriting, Computation and Proof*. XVI, 273 pages. 2007.

- Vol. 4599: S. Vassiliadis, M. Berekovic, T.D. Hämäläinen (Eds.), *Embedded Computer Systems: Architectures, Modeling, and Simulation*. XVIII, 466 pages. 2007.
- Vol. 4598: G. Lin (Ed.), *Computing and Combinatorics*. XII, 570 pages. 2007.
- Vol. 4596: L. Arge, C. Cachin, T. Jurdziński, A. Tarlecki (Eds.), *Automata, Languages and Programming*. XVII, 953 pages. 2007.
- Vol. 4595: D. Bošnački, S. Edelkamp (Eds.), *Model Checking Software*. X, 285 pages. 2007.
- Vol. 4590: W. Damm, H. Hermanns (Eds.), *Computer Aided Verification*. XV, 562 pages. 2007.
- Vol. 4588: T. Harju, J. Karhumäki, A. Lepistö (Eds.), *Developments in Language Theory*. XI, 423 pages. 2007.
- Vol. 4583: S.R. Della Rocca (Ed.), *Typed Lambda Calculi and Applications*. X, 397 pages. 2007.
- Vol. 4580: B. Ma, K. Zhang (Eds.), *Combinatorial Pattern Matching*. XII, 366 pages. 2007.
- Vol. 4576: D. Leivant, R. de Queiroz (Eds.), *Logic, Language, Information and Computation*. X, 363 pages. 2007.
- Vol. 4547: C. Carlet, B. Sunar (Eds.), *Arithmetic of Finite Fields*. XI, 355 pages. 2007.
- Vol. 4546: J. Kleijn, A. Yakovlev (Eds.), *Petri Nets and Other Models of Concurrency – ICATPN 2007*. XI, 515 pages. 2007.
- Vol. 4545: H. Anai, K. Horimoto, T. Kutsia (Eds.), *Algebraic Biology*. XIII, 379 pages. 2007.
- Vol. 4533: F. Baader (Ed.), *Term Rewriting and Applications*. XII, 419 pages. 2007.
- Vol. 4528: J. Mira, J.R. Álvarez (Eds.), *Nature Inspired Problem-Solving Methods in Knowledge Engineering*, Part II. XXII, 650 pages. 2007.
- Vol. 4527: J. Mira, J.R. Álvarez (Eds.), *Bio-inspired Modeling of Cognitive Tasks*, Part I. XXII, 630 pages. 2007.
- Vol. 4525: C. Demetrescu (Ed.), *Experimental Algorithms*. XIII, 448 pages. 2007.
- Vol. 4514: S.N. Artemov, A. Nerode (Eds.), *Logical Foundations of Computer Science*. XI, 513 pages. 2007.
- Vol. 4513: M. Fischetti, D.P. Williamson (Eds.), *Integer Programming and Combinatorial Optimization*. IX, 500 pages. 2007.
- Vol. 4510: P. Van Hentenryck, L.A. Wolsey (Eds.), *Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems*. X, 391 pages. 2007.
- Vol. 4507: F. Sandoval, A. Prieto, J. Cabestany, M. Graña (Eds.), *Computational and Ambient Intelligence*. XXVI, 1167 pages. 2007.
- Vol. 4501: J. Marques-Silva, K.A. Sakallah (Eds.), *Theory and Applications of Satisfiability Testing – SAT 2007*. XI, 384 pages. 2007.
- Vol. 4497: S.B. Cooper, B. Löwe, A. Sorbi (Eds.), *Computation and Logic in the Real World*. XVIII, 826 pages. 2007.
- Vol. 4494: H. Jin, O.F. Rana, Y. Pan, V.K. Prasanna (Eds.), *Algorithms and Architectures for Parallel Processing*. XIV, 508 pages. 2007.
