

Lecture Notes in Computer Science
Edited by G. Goos, J. Hartmanis, and J. van Leeuwen

2790

Springer

Berlin

Heidelberg

New York

Hong Kong

London

Milan

Paris

Tokyo

Harald Kosch László Böszörményi
Hermann Hellwagner (Eds.)

Euro-Par 2003

Parallel Processing

9th International Euro-Par Conference
Klagenfurt, Austria, August 26-29, 2003
Proceedings



Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Harald Kosch
László Böszörményi
Hermann Hellwagner
University Klagenfurt, Institute for Information Technology
Universitätsstr. 65-67, 9020 Klagenfurt, Austria
E-mail: {harald.kosch, laszlo, hermann.hellwagner}@itec.uni-klu.ac.at

Cataloging-in-Publication Data applied for

A catalog record for this book is available from the Library of Congress

Bibliographic information published by Die Deutsche Bibliothek
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliographie;
detailed bibliographic data is available in the Internet at <<http://dnb.ddb.de>>.

CR Subject Classification (1998): C.1-4, D.1-4, F.1-3, G.1-2, H.2

ISSN 0302-9743

ISBN 3-540-40788-X Springer-Verlag 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-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag Berlin Heidelberg New York
a member of BertelsmannSpringer Science+Business Media GmbH

<http://www.springer.de>

© Springer-Verlag Berlin Heidelberg 2003
Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin GmbH
Printed on acid-free paper SPIN: 10931837 06/3142 5 4 3 2 1 0

Preface

Euro-Par Conference Series

The European Conference on Parallel Computing (Euro-Par) is an international conference series dedicated to the promotion and advancement of all aspects of parallel and distributed computing. The major themes fall into the categories of hardware, software, algorithms, and applications. This year, new and interesting topics were introduced, like *Peer-to-Peer Computing*, *Distributed Multimedia Systems*, and *Mobile and Ubiquitous Computing*. For the first time, we organized a *Demo Session* showing many challenging applications.

The general objective of Euro-Par is to provide a forum promoting the development of parallel and distributed computing both as an industrial technique and an academic discipline, extending the frontiers of both the state of the art and the state of the practice. The industrial importance of parallel and distributed computing is supported this year by a special *Industrial Session* as well as a vendors' exhibition. This is particularly important as currently parallel and distributed computing is evolving into a globally important technology; the buzzword

Grid Computing clearly expresses this move. In addition, the trend to a mobile world is clearly visible in this year's Euro-Par.

The main audience for and participants at Euro-Par are researchers in academic departments, industrial organizations, and government laboratories. Euro-Par aims to become the primary choice of such professionals for the presentation of new results in their specific areas.

Euro-Par has its own Internet domain with a permanent Web site where the history of the conference series is described: <http://www.euro-par.org>. The Euro-Par conference series is sponsored by the Association for Computer Machinery (ACM) and the International Federation for Information Processing (IFIP).

Euro-Par 2003 at Klagenfurt, Austria

Euro-Par 2003 was organized by the Institute of Information Technology, University of Klagenfurt, Austria. The conference location was the University of Klagenfurt which provided a convenient and stimulating environment for the presentation and discussion of recent research results.

A number of tutorials and invited talks extended the regular scientific program. Euro-Par 2003 invited five tutorials: *Project JXTA: An Open P2P Platform Architecture* (Bernard Traversat, Sun Microsystems); *Grid Computing with Jini* (Mark Baker, University of Portsmouth, and Zoltan Juhasz, University of Veszprem); *Pervasive Computing* (Alois Ferscha, University of Linz); *Carrier Grade Linux Platforms* (Ibrahim Haddad, Ericsson Research); and *A Family of*

Multimedia Representation Standards: MPEG-4/7/21 (Fernando Pereira, University of Technology Lisbon, and Hermann Hellwagner, University of Klagenfurt).

Invited talks were given by C.A.R. Hoare (Microsoft Research and Oxford University) on *The Verifying Compiler*; Jim Miller (Microsoft Research) on *Lessons from .NET*; Stefan Dessloch (Kaiserslautern University of Technology) on *Databases, Web Services, and Grid Computing*; and Henri E. Bal (Vrije Universiteit, Amsterdam) on *Ibis: A Java-Based Grid Programming Environment*. The first two invited speeches were in common with the co-located *Fifth Joint Modular Languages Conference (JMLC 2003)*, the main track of which took place prior to Euro-Par 2003 at the same venue.

The co-location of both conferences motivated us to organize a special “event” in the conference week: a memorial panel and an exhibition in honor of the recently deceased great computer scientists Ole-Johan Dahl, Edsger W. Dijkstra, and Kristen Nygaard. The virtual part of the exhibition has been made available for everybody via the Euro-Par 2003 Web site:

<http://europar-itec.uni-klu.ac.at/>.

Euro-Par 2003 Statistics

The format of Euro-Par 2003 followed that of the previous editions of the conference and consisted of a number of topics, each of them monitored by a committee of four members. In this year’s conference, there were 19 topics, four of which were included for the first time: Mobile and Ubiquitous Computing (Topic 15), Distributed Systems and Distributed Multimedia (Topic 16), Peer-to-Peer Computing (Topic 18), and a Demo Session (Topic 19) for the presentation of applications. The call for papers attracted 338 submissions, of which 159 were accepted. 103 were selected as regular papers and 52 as research notes. It is worth mentioning that four of the accepted papers were considered to be distinguished papers by the program committee. In total, 1233 review reports were collected, an average of 3.72 per paper.

Submissions were received from 43 countries (based on the corresponding author’s country), 29 of which were represented at the conference. The principal contributors by country were USA (25 accepted papers), Germany and Spain (each 21 accepted papers), and France (15 accepted papers).

Acknowledgments

A number of institutions and many individuals, in widely different respects, contributed to Euro-Par 2003. We thank for their generous support of the University of Klagenfurt; the Carinthian Economic Fund (KWF); the Carinthian International Campus for Science and Technology (Lakeside Park); the City of Klagenfurt; the Austrian Ministry of Education, Science and Culture (bm:bwk); the Austrian Ministry of Transportation, Innovation and Technology (bmvit); and

the Austrian Computer Society (OCG). The sponsor companies, Microsoft Research, Hewlett-Packard, Quant-X, Uniquare, IBM, ParTec, Sun Microsystems and the Verein der Freunde der Informatik@University of Klagenfurt provided the financial background required for the organization of a major conference. Finally, we are grateful to Springer-Verlag for publishing this proceedings.

We owe special thanks to all the authors for their contributions, members of the topics committee (more than 70 persons), and the numerous reviewers for their excellent work, ensuring the high quality of the conference.

We are especially grateful to Christian Lengauer, the chair of the Euro-Par steering committee, who gave us the benefit of his experience in the 18 months leading up to the conference.

Last, but not least, we are deeply indebted to the local organization team for their enthusiastic work, especially Martina Steinbacher, Mario Döllner, Mulugeta Libsie, Angelika Rossak and the technical staff of our institute.

We hope that all participants had a very enjoyable experience here in Klagenfurt, Austria, at Euro-Par 2003!

