

*Commenced Publication in 1973*

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

## Editorial Board

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*

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

*New York University, NY, 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*

**Springer**

*Berlin*

*Heidelberg*

*New York*

*Hong Kong*

*London*

*Milan*

*Paris*

*Tokyo*

Antonio Laganà Marina L. Gavrilova  
Vipin Kumar Youngsong Mun  
C.J. Kenneth Tan Osvaldo Gervasi (Eds.)

# Computational Science and Its Applications – ICCSA 2004

International Conference  
Assisi, Italy, May 14-17, 2004  
Proceedings, Part III



Springer

## Volume Editors

Antonio Laganà  
University of Perugia, Department of Chemistry  
Via Elce di Sotto, 8, 06123 Perugia, Italy  
E-mail: lag@unipg.it

Marina L. Gavrilova  
University of Calgary, Department of Computer Science  
2500 University Dr. N.W., Calgary, AB, T2N 1N4, Canada  
E-mail: marina@cpsc.ucalgary.ca

Vipin Kumar  
University of Minnesota, Department of Computer Science and Engineering  
4-192 EE/CS Building, 200 Union Street SE, Minneapolis, MN 55455, USA  
E-mail: kumar@cs.umn.edu

Youngsong Mun  
Soongsil University, School of Computing, Computer Communication Laboratory  
1-1 Sang-do 5 Dong, Dong-jak Ku, Seoul 156-743, Korea  
E-mail: mun@computing.soongsil.ac.kr

C.J. Kenneth Tan  
Queen's University Belfast, Heuchera Technologies Ltd.  
Lanyon North, University Road, Belfast, Northern Ireland, BT7 1NN, UK  
E-mail: cjtan@optimanumerics.com

Osvaldo Gervasi  
University of Perugia, Department of Mathematics and Computer Science  
Via Vanvitelli, 1, 06123 Perugia, Italy  
E-mail: ogervasi@computer.org

Library of Congress Control Number: 2004105531

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

ISSN 0302-9743

ISBN 3-540-22057-7 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 to prosecution under the German Copyright Law.

Springer-Verlag is a part of Springer Science+Business Media  
springeronline.com

© Springer-Verlag Berlin Heidelberg 2004  
Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin, Protago-TeX-Production GmbH  
Printed on acid-free paper      SPIN: 11010111      06/3142      5 4 3 2 1 0

# Preface

The natural mission of Computational Science is to tackle all sorts of human problems and to work out *intelligent* automata aimed at alleviating the burden of working out suitable tools for solving complex problems. For this reason Computational Science, though originating from the need to solve the most challenging problems in science and engineering (computational science is the key player in the fight to gain fundamental advances in astronomy, biology, chemistry, environmental science, physics and several other scientific and engineering disciplines) is increasingly turning its attention to all fields of human activity.

In all activities, in fact, intensive computation, information handling, knowledge synthesis, the use of ad-hoc devices, etc. increasingly need to be exploited and coordinated regardless of the location of both the users and the (various and heterogeneous) computing platforms. As a result the key to understanding the explosive growth of this discipline lies in two adjectives that more and more appropriately refer to Computational Science and its applications: interoperable and ubiquitous. Numerous examples of ubiquitous and interoperable tools and applications are given in the present four LNCS volumes containing the contributions delivered at the 2004 International Conference on Computational Science and its Applications (ICCSA 2004) held in Assisi, Italy, May 14–17, 2004.

To emphasize this particular connotation of modern Computational Science the conference was preceded by a tutorial on Grid Computing (May 13–14) concerted with the COST D23 Action (METACHEM: Metalaboratories for Complex Computational Applications in Chemistry) of the European Coordination Initiative COST in Chemistry and the Project *Enabling Platforms for High-Performance Computational Grids Oriented to Scalable Virtual Organization* of the Ministry of Science and Education of Italy.

The volumes consist of 460 peer reviewed papers given as oral contributions at the conference. The conference included 8 presentations from keynote speakers, 15 workshops and 3 technical sessions. Thanks are due to most of the workshop organizers and the Program Committee members, who took care of the unexpected exceptional load of reviewing work (either carrying it out by themselves or distributing it to experts in the various fields).

Special thanks are due to Noelia Faginas Lago for handling all the necessary secretarial work. Thanks are also due to the young collaborators of the High Performance Computing and the Computational Dynamics and Kinetics research groups of the Department of Mathematics and Computer Science and of the Department of Chemistry of the University of Perugia. Thanks are, obviously,

due as well to the sponsors for supporting the conference with their financial and organizational help.

May 2004

Antonio Laganà  
on behalf of the co-editors:  
Marina L. Gavrilova  
Vipin Kumar  
Youngsong Mun  
C.J. Kenneth Tan  
Osvaldo Gervasi

# Organization

ICCSA 2004 was organized by the University of Perugia, Italy; the University of Minnesota, Minneapolis (MN), USA and the University of Calgary, Calgary (Canada).