- Vol. 4493: D. Liu, S. Fei, Z. Hou, H. Zhang, C. Sun (Eds.), *Advances in Neural Networks – ISNN 2007*, Part III. XXVI, 1215 pages. 2007.
- Vol. 4492: D. Liu, S. Fei, Z. Hou, H. Zhang, C. Sun (Eds.), *Advances in Neural Networks – ISNN 2007*, Part II. XXVII, 1321 pages. 2007.
- Vol. 4491: D. Liu, S. Fei, Z.-G. Hou, H. Zhang, C. Sun (Eds.), *Advances in Neural Networks – ISNN 2007*, Part I. LIV, 1365 pages. 2007.
- Vol. 4490: Y. Shi, G.D. van Albada, J. Dongarra, P.M.A. Sloot (Eds.), *Computational Science – ICCS 2007*, Part IV. XXXVII, 1211 pages. 2007.
- Vol. 4489: Y. Shi, G.D. van Albada, J. Dongarra, P.M.A. Sloot (Eds.), *Computational Science – ICCS 2007*, Part III. XXXVII, 1257 pages. 2007.
- Vol. 4488: Y. Shi, G.D. van Albada, J. Dongarra, P.M.A. Sloot (Eds.), *Computational Science – ICCS 2007*, Part II. XXXV, 1251 pages. 2007.
- Vol. 4487: Y. Shi, G.D. van Albada, J. Dongarra, P.M.A. Sloot (Eds.), *Computational Science – ICCS 2007*, Part I. LXXXI, 1275 pages. 2007.
- Vol. 4484: J.-Y. Cai, S.B. Cooper, H. Zhu (Eds.), *Theory and Applications of Models of Computation*. XIII, 772 pages. 2007.
- Vol. 4475: P. Crescenzi, G. Prencipe, G. Pucci (Eds.), *Fun with Algorithms*. X, 273 pages. 2007.
- Vol. 4474: G. Prencipe, S. Zaks (Eds.), *Structural Information and Communication Complexity*. XI, 342 pages. 2007.
- Vol. 4459: C. Cérin, K.-C. Li (Eds.), *Advances in Grid and Pervasive Computing*. XVI, 759 pages. 2007.
- Vol. 4449: Z. Horváth, V. Zsóka, A. Butterfield (Eds.), *Implementation and Application of Functional Languages*. X, 271 pages. 2007.
- Vol. 4448: M. Giacobini (Ed.), *Applications of Evolutionary Computing*. XXIII, 755 pages. 2007.
- Vol. 4447: E. Marchiori, J.H. Moore, J.C. Rajapakse (Eds.), *Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics*. XI, 302 pages. 2007.
- Vol. 4446: C. Cotta, J. van Hemert (Eds.), *Evolutionary Computation in Combinatorial Optimization*. XII, 241 pages. 2007.
- Vol. 4445: M. Ebner, M. O'Neill, A. Ekárt, L. Vanneschi, A.I. Esparcia-Alcázar (Eds.), *Genetic Programming*. XI, 382 pages. 2007.
- Vol. 4436: C.R. Stephens, M. Toussaint, D. Whitley, P.F. Stadler (Eds.), *Foundations of Genetic Algorithms*. IX, 213 pages. 2007.
- Vol. 4433: E. Şahin, W.M. Spears, A.F.T. Winfield (Eds.), *Swarm Robotics*. XII, 221 pages. 2007.
- Vol. 4432: B. Beliczynski, A. Dzielinski, M. Iwanowski, B. Ribeiro (Eds.), *Adaptive and Natural Computing Algorithms*, Part II. XXVI, 761 pages. 2007.
- Vol. 4431: B. Beliczynski, A. Dzielinski, M. Iwanowski, B. Ribeiro (Eds.), *Adaptive and Natural Computing Algorithms*, Part I. XXV, 851 pages. 2007.