Klagenfurt, June 2003

Harald Kosch
László Böszörményi
Hermann Hellwagner

Euro-Par Steering Committee

Chair

Christian Lengauer University of Passau, Germany

Vice Chair

Luc Bougé ENS Cachan, France

European Representatives

Marco Danelutto University of Pisa, Italy

Michel Daydé INP Toulouse, France

Rainer Feldmann University of Paderborn, Germany

Christos Kaklamanis Computer Technology Institute, Greece

Paul Kelly Imperial College, London, UK

Thomas Ludwig University of Heidelberg, Germany

Luc Moreau University of Southampton, UK

Rizos Sakellariou University of Manchester, UK

Henk Sips Technical University, Delft, The Netherlands

Non-European Representatives

Jack Dongarra University of Tennessee at Knoxville, USA

Shinji Tomita Kyoto University, Japan

Honorary Members

Ron Perrott Queen's University Belfast, UK

Karl Dieter Reinartz University of Erlangen-Nuremberg, Germany

Euro-Par 2003 Local Organization

Euro-Par 2003 was organized by the University of Klagenfurt.

Conference Chair

Harald Kosch

László Böszörményi

Hermann Hellwagner

Committee

Martina Steinbacher

Mario Döller

Mulugeta Libsie

Angelika Rossak

Andreas Griesser

Ronald Sowa

Peter Schojer

Remigiusz Górecki in Topic 8

Euro-Par 2003 Programme Committee

Topic 1: Support Tools and Environments

Global Chair

Helmar Burkhart Institut für Informatik, University of Basel,
Switzerland

Local Chair

Thomas Ludwig Institut für Informatik, Ruprecht-Karls-
Universität, Heidelberg, Germany

Vice Chairs

Rudolf Eigenmann School of Electrical and Computer
Engineering, Purdue University, USA
Tomàs Margalef Computer Science Department,
Universitat Autònoma de Barcelona, Spain

Topic 2: Performance Evaluation and Prediction

Global Chair

Jeff Hollingsworth Computer Science Department, University
of Maryland, USA

Local Chair

Thomas Fahringer Institute for Software Science, University
of Vienna, Austria

Vice Chairs

Allen D. Malony Department of Computer and Information
Science, University of Oregon, USA
Jesús Labarta European Center for Parallelism of Barce-
lona, Technical University of
Catalonia, Spain

Topic 3: Scheduling and Load Balancing

Global Chair

Yves Robert Lab. de l'Informatique du Parallélisme,
ENS Lyon, France

Local Chair

Dieter Kranzlmüller GUP Linz, Johannes Kepler University,
Linz, Austria

Vice Chairs

A.J.C. van Gemund Delft University of Technology,
The Netherlands
Henri Casanova San Diego Supercomputing Center, USA

Topic 4: Compilers for High Performance

Global Chair

Michael Gerndt	Institut für Informatik, Technische Universität München, Ger- many
----------------	--------------------------------------------------------------------------

Local Chair

Markus Schordan	Lawrence Livermore National Laboratory, Livermore, USA
-----------------	-----------------------------------------------------------

Vice Chairs

Chau-Wen Tseng	University of Maryland, College Park, USA
Michael O'Boyle	University of Edinburgh, UK

Topic 5: Parallel and Distributed Databases, Data Mining and Knowledge Discovery

Global Chair

Bernhard Mitschang	Institute of Parallel and Distributed Systems, Universität Stuttgart, Germany
--------------------	----------------------------------------------------------------------------------

Local Chair

Domenico Talia	Dipartimento di Elettronica Informatica e Sistemistica, University of Calabria, Italy
----------------	------------------------------------------------------------------------------------------

Vice Chairs

David Skillicorn	Queen's University, Kingston, Canada
Philippe Bonnet	Datalogisk Institut, Københavns Universitet, Denmark

Topic 6: Grid Computing and Middleware Systems

Global Chair

Henri Bal	Department of Mathematics and Computer Science, Vrije Universiteit, The Netherlands
-----------	-------------------------------------------------------------------------------------------

Local Chair

Peter Kacsuk	Computer and Automation Research Institute, Hungarian Academy of Sciences, Budapest, Hungary
--------------	----------------------------------------------------------------------------------------------------

Vice Chairs

Domenico LaForenza	Information Science and Technologies Institute, Italian National Research Coun- cil (CNR), Pisa, Italy
Thierry Priol	INRIA Rennes Research Unit, France

Topic 7: Applications on High-Performance Computers**Global Chair**

Jacek Kitowski	Institute of Computer Science and ACC CYFRONET UMM, University of Mining and Metallurgy, Cracow, Poland
----------------	---------------------------------------------------------------------------------------------------------------

Local Chair

Peter Luksch	Institut für Informatik, Technische Universität München, Germany
--------------	---------------------------------------------------------------------

Vice Chairs

Boleslaw K. Szymanski	Department of Computer Science, Rensselaer Polytechnic Institute, USA
Andrzej M. Goscinski	School of Information Technology, Deakin University, Australia

**Topic 8: Parallel Computer Architecture and
Instruction Level Parallelism****Global Chair**

Stamatis Vassiliadis	Computer Engineering Laboratory, Delft University of Technology, The Netherlands
----------------------	-------------------------------------------------------------------------------------

Local Chair

Arndt Bode	Institut für Informatik, Technische Universität München, Germany
------------	---------------------------------------------------------------------

Vice Chairs

Nikitas J. Dimopoulos	Electrical and Computer Engineering, University of Victoria, Canada
Jean-François Collard	HP Labs 3U, Hewlett-Packard, US

Topic 9: Distributed Algorithms**Global Chair**

Jayadev Misra	Department of Computer Sciences, University of Texas at Austin, USA
---------------	------------------------------------------------------------------------

Local Chair

Laurent Lefèvre	RESO/LIP, École Normale Supérieure de Lyon, France
-----------------	-------------------------------------------------------

Vice Chairs

Wolfgang Reisig	Institut für Informatik, Humboldt- Universität zu Berlin, Germany
Michael Schöttner	Abteilung Verteilte Systeme, Universität Ulm, Germany

Topic 10: Parallel Programming: Models, Methods and Programming Languages

Global Chair

José C. Cunha New University of Lisbon, Portugal

Local Chair

Christoph Herrmann Universität Passau, Germany

Vice Chairs

Marco Danelutto University of Pisa, Italy

Peter H. Welch University of Kent, UK

Topic 11: Numerical Algorithms and Scientific Engineering Problems

Global Chair

Iain Duff Computational Science and Engineering Department, Rutherford Appleton Laboratory, Oxfordshire, UK

Local Chair

Peter Zinterhof Department of Scientific Computing, Salzburg University, Austria

Vice Chairs

Henk van der Vorst Mathematical Institute, Utrecht University, The Netherlands

Luc Giraud CERFACS, Toulouse, France

Topic 12: Architectures and Algorithms for Multimedia Applications

Global Chair

Ishfaq Ahmad Computer Science Department, The Hong Kong University of Science and Technology

Local Chair

Andreas Uhl Department of Scientific Computing, Salzburg University, Austria

Vice Chairs

Pieter Jonker Department of Applied Physics, Delft University of Technology,

The Netherlands
School of Computer Engineering,
Nanyang Technological University,
Singapore