## Conference Chairs

Osvaldo Gervasi (University of Perugia, Perugia, Italy), Conference Chair

Marina L. Gavrilova (University of Calgary, Calgary, Canada),

Conference Co-chair

Vipin Kumar (University of Minnesota, Minneapolis, USA), Honorary Chair

## International Steering Committee

J.A. Rod Blais (University of Calgary, Canada)

Alexander V. Bogdanov (Institute for High Performance Computing and Data Bases, Russia)

Marina L. Gavrilova (University of Calgary, Canada)

Andres Iglesias (University de Cantabria, Spain)

Antonio Laganà (University of Perugia, Italy)

Vipin Kumar (University of Minnesota, USA)

Youngsong Mun (Soongsil University, Korea)

Reneé S. Renner (California State University at Chico, USA)

C.J. Kenneth Tan (Heuchera Technologies, Canada and The Queen's University of Belfast, UK)

## Local Organizing Committee

Osvaldo Gervasi (University of Perugia, Italy)

Antonio Laganà (University of Perugia, Italy)

Noelia Faginas Lago (University of Perugia, Italy)

Sergio Tasso (University of Perugia, Italy)

Antonio Riganelli (University of Perugia, Italy)

Stefano Crocchianti (University of Perugia, Italy)

Leonardo Pacifici (University of Perugia, Italy)

Cristian Dittamo (University of Perugia, Italy)

Matteo Lobbiani (University of Perugia, Italy)

## **Workshop Organizers**

### **Information Systems and Information Technologies (ISIT)**

Youngsong Mun (Soongsil University, Korea)

### **Approaches or Methods of Security Engineering**

Haeng Kon Kim (Catholic University of Daegu, Daegu, Korea)

Tai-hoon Kim (Korea Information Security Agency, Korea)

### **Authentication Technology**

Eui-Nam Huh (Seoul Women's University, Korea)

Ki-Young Mun (Seoul Women's University, Korea)

Taemyung Chung (Seoul Women's University, Korea)

### **Internet Communications Security**

José Sierra-Camara (ITC Security Lab., University Carlos III of Madrid, Spain)

Julio Hernandez-Castro (ITC Security Lab., University Carlos III of Madrid, Spain)

Antonio Izquierdo (ITC Security Lab., University Carlos III of Madrid, Spain)

### **Location Management and Security in Next Generation Mobile Networks**

Dong Chun Lee (Howon University, Chonbuk, Korea)

Kuinam J. Kim (Kyonggi University, Seoul, Korea)

### **Routing and Handoff**

Hyunseung Choo (Sungkyunkwan University, Korea)

Frederick T. Sheldon (Sungkyunkwan University, Korea)

Alexey S. Rodionov (Sungkyunkwan University, Korea)

### **Grid Computing**

Peter Kacsuk (MTA SZTAKI, Budapest, Hungary)

Robert Lovas (MTA SZTAKI, Budapest, Hungary)

### **Resource Management and Scheduling Techniques for Cluster and Grid Computing Systems**

Jemal Abawajy (Carleton University, Ottawa, Canada)

### **Parallel and Distributed Computing**

Jiawan Zhang (Tianjin University, Tianjin, China)

Qi Zhai (Tianjin University, Tianjin, China)

Wenxuan Fang (Tianjin University, Tianjin, China)

**Molecular Processes Simulations**

Antonio Laganà (University of Perugia, Perugia, Italy)

**Numerical Models in Biomechanics**

Jiri Nedoma (Academy of Sciences of the Czech Republic, Prague, Czech Republic)

Josef Danek (University of West Bohemia, Pilsen, Czech Republic)

**Scientific Computing Environments (SCEs) for Imaging in Science**

Almerico Murli (University of Naples Federico II and Institute for High Performance Computing and Networking, ICAR, Italian National Research Council, Naples, Italy)

Giuliano Laccetti (University of Naples Federico II, Naples, Italy)

**Computer Graphics and Geometric Modeling (TSCG 2004)**

Andres Iglesias (University of Cantabria, Santander, Spain)

Deok-Soo Kim (Hanyang University, Seoul, Korea)

**Virtual Reality in Scientific Applications and Learning**

Osvaldo Gervasi (University of Perugia, Perugia, Italy)

**Web-Based Learning**

Woochun Jun (Seoul National University of Education, Seoul, Korea)

**Matrix Approximations with Applications to Science, Engineering and Computer Science**

Nicoletta Del Buono (University of Bari, Bari, Italy)

Tiziano Politi (Politecnico di Bari, Bari, Italy)

**Spatial Statistics and Geographic Information Systems: Algorithms and Applications**

Stefania Bertazzon (University of Calgary, Calgary, Canada)

Borruso Giuseppe (University of Trieste, Trieste, Italy)

**Computational Geometry and Applications (CGA 2004)**

Marina L. Gavrilova (University of Calgary, Calgary, Canada)

## Program Committee

Jemal Abawajy (Carleton University, Canada)  
Kenny Adamson (University of Ulster, UK)  
Stefania Bertazzon (University of Calgary, Canada)  
Sergei Bospamyatnikh (Duke University, USA)  
J.A. Rod Blais (University of Calgary, Canada)  
Alexander V. Bogdanov (Institute for High Performance Computing and Data Bases, Russia)  
Richard P. Brent (Oxford University, UK)  
Martin Buecker (Aachen University, Germany)  
Rajkumar Buyya (University of Melbourne, Australia)  
Hyunseung Choo (Sungkyunkwan University, Korea)  
Toni Cortes (Universidad de Catalunya, Barcelona, Spain)  
Danny Crookes (The Queen's University of Belfast, (UK))  
Brian J. d'Auriol (University of Texas at El Paso, USA)  
Ivan Dimov (Bulgarian Academy of Sciences, Bulgaria)  
Matthew F. Dixon (Heuchera Technologies, UK)  
Marina L. Gavrilova (University of Calgary, Canada)  
Osvaldo