Table of Contents

Network Applications

Cluster and Grid Computing

On a High-Order Compact Scheme and Its Utilization in Parallel Solution of a Time-Dependent System on a Distributed Memory Processor	1
<i>Okon H. Akpan</i>	
Dynamic Multi-resource Advance Reservation in Grid Environment	13
<i>Zhi-Ang Wu and Jun-Zhou Luo</i>	
A Novel Adaptive Proxy Certificates Management Scheme in Military Grid Environment.....	23
<i>Ying Liu, Jingbo Xia, and Jing Dai</i>	
A Scheduling Model for Maximizing Availability with Makespan Constraint Based on Residual Lifetime in Heterogeneous Clusters	31
<i>Xin Jiang, Chuang Lin, Hao Yin, and Yada Hu</i>	
A VO-Based Two-Stage Replica Replacement Algorithm	41
<i>Tian Tian and Junzhou Luo</i>	
Grid Scheduling Optimization Under Conditions of Uncertainty	51
<i>Zeng Bin, Luo Zhaohui, and Wei Jun</i>	
A Dynamic Adjustment Strategy for File Transformation in Data Grids.....	61
<i>Chao-Tung Yang, Shih-Yu Wang, and Chun-Pin Fu</i>	

Internet Computing

Spatial Map Data Share and Parallel Dissemination System Based on Distributed Network Services and Digital Watermark	71
<i>Dong Zhang, Depei Qian, Weiguo Wu, Ailong Liu, Xuewei Yang, and Pen Han</i>	
Managing Email Overload with an Automatic Nonparametric Clustering Approach	81
<i>Yang Xiang, Wanlei Zhou, and Jinjun Chen</i>	

Optical Networks

On the Routing Algorithms for Optical Multi- $\log_2 N$ Networks	91
<i>Yusuke Fukushima, Xiaohong Jiang, and Susumu Horiguchi</i>	
Overall Blocking Behavior Analysis on Banyan-Based Optical Switching Networks Under Crosstalk Constraint	101
<i>Chen Yu, Yasushi Inoguchi, and Susumu Horiguchi</i>	

Peer-to-Peer Computing

SW-Uinta: A Small-World P2P Overlay Network	114
<i>Jie Xu and Hai Jin</i>	

Ubiquitous Computing

Unmanned Navigation of the 1/10 Vehicle Using U-SAT	124
<i>Su Yong Kim and SooHong Park</i>	
Energy-Efficient Scheduling Fixed-Priority Tasks with Preemption Thresholds on Variable Voltage Processors	133
<i>XiaoChuan He and Yan Jia</i>	
Estimation of Absolute Positioning of Mobile Robot Using U-SAT	143
<i>Su Yong Kim and SooHong Park</i>	
A Collaborative Service Discovery and Service Sharing Framework for Mobile Ad Hoc Networks	151
<i>Haidar Safa, Hassan Artail, Hicham Hamze, and Khaleel Mershad</i>	
Proteus: An Architecture for Adapting Web Page on Small-Screen Devices	161
<i>M.F. Caetano, A.L.F. Fialho, J.L. Bordim, C.D. Castanho, R.P. Jacobi, and K. Nakano</i>	

Wireless Computing

EEGFGR: An Energy-Efficient Greedy-Face Geographic Routing for Wireless Sensor Networks	171
<i>Tao Zi-Jin, Wu Yi, and Gong Zheng-Hu</i>	
An Improved Bandwidth-Use Method on IEEE 802.11e Standard over Wireless LAN	183
<i>Fang-Yie Leu, Yu-Hsin Chen, and Ching-Chien Kuan</i>	
Maximum Life-Time Localized Broadcast Routing in MANET	193
<i>Ruiqin Zhao, Aijun Wen, Zengji Liu, and Peng Yue</i>	

Network Technologies

Communication Technology

- Modulation Multiplexing Distributed Space-Time Block Coding for
Two-User Cooperative Diversity in Wireless Network 203
Rong Ran and Dongku Kim

Network Algorithms

- Modified Widest Disjoint Paths Algorithm for Multipath Routing 212
Shangming Zhu, Zhili Zhang, and Xinhua Zhuang
- Optimum Broadcasting Algorithms in (n, k) -Star Graphs Using
Spanning Trees 220
Jinli Li, Manli Chen, Yonghong Xiang, and Shaowen Yao
- Link Protocol Based on DS-CDMA with MUD for Decentralized
All-Connected Wireless Network 231
Zhe Hu, Jun Zhang, and Huiyuan Zheng
- A Small-World Optimization Algorithm Based and ABC Supported
QoS Unicast Routing Scheme 242
Xingwei Wang, Shuxiang Cai, and Min Huang
- Algorithms for the m -Coverage Problem and k -Connected m -Coverage
Problem in Wireless Sensor Networks 250
Deying Li, Jiannong Cao, Dongsheng Liu, Ying Yu, and Hui Sun
- A Novel Multiple Access Protocol with QoS Support for Mobile Ad
Hoc Networks 260
Dapeng Wang, Kai Liu, Lianzhen Cheng, and Yan Zhang
- ### Network Reliability, Security, and Dependability
- Dual-Residue Montgomery Multiplication 267
Anding Wang, Yier Jin, and Shiju Li
- Design and Performance Analysis of CZML-IPSec for Satellite IP
Networks 277
Zhan Huang and Xuemai Gu
- A Novel Group Key Management Based on Jacobian Elliptic Chebyshev
Rational Map 287
Qin Ke, Zhou Mingtian, Liu Naiqi, Hao Yujie, and Guo Jiandong