Topic 13: Theory and Algorithms for Parallel Computation

Global Chair

Christos Kaklamanis

Computer Technology Institute and
Department of Computer Engineering
and Informatics, University of Patras,
Greece

Local Chair

Michael Kaufmann

Wilhelm-Schickard-Institut für
Informatik, Universität Tübingen,
Germany

Vice Chairs

Danny Krizanc

Computer Science Group, Mathematics
Department, Wesleyan University, USA
Laboratoire de Recherche en
Informatique, Université Paris-Sud,
France

Pierre Fraigniaud

Topic 14: Routing and Communication in Interconnection Networks

Global Chair

José Duato Technical University of Valencia, Spain

Local Chair

Hermann Hellwagner Institute of Information Technology,
University of Klagenfurt, Austria

Vice Chairs

Olav Lysne Simula Research Lab and University of
Oslo, Norway
Timothy Pinkston University of Southern California, USA

Topic 15: Mobile and Ubiquitous Computing

Global Chair

Max Mühlhäuser FG Telekooperation, TU Darmstadt,
Germany

Local Chair

Alois Ferscha Institut für Praktische Informatik, Gruppe
Software, Johannes Kepler Universität,
Linz, Austria

Vice Chairs

Azzedine Boukerche University of Ottawa, Canada
Karin Hummel Institute for Computer Science and
Business Informatics, University of Vienna,
Austria

Topic 16: Distributed Systems and Distributed Multimedia

Global Chair

Fernando Pereira Electrical and Computers Department,
Instituto Superior Técnico, Lisboa, Portugal

Local Chair

László Böszörményi Institute of Information Technology,
University of Klagenfurt, Austria

Vice Chairs

Abdulmotaleb El Saddik School of Information Technology and
Engineering (SITE), University of Ottawa,
Canada
Roy Friedman Department of Computer Science,
Technion – Israel Institute of Technology,
Haifa, Israel

Topic 17: High-Performance Object-Oriented and Middleware Systems

Global Chair

Geoffrey Fox Community Grids Laboratory, Indiana
University, USA

Local Chair

Michael Philippsen Institut für Informatik, Universität
Erlangen-Nürnberg, Germany

Vice Chairs

Mark Bull Edinburgh Parallel Computing Centre
(EPCC), University of Edinburgh, UK

Andrew Wendelborn Department of Computer Science,
University of Adelaide, Australia

Topic 18: Peer-to-Peer Computing

Global Chair

Luc Bougé IRISA, ENS Cachan, Brittany Extension,
Rennes, France

Local Chair

Franck Cappello CNRS, LRI-Université Paris-Sud, France

Vice Chairs

Bernard Traversat Project JXTA, Sun Microsystems, Santa
Clara, USA

Omer Rana Department of Computer Science, Cardiff
University, UK

Topic 19: Demonstrations of Parallel and Distributed Computing

Global Chair

Ron Perrott School of Computer Science, Queen's
University Belfast, UK

Local Chair

Michael Kropfberger Institute of Information Technology,
University of Klagenfurt, Austria

Vice Chairs

Henk Sips Faculty of Information Technology and Sys-
tems, Technical University of Delft, The
Netherlands

Jarek Nabrzyski Poznan Supercomputing and Networking
Center, Poznan, Poland

Euro-Par 2003 Referees

(not including members of the programme or organization committees)

Afsahi, Ahmad	Bystroff, Chris
Alda, Witold	Byun, Tae-Young
Aldinucci, M.	Caarls, Wouter
Alexandru, Jugravu	Cabillic, Gilbert
Allcock, Bill	Cafaro, Massimo
Alt, Martin	Cai, Jianfei
Amodio, Pierluigi	Cai, Xing
Antochi, Iosif	Campadello, Stefano
Antoniu, Gabriel	Cannataro, Mario
Armstrong, Brian	Caragiannis, Ioannis
Ashby, Tom	Cardinale, Yudith
Attiya, Hagit	Caromel, Denis
Aumage, Olivier	Caron, Eddy
Austaller, Gerhard	Carter, Larry
Balatan, Zoltan	Casado, Rafael
Badia, Rosa M.	Catthoor, Francky
Bahi, Jacques	Chang, Chuan-Hua
Bajard, Jean-Claude	Chatterjee, Mainak
Banczúr, Andrés	Cheresiz, Dmitry
Baniasadi, Amirali	Chiola, Giovanni
Baraglia, Ranieri	Chrysos, George
Barthou, Denis	Chun, B.N.
Basumallik, Ayon	Chung, I-hsin
Baude, Francoise	Cintra, Marcelo
Beaumont, Olivier	Coddington, Paul
Beck, Micah	Cole, Murray
Bellosa, Frank	Contes, Arnaud
Birnbaum, Adam	Coppola, Massimo
Bischof, Holger	Cortés, Ana
Bivens, Alan	Costa, Vitor Santos
Boavida, Fernando	Cramp, Anthony
Bodin, Francois	Crispo, Bruno
Boudet, Vincent	César, Eduardo
Braun, Elmar	Da Costa, Carlos
Breimer, Eric	Dail, Holly
Breton, Vincent	Dayde, Michel
Bretschneider, Timo Rolf	De Castro Dutra, Ines
Bubak, Marian	Deelman, Ewa
Buchholz, Peter	Denis, Alexandre
Buck, Bryan	Denneulin, Yves
Buyya, Rajkumar	Desprez, Frederic

Dhaenens, Clarisse
 Di Cosmo, Roberto
 Di Serafino, Daniela
 Dias, Artur Miguel
 Diessel, Oliver
 Dimakopoulos, Vassilos
 Do, Tai
 Dobrucky, Miroslav
 Dolev, Shlomi
 Dou, Jialin
 Drach-Temam, Nathalie
 Ducourthial, Bertrand
 Durr, C.
 Dutot, Pierre-Francois
 Dzwinel, Witold
 Eijkhout, Victor
 El Khatib, Khalil
 Ekaterinides, Yannis
 Emmanuel, S.
 Espinosa, Antonio
 Faber, Peter
 Fabrega, Josep
 Fagni, Tiziano
 Falkner, Katrina E.
 Farcy, Alexandre
 Feng, W.
 Ferragina, Paola
 Ferrante, Jeanne
 Fink, Torsten
 Fisher, Steve
 Fleury, Eric
 Folino, Gianluigi
 Ford, Rupert
 Fowler, Rob
 Franco, Daniel
 Franke, Bjoern
 Frenz, Stefan
 Frigo, Matteo
 Frohner, Akos
 Funika, Wlodzimierz
 Furfaro, Filippo
 Fursin, Grigori
 Furlinger, Karl
 Gansterer, Wilfried
 Garrido, Antonio
 Gautama, Hasyim
 Gaydadjiev, G.N.
 Geist, Al
 Gelas, Jean-Patrick
 Getov, Vladimir
 Geuzebroek, Jeroen
 Gibbins, Nick
 Gjessing, Stein
 Glossner, John
 Gombas, Gabor
 Gorlatch, Sergei
 Goyeneche, Ariel
 Gratton, Serge
 Guermouche, Abdou
 Gupta, Amitava
 Haase, Gundolf
 Hammond, Kevin
 Hartl, Andreas
 Haumacher, Bernhard
 Hauswirth, Manfred
 Heinemann, Andreas
 Heinrich, Mark A.
 Hermenegildo, Manuel V.
 Hernández, Porfidio
 Heymann, Elisa
 Hlavacs, Helmut
 Hluchy, Ladislav
 Hopkins, T.R.
 Horn, Geir
 Hoschek, Wolfgang
 Hotop, Ewald
 Houda, Lamahamedi
 Hu, Zhenjiang
 Hutchison, David
 Hyon, Emmanuel
 Iqbal, M. Ashraf
 Isaila, Florin
 Jegou, Yvon
 Jeitner, Jürgen
 Jin, Hai
 Johnson, Troy A.
 Jorba, Josep
 Jouhaud, Jen-Christophe
 Jouppi, Norman P.
 Ju, Roy

XVIII Organization

Juhasz, Zoltan
Juurlink, Ben
Kaeli, David
Kagstrom, Bo
Kalantery, Nasser
Karl, Wolfgang
Karp, Alan
Kat, Ronen
Keahey, Kate
Kelly, Paul
Kereku, Edmond
Kesavan, Ram
Khunjush, Farshad
Kielmann, Thilo
Kindermann, Stephan
Kleinjung, Jens
Kohn, Scott
Kondo, Derrick
Kotsis, Gabriele
Kowarschik, Markus
Krishnamurthy, Arvind
Kuchen, Herbert
Kumar, Sanjeev
Kunszt, Peter
Kuzmanov, Georgi
L'Excellent, Jean-Yves
Legendijk, R.
Langer, Ulrich
Lanteri, Stephane
Lauff, Markus
Lavenier, Dominique
Layuan, Li
Lee, Jack
Lisi, Francesca
Liu, Jane W.S.
Lopez, Pedro
Lourenco, Joao
Luque, Emilio
Luszczek, Piotr
Mairandres, Martin
Maman, Nathan
Manco, Giuseppe
Marcos, Aderito Fernandes
Markatos, Evangelos
Marques, Osni

Marques, Rui
Martinaitis, Paul
Mastroianni, Carlo
Matyska, Ludek
Mayrhofer, Rene
Mazzia, Francesca
McCance, Gavin
Medeiros, Pedro
Meier, Harald
Merzky, Andre
Michaelson, Greg
Midkiff, Sam
Min, Seung Jai
Miron, Pavlus
Molnos, Anca
Monteiro, Edmundo
Moreau, Luc
Moro, Gianluca
Moscu, Elena
Moshovos, Andreas
Moure, Juan Carlos
Muller, Jens
Muthukumar, Kalyan
Namyst, Raymond
Nandy, Sagnik
Napolitano, Jim
Nawarecki, Edward
Newhall, Tia
Nieminen, Risto
Nikoletseas, Sotiris
Nolte, Tina
Notare, Mirela Sechi
O'Donnell, John
Ohsumi, Toshiro
Orban, Dominique
Orduna, Juan Manuel
Orlando, Salvatore
Ortega, Julio
Ould-Khaoua, Mohamed
Overeinder, Benno J.
Paar, Alexander
Pallickara, Shrideep
Palmerini, Paolo
Pan, Zhelong
Park, Yong Woon

Peinl, Peter
 Peng, Jufeng
 Perego, Raffaele
 Perez, Christian
 Petitot, Antoine
 Petrini, Fabrizio
 Pham, Congduc
 Pichler, Mario
 Pierce, Evelyn
 Pllana, Sabri
 Podlipnig, Stefan
 Poetzsch-Heffter, Arnd
 Pommer, Andreas
 Poplavko, Peter
 Pralet, Stepahe
 Pramanick, Ira
 Prodan, Radu
 Pugliese, Andrea
 Puliafito, Antonio
 Quinson, Martin
 Radulescu, Andrei
 Rakhmatov, Daler N.
 Rantzau, Ralf
 Rathmayer, Sabine
 Regin, Jean-Charles
 Reinemo, Sven-Arne
 Renambot, Luc
 Resch, Michael
 Ripoll, Ana
 Roe, Paul
 Ruiz, Daniel
 Saffre, Fabrice
 Safwat, Ahmed
 Saha, Debashis
 Sanders, Beverly
 Santos, Luis Paulo
 Sartori, Claudio
 Sasaki, Galen
 Schillo, Michael
 Schimmler, Manfred
 Schintke, Florian
 Schlansker, Michael
 Schojer, Peter
 Schreiber, Rob
 Schulz, Martin
 Schuster, Assaf
 Schwarz, Holger
 Seitz, Christian
 Senar, Miquel Angel
 Sens, Pierre
 Seragiotto, Clovis, Jr.
 Sethumadhavan, Simha
 Shankar, Udaya A.
 Siciliano, Bruno
 Silva, Luis Moura
 Silvestri, Fabrizio
 Sima, Mihai
 Simpson, Steven
 Sion, Radu
 Skeie, Tor
 Sommeijer, Ben
 Sorensen, Dan
 Spriestersbach, Axel
 Srinivasan, Srikanth T.
 Stamatakis, Alexandros
 Stathis, Pyrrhos
 Stefan, Peter
 Stiles, Gardiner S.
 Stricker, Thomas M.
 Su, Alan
 Sulistio, Anthony
 Suppi, Remo
 Suter, Frederic
 Szeberenyi, Imre
 Sérot, Jocelyn
 Tao, Jie
 Taylor, Ian
 Tchernykh, Andrei
 Teich, Jürgen
 Temam, Olivier
 Teresco, Jim
 Terstyanszky, Gabor
 Theiss, Ingebjorg Thelin
 Thottethodi, Mithuna
 Todorova, Petia
 Tolia, Sovrin
 Tolksdorf, Robert
 Tonello, Nicola
 Tran, Viet
 Trinitis, Carsten

Trobec, Roman
Trunfio, Paolo
Truong, Hong-Linh
Tudruj, Marek
Turner, S.J.
Tusch, Roland
Ueberhuber, Christoph
Unger, Shelley
Utard, Gil
Vajtersic, Marian
Van Gijzen, Martin
Van der Vorst, Henk
Varela, Carlos
Varga, Laszlo Z.
Varshney, Upkar
Veldema, Ronald
Vivien, Frederic
Vogels, Werner
Vogl, Simon
Volker, Christian
Volkert, Jens
Von Laszewski, Gregor
Walter, Max

Wang, Dajin
Wasniewski, Jerzy
Weidendorfer, Josef
Welzl, Michael
Wismüller, Roland
Wong, Stephan
Woodcock, Jim
Wyrzykowski, Roman
Xiao, Li
Yan, Ken Qing
Yang, Yang
Yeo, Chai Kiat
Yi, Qing
Yoo, Chuck
Yuksel, Murat
Zambonelli, Franco
Zhang, Ming
Zheng, Yili
Zhou, Xiaobo
Zoccolo, C.
Zottl, Joachim

Table of Contents

Invited Talks

The Verifying Compiler: A Grand Challenge for Computing Research <i>C.A.R. Hoare</i>	1
Evolving a Multi-language Object-Oriented Framework: Lessons from .NET <i>Jim Miller</i>	2
Databases, Web Services, and Grid Computing – Standards and Directions <i>Stefan Dessloch</i>	3
Ibis: A Java-Based Grid Programming Environment <i>Henri E. Bal</i>	4

Topic 1: Support Tools and Environments

Topic Introduction <i>Topic Chairs</i>	5
A Hardware Counters Based Tool for System Monitoring <i>Tiago C. Ferreto, Luiz DeRose, César A.F. De Rose</i>	7
<i>ParaProf</i> : A Portable, Extensible, and Scalable Tool for Parallel Performance Profile Analysis <i>Robert Bell, Allen D. Malony, Sameer Shende</i>	17
On Utilizing Experiment Data Repository for Performance Analysis of Parallel Applications <i>Hong-Linh Truong, Thomas Fahringer</i>	27
Flexible Performance Debugging of Parallel and Distributed Applications <i>Jacques Chassin de Kergommeaux, Cyril Guilloud, B. de Oliveira Stein</i>	38
EventSpace – Exposing and Observing Communication Behavior of Parallel Cluster Applications <i>Lars Ailo Bongo, Otto J. Anshus, John Markus Bjørndalen</i>	47
A Race Detection Mechanism Embedded in a Conceptual Model for the Debugging of Message-Passing Distributed Programs <i>Ana Paula Cláudio, João Duarte Cunha</i>	57

DIOS++: A Framework for Rule-Based Autonomic Management of Distributed Scientific Applications 66
Hua Liu, Manish Parashar

DeWiz – A Modular Tool Architecture for Parallel Program Analysis 74
Dieter Kranzlmüller, Michael Scarpa, Jens Volkert

Why Not Use a Pattern-Based Parallel Programming System? 81
John Anvik, Jonathan Schaeffer, Duane Szafron, Kai Tan

Topic 2: Performance Evaluation and Prediction

Topic Introduction 87
Topic Chairs

Symbolic Performance Prediction of Speculative Parallel Programs 88
Hasyim Gautama, Arjan J.C. van Gemund

A Reconfigurable Monitoring System for Large-Scale Network Computing 98
Rajesh Subramanyan, José Miguel-Alonso, José A.B Fortes

Obtaining Hardware Performance Metrics for the BlueGene/L Supercomputer 109
Pedro Mindlin, José R. Brunheroto, Luiz DeRose, José E. Moreira

Presentation and Analysis of Grid Performance Data 119
Norbert Podhorszki, Peter Kacsuk

Distributed Application Monitoring for Clustered SMP Architectures 127
Karl Furlinger, Michael Gerndt

An Emulation System for Predicting Master/Slave Program Performance 135
Yasuharu Mizutani, Fumihiko Ino, Kenichi Hagihara

POETRIES: Performance Oriented Environment for Transparent Resource-Management, Implementing End-User Parallel/Distributed Applications 141
Eduardo Cesar, J.G. Mesa, Joan Sorribes, Emilio Luque

Topic 3: Scheduling and Load Balancing

Topic Introduction 147
Topic Chairs

Static Load-Balancing Techniques for Iterative Computations on Heterogeneous Clusters	148
<i>Hélène Renard, Yves Robert, Frédéric Vivien</i>	
Impact of Job Allocation Strategies on Communication-Driven Coscheduling in Clusters	160
<i>Gyu Sang Choi, Saurabh Agarwal, Jin-Ha Kim, Anydy B. Yoo, Chita R. Das</i>	
Trading Cycles for Information: Using Replication to Schedule Bag-of-Tasks Applications on Computational Grids	169
<i>Daniel Paranhos da Silva, Walfredo Cirne, Francisco Vilar Brasileiro</i>	
Dynamic Load Partitioning Strategies for Managing Data of Space and Time Heterogeneity in Parallel SAMR Applications	181
<i>Xiaolin Li, Manish Parashar</i>	
An Experimental Investigation into the Rank Function of the Heterogeneous Earliest Finish Time Scheduling Algorithm	189
<i>Henan Zhao, Rizos Sakellariou</i>	
Performance-Based Dynamic Scheduling of Hybrid Real-Time Applications on a Cluster of Heterogeneous Workstations	195
<i>Ligang He, Stephen A. Jarvis, Daniel P. Spooner, Graham R. Nudd</i>	
Recursive Refinement of Lower Bounds in the Multiprocessor Scheduling Problem	201
<i>Satoshi Fujita, Masayuki Masukawa, Shigeaki Tagashira</i>	
Efficient Dynamic Load Balancing Strategies for Parallel Active Set Optimization Methods	206
<i>I. Pardines, Francisco F. Rivera</i>	
Cooperating Coscheduling in a Non-dedicated Cluster	212
<i>Francesc Giné, Francesc Solsona, Porfidio Hernández, Emilio Luque</i>	
Predicting the Best Mapping for Efficient Exploitation of Task and Data Parallelism	218
<i>Fernando Guirado, Ana Ripoll, Concepció Roig, Xiao Yuan, Emilio Luque</i>	
Dynamic Load Balancing for I/O- and Memory-Intensive Workload in Clusters Using a Feedback Control Mechanism	224
<i>Xiao Qin, Hong Jiang, Yifeng Zhu, David R. Swanson</i>	

An Experimental Study of k -Splittable Scheduling for DNS-Based Traffic Allocation	230
<i>Amit Agarwal, Tarun Agarwal, Sumit Chopra*, Anja Feldmann, Nils Kammenhuber, Piotr Krysta, Berthold Vöcking</i>	

Scheduling Strategies of Divisible Loads in DIN Networks	236
<i>Ligang Dong, Lek Heng Ngoh, Joo Geok Tan</i>	

Topic 4: Compilers for High Performance

Topic Introduction	241
<i>Topic Chairs</i>	

Partial Redundancy Elimination with Predication Techniques	242
<i>Bernhard Scholz, Eduard Mehofer, Nigel Horspool</i>	

SIMD Vectorization of Straight Line FFT Code	251
<i>Stefan Kral, Franz Franchetti, Juergen Lorenz, Christoph W. Ueberhuber</i>	

Branch Elimination via Multi-variable Condition Merging	261
<i>William Kreehling, David Whalley, Mark Bailey, Xin Yuan, Gang-Ryung Uh, Robert van Engelen</i>	

Exploiting On-Chip Data Transfers for Improving Performance of Chip-Scale Multiprocessors	271
<i>G. Chen, M. Kandemir, I. Kolcu, A. Choudhary</i>	

An Energy-Oriented Evaluation of Communication Optimizations for Microsensor Networks	279
<i>I. Kadayif, M. Kandemir, A. Choudhary, M. Karakoy</i>	

Increasing the Parallelism of Irregular Loops with Dependences	287
<i>David E. Singh, María J. Martín, Francisco F. Rivera</i>	

Finding Free Schedules for Non-uniform Loops	297
<i>Volodymyr Beletskyy, Krzysztof Siedlecki</i>	

Replicated Placements in the Polyhedron Model	303
<i>Peter Faber, Martin Griebel, Christian Lengauer</i>	

Topic 5: Parallel and Distributed Databases, Data Mining, and Knowledge Discovery

Topic Introduction	309
<i>Topic Chairs</i>	

A Parallel Algorithm for Incremental Compact Clustering	310
<i>Reynaldo Gil-García, José M. Badía-Contelles, Aurora Pons-Porrata</i>	

Preventive Multi-master Replication in a Cluster of Autonomous Databases	318
<i>Esther Pacitti, M. Tamer Özsu, Cédric Coulon</i>	
Pushing Down Bit Filters in the Pipelined Execution of Large Queries	328
<i>Josep Aguilar-Saborit, Victor Muntés-Mulero, Josep-L. Larriba-Pey</i>	
Suffix Arrays in Parallel	338
<i>Mauricio Marín, Gonzalo Navarro</i>	
Revisiting Join Site Selection in Distributed Database Systems	342
<i>Haiwei Ye, Brigitte Kerhervé, Gregor v. Bochmann</i>	
SCINTRA: A Model for Quantifying Inconsistencies in Grid-Organized Sensor Database Systems	348
<i>Lutz Schlesinger, Wolfgang Lehner</i>	
Topic 6: Grid Computing and Middleware Systems	
Topic Introduction	356
<i>Topic Chairs</i>	
Implementation of a Grid Computation Toolkit for Design Optimisation with Matlab and Condor	357
<i>Gang Xue, Matthew J. Fairman, Graeme E. Pound, Simon J. Cox</i>	
Grid Resource Selection for Opportunistic Job Migration	366
<i>Rubén S. Montero, Eduardo Huedo, Ignacio M. Llorente</i>	
Semantic Access Control for Medical Applications in Grid Environments	374
<i>Ludwig Seitz, Jean-Marc Pierson, Lionel Brunie</i>	
Automated Negotiation for Grid Notification Services	384
<i>Richard Lawley, Keith Decker, Michael Luck, Terry Payne, Luc Moreau</i>	
GrADSolve – RPC for High Performance Computing on the Grid	394
<i>Sathish Vadhiyar, Jack Dongarra, Asim YarKhan</i>	
Resource and Job Monitoring in the Grid	404
<i>Zoltán Balaton, Gábor Gombás</i>	
Delivering Data Management for Engineers on the Grid	412
<i>Jasmín Wason, Marc Molinari, Zhuoan Jiao, Simon J. Cox</i>	
A Resource Accounting and Charging System in Condor Environment	417
<i>Csongor Somogyi, Zoltán László, Imre Szeberényi</i>	

Secure Web Services with Globus GSI and gSOAP 421
*Giovanni Aloisio, Massimo Cafaro, Daniele Lezzi,
 Robert Van Engelen*

Future-Based RMI: Optimizing Compositions of Remote Method
 Calls on the Grid 427
Martin Alt, Sergei Gorlatch

Topic 7: Applications on High-Performance Computers

Topic Introduction 431
Topic Chairs

CAD Grid: Corporate-Wide Resource Sharing for Parameter Studies 433
Ed Wheelhouse, Carsten Trinitis, Martin Schulz

Cache Performance Optimizations for Parallel
 Lattice Boltzmann Codes 441
Jens Wilke, Thomas Pohl, Markus Kowarschik, Ulrich Rude

Effectiveness of Parallelizing the ILOG-CPLEX Mixed Integer
 Optimizer in the PUBB2 Framework 451
Yuji Shinano, Tetsuya Fujie, Yuusuke Kounoike

Improving Performance of Hypermatrix Cholesky
 Factorization 461
Jos R. Herrero, Juan J. Navarro

Parallel Agent-Based Simulation on a Cluster of Workstations 470
*Konstantin Popov, Vladimir Vlassov, Mahmoud Rafea,
 Fredrik Holmgren, Per Brand, Seif Haridi*

Low Level Parallelization of Nonlinear Diffusion Filtering
 Algorithms for Cluster Computing Environments 481
*David Slogsnat, Markus Fischer, Andrs Bruhn, Joachim Weickert,
 Ulrich Bruning*

Implementation of Adaptive Control Algorithms in Robot
 Manipulators Using Parallel Computing 491
Juan C. Fernndez, Vicente Hernndez, Lourdes Pealver

Interactive Ray Tracing on Commodity PC Clusters 499
Ingo Wald, Carsten Benthin, Andreas Dietrich, Philipp Slusallek

Toward Automatic Management of Embarrassingly
 Parallel Applications 509
*Ins Dutra, David Page, Vitor Santos Costa, Jude Shavlik,
 Michael Waddell*

Comparing Two Long Biological Sequences Using a DSM System	517
<i>Renata Cristina F. Melo, Maria Emília Telles Walter, Alba Cristina Magalhaes Alves Melo, Rodolfo Batista, Marcelo Nardelli, Thelmo Martins, Tiago Fonseca</i>	
Two Dimensional Airfoil Optimisation Using CFD in a Grid Computing Environment	525
<i>Wenbin Song, Andy Keane, Hakki Eres, Graeme Pound, Simon Cox</i>	
Applied Grid Computing: Optimisation of Photonic Devices	533
<i>Duan H. Beckett, Ben Hiatt, Ken S. Thomas, Simon J. Cox</i>	
Parallel Linear System Solution and Its Application to Railway Power Network Simulation	537
<i>Muhammet F. Ercan, Yu-fai Fung, Tin-kin Ho, Wai-leung Cheung</i>	
Topic 8: Parallel Computer Architecture and Instruction-Level Parallelism	
Topic Introduction	541
<i>Topic Chairs</i>	
An Overview of the Blue Gene/L System Software Organization	543
<i>George Almási, Ralph Bellofatto, José Brunheroto, Călin Caşcaval, José G. Castaños, Luis Ceze, Paul Crumley, C. Christopher Erway, Joseph Gagliano, Derek Lieber, Xavier Martorell, José E. Moreira, Alda Sanomiya, Karin Strauss</i>	
Trace Substitution	556
<i>Hans Vandierendonck, Hans Logie, Koen De Bosschere</i>	
Optimizing a Decoupled Front-End Architecture: The Indexed Fetch Target Buffer (iFTB)	566
<i>Juan C. Moure, Dolores I. Rexachs, Emilio Luque</i>	
Clustered Microarchitecture Simultaneous Multithreading	576
<i>Seong-Won Lee, Jean-Luc Gaudiot</i>	
Counteracting Bank Misprediction in Sliced First-Level Caches	586
<i>Enrique F. Torres, P. Ibañez, V. Viñals, J.M. Llabería</i>	
An Enhanced Trace Scheduler for SPARC Processors	597
<i>Spiros Kalogeropoulos</i>	
Compiler-Assisted Thread Level Control Speculation	603
<i>Hideyuki Miura, Luong Dinh Hung, Chitaka Iwama, Daisuke Tashiro, Niko Demus Barli, Shuichi Sakai, Hidehiko Tanaka</i>	

Compression in Data Caches with Compressible Field Isolation for Recursive Data Structures 609
Masamichi Takagi, Kei Hiraki

Value Compression to Reduce Power in Data Caches 616
Carles Aliagas, Carlos Molina, Montse Garcia, Antonio Gonzalez, Jordi Tubella

Topic 9: Distributed Algorithms

Topic Introduction 623
Topic Chairs

Multiresolution Watershed Segmentation on a Beowulf Network..... 624
Syarrraieni Ishar, Michel Bister

iRBP – A Fault Tolerant Total Order Broadcast for Large Scale Systems 632
Luiz Angelo Barchet-Estefanel

Computational Models for Web- and Grid-Based Computation 640
Joaquim Gabarró, Alan Stewart, Maurice Clint, Eamonn Boyle, Isabel Vallejo

CAS-Based Lock-Free Algorithm for Shared Deques 651
Maged M. Michael

Energy Efficient Algorithm for Disconnected Write Operations in Mobile Web Environments 661
Jong-Mu Choi, Jin-Seok Choi, Jai-Hoon Kim, Young-Bae Ko

Distributed Scheduling of Mobile Priority Requests..... 669
Ahmed Housni, Michel Lacroix, Michel Trehel

Parallel Distributed Algorithms of the β -Model of the Small World Graphs 675
Mahmoud Rafea, Konstantin Popov, Per Brand, Fredrik Holmgren, Seif Haridi

Topic 10: Parallel Programming: Models, Methods, and Programming Languages

Topic Introduction 681
Topic Chairs

Cost Optimality and Predictability of Parallel Programming with Skeletons 682
Holger Bischof, Sergei Gorlatch, Emanuel Kitzelmann

A Methodology for Order-Sensitive Execution of Non-deterministic Languages on Beowulf Platforms	694
<i>K. Villaverde, E. Pontelli, H-F. Guo, G. Gupta</i>	
From Complexity Analysis to Performance Analysis	704
<i>Vicente Blanco, Jesús A. González, Coromoto León, Casiano Rodríguez, Germán Rodríguez</i>	
The Implementation of ASSIST, an Environment for Parallel and Distributed Programming	712
<i>Marco Aldinucci, Sonia Campa, Pierpaolo Ciullo, Massimo Coppola, Silvia Magini, Paolo Pesciullesi, Laura Potiti, Roberto Ravazzolo, Massimo Torquati, Marco Vanneschi, Corrado Zoccolo</i>	
The Design of an API for Strict Multithreading in C++	722
<i>Wolfgang Blochinger, Wolfgang Kuchlin</i>	
High-Level Process Control in Eden	732
<i>Jost Berthold, Ulrike Klusik, Rita Loogen, Steffen Priebe, Nils Weskamp</i>	
Using Skeletons in a Java-Based Grid System	742
<i>Martin Alt, Sergei Gorlatch</i>	
Prototyping Application Models in Concurrent ML	750
<i>David Johnston, Martin Fleury, Andy Downton</i>	
THROOM – Supporting POSIX Multithreaded Binaries on a Cluster	760
<i>Henrik Löf, Zoran Radović, Erik Hagersten</i>	
An Inter-entry Invocation Selection Mechanism for Concurrent Programming Languages	770
<i>Aaron W. Keen, Ronald A. Olsson</i>	
Parallel Juxtaposition for Bulk Synchronous Parallel ML	781
<i>Frédéric Loulergue</i>	
Parallelization with Tree Skeletons	789
<i>Kiminori Matsuzaki, Zhenjiang Hu, Masato Takeichi</i>	
Topic 11: Numerical Algorithms and Scientific Engineering Problems	
Topic Introduction	799
<i>Topic Chairs</i>	
Parallel ScaLAPACK-Style Algorithms for Solving Continuous-Time Sylvester Matrix Equations	800
<i>Robert Granat, Bo Kågström, Peter Poromaa</i>	

RECSY – A High Performance Library for Sylvester-Type Matrix Equations 810
Isak Jonsson, Bo Kågström

Two Level Parallelism in a Stream-Function Model for Global Ocean Circulation 820
Martin van Gijzen

Scalable Parallel RK Solvers for ODEs Derived by the Method of Lines 830
Matthias Korch, Thomas Rauber

Hierarchical Hybrid Grids as Basis for Parallel Numerical Solution of PDE 840
Frank Hülsemann, Benjamin Bergen, Ulrich Rüde

Overlapping Computation/Communication in the Parallel One-Sided Jacobi Method 844
El Mostafa Daoudi, Abdelhak Lakhouaja, Halima Outada

Topic 12: Architectures and Algorithms for Multimedia Applications

Topic Introduction 850
Topic Chairs

Distributed Multimedia Streaming over Peer-to-Peer Networks 851
Jin B. Kwon, Heon Y. Yeom

Exploiting Traffic Balancing and Multicast Efficiency in Distributed Video-on-Demand Architectures 859
Fernando Cores, Ana Ripoll, Bahjat Qazzaz, Remo Suppi, Xiaoyuan Yang, Porfidio Hernandez, Emilio Luque

On Transmission Scheduling in a Server-Less Video-on-Demand System 870
C.Y. Chan, Jack Y.B. Lee

A Proxy-Based Dynamic Multicasting Policy Using Stream’s Access Pattern 880
Yong Woon Park, Si Woong Jang

Topic 13: Theory and Algorithms for Parallel Computation

Topic Introduction 884
Topic Chairs

Improving Communication Sensitive Parallel Radix Sort for Unbalanced Data	885
<i>Martin Schmollinger</i>	
Minimizing Global Communication in Parallel List Ranking	894
<i>Jop F. Sibeyn</i>	
Construction of Efficient Communication Sub-structures: Non-approximability Results and Polynomial Sub-cases	903
<i>Christian Laforest</i>	
<i>c</i> -Perfect Hashing Schemes for Binary Trees, with Applications to Parallel Memories	911
<i>Gennaro Cordasco, Alberto Negro, Vittorio Scarano, Arnold L. Rosenberg</i>	
A Model of Pipelined Mutual Exclusion on Cache-Coherent Multiprocessors	917
<i>Masaru Takesue</i>	
Efficient Parallel Multiplication Algorithm for Large Integers	923
<i>Viktor Bunimov, Manfred Schimmler</i>	
Topic 14: Routing and Communication in Interconnection Networks	
Topic Introduction	929
<i>Topic Chairs</i>	
Dynamic Streams for Efficient Communications between Migrating Processes in a Cluster	930
<i>Pascal Gallard, Christine Morin</i>	
FOBS: A Lightweight Communication Protocol for Grid Computing	938
<i>Phillip M. Dickens</i>	
Low-Fragmentation Mapping Strategies for Linear Forwarding Tables in InfiniBand TM	947
<i>P. López, J. Flich, A. Robles</i>	
A Robust Mechanism for Congestion Control: INC	958
<i>Elvira Baydal, P. López</i>	
RoCL: A Resource Oriented Communication Library	969
<i>Albano Alves, António Pina, José Exposto, José Rufino</i>	
A QoS Multicast Routing Protocol for Dynamic Group Topology	980
<i>Li Layuan, Li Chunlin</i>	

A Study of Network Capacity under Deflection Routing Schemes 989
Josep Fàbrega, Xavier Muñoz

Implementation and Performance Evaluation of M-VIA on AceNIC
 Gigabit Ethernet Card 995
In-Su Yoon, Sang-Hwa Chung, Ben Lee, Hyuk-Chul Kwon

Topic 15: Mobile and Ubiquitous Computings

Topic Introduction 1001
Topic Chairs

A Comparative Study of Protocols for Efficient Data
 Propagation in Smart Dust Networks 1003
*I. Chatzigiannakis, T. Dimitriou, M. Mavronicolas, S. Nikolettseas,
 P. Spirakis*

Network Based Mobile Station Positioning in Metropolitan Area 1017
*Karl R.P.H. Leung, Joseph Kee-Yin Ng, Tim K.T. Chan,
 Kenneth M.K. Chu, Chun Hung Li*

Programming Coordinated Motion Patterns with the
 TOTA Middleware 1027
Marco Mamei, Franco Zambonelli, Letizia Leonardi

iClouds – Peer-to-Peer Information Sharing in Mobile Environments 1038
*Andreas Heinemann, Jussi Kangasharju, Fernando Lyardet,
 Max Mühlhäuser*

Support for Personal and Service Mobility in Ubiquitous Computing
 Environments 1046
K. El-Khatib, N. Hadibi, Gregor v. Bochmann

Dynamic Layouts for Wireless ATM 1056
*Michele Flammini, Giorgio Gambosi, Alessandro Gasparini,
 Alfredo Navarra*

Modeling Context-Aware Behavior by Interpreted ECA Rules 1064
Wolfgang Beer, Volker Christian, Alois Ferscha, Lars Mehrmann

A Coordination Model for ad hoc Mobile Systems 1074
*Marco Tulio Valente, Fernando Magno Pereira,
 Roberto da Silva Bigonha, Mariza Andrade da Silva Bigonha*

Making Existing Interactive Applications Context-Aware 1082
*Tatsuo Nakajima, Atsushi Hasegawa, Tomoyoshi Akutagawa,
 Akihiro Ibe, Kouji Yamamoto*

Benefits and Requirements of Using Multi-agent Systems on Smart Devices	1091
<i>Cosmin Carabelea, Olivier Boissier, Fano Ramparany</i>	
Performance Evaluation of Two Congestion Control Mechanisms with On-Demand Distance Vector (AODV) Routing Protocol for Mobile and Wireless Networks	1099
<i>Azzedine Boukerche</i>	
Towards an Approach for Mobile Profile Based Distributed Clustering ...	1109
<i>Christian Seitz, Michael Berger</i>	
Simulating Demand-Driven Server and Service Location in Third Generation Mobile Networks	1118
<i>Geraldo Robson Mateus, Olga Goussevskaia, Antonio A.F. Loureiro</i>	
Designing Mobile Games for a Challenging Experience of the Urban Heritage	1129
<i>Francesco Bellotti, Riccardo Berta, Alessandro De Gloria, Edmondo Ferretti, Massimiliano Margarone</i>	
QoS Provision in IP Based Mobile Networks	1137
<i>Vilmos Simon, rad Huszak, Sandor Szabo, Sandor Imre</i>	
Design of a Management System for Wireless Home Area Networking....	1141
<i>Tapio Rantanen, Janne Sikio, Marko Hannikainen, Timo Vanhatupa, Olavi Karasti, Timo Hamalainen1</i>	
Short Message Service in a Grid-Enabled Computing Environment	1148
<i>Fenglian Xu, Hakki Eres, Simon Cox</i>	
Service Migration Mechanism Using Mobile Sensor Network	1153
<i>Kyungsoo Lim, Woojin Park, Sinam Woo, Sunshin An</i>	
Topic 16: Distributed Systems and Distributed Multimedia	
Topic Introduction	1159
<i>Topic Chairs</i>	
Nswap: A Network Swapping Module for Linux Clusters	1160
<i>Tia Newhall, Sean Finney, Kuzman Ganchev, Michael Spiegel</i>	
Low Overhead Agent Replication for the Reliable Mobile Agent System ..	1170
<i>Taeseon Park, Ilsoo Byun</i>	
A Transparent Software Distributed Shared Memory	1180
<i>Emil-Dan Kohn, Assaf Schuster</i>	

On the Characterization of Distributed Virtual Environment Systems	1190
<i>Pedro Morillo, Juan M. Orduña, M. Fernández, J. Duato</i>	
A Proxy Placement Algorithm for the Adaptive Multimedia Server	1199
<i>Balázs Goldschmidt, Zoltán László</i>	
A New Distributed JVM for Cluster Computing	1207
<i>Marcelo Lobosco, Anderson Silva, Orlando Loques, Claudio L. de Amorim</i>	
An Extension of BSDL for Multimedia Bitstream Syntax Description	1216
<i>Sylvain Devillers</i>	
Fast Construction, Easy Configuration, and Flexible Management of a Cluster System	1224
<i>Ha Yoon Song, Han-gyoo Kim, Kee Cheol Lee</i>	
Topic 17: Peer-to-Peer Computing	
Topic Introduction	1229
<i>Topic Chairs</i>	
Hierarchical Peer-to-Peer Systems	1230
<i>L. Garcés-Erice, E.W. Biersack, P.A. Felber, K.W. Ross, G. Urvoy-Keller</i>	
Enabling Peer-to-Peer Interactions for Scientific Applications on the Grid	1240
<i>Vincent Matossian, Manish Parashar</i>	
A Spontaneous Overlay Search Tree	1248
<i>Hung-Chang Hsiao, Chuan-Mao Lin, Chung-Ta King</i>	
Fault Tolerant Peer-to-Peer Dissemination Network	1257
<i>Konstantinos G. Zerfiridis, Helen D. Karatza</i>	
Exploring the Catalactic Coordination Approach for Peer-to-Peer Systems	1265
<i>Oscar Ardaiz, Pau Artigas, Torsten Eymann, Felix Freitag, Roc Messeguer, Leandro Navarro, and Michael Reinicke</i>	
Incentives for Combatting Freeriding on P2P Networks	1273
<i>Sepandar D. Kamvar, Mario T. Schlosser, Hector Garcia-Molina</i>	

Topic 18: Demonstrations of Parallel and Distributed Computing

Topic Introduction	1280
<i>Topic Chairs</i>	
Demonstration of P-GRADE Job-Mode for the Grid	1281
<i>P. Kacsuk, R. Lovas, J. Kovács, F. Szalai, G. Gombás, N. Podhorszki, Á. Horváth, A. Horányi, I. Szeberényi, T. Delaitre, G. Terstyánszky, A. Gourgoulis</i>	
Coupling Parallel Simulation and Multi-display Visualization on a PC Cluster	1287
<i>Jérémie Allard, Bruno Raffin, Florence Zara</i>	
Kerrighed: A Single System Image Cluster Operating System for High Performance Computing	1291
<i>Christine Morin, Renaud Lottiaux Geoffroy Vallée, Pascal Gallard, Gaël Utard, R. Badrinath, Louis Rilling</i>	
ASSIST Demo: A High Level, High Performance, Portable, Structured Parallel Programming Environment at Work	1295
<i>M. Aldinucci, S. Campa, P. Ciullo, M. Coppola, M. Danelutto, P. Pesciullesi, R. Ravazzolo, M. Torquati, M. Vanneschi, C. Zoccolo</i>	
KOJAK – A Tool Set for Automatic Performance Analysis of Parallel Programs	1301
<i>Bernd Mohr, Felix Wolf</i>	
Visual System for Developing of Parallel Programs	1305
<i>O.G. Monakhov</i>	
Late Paper	
Peer-to-Peer Communication through the Design and Implementation of Xiangqi	1309
<i>Abdulmotaleb El Saddik, Andre Dufour</i>	
Author Index	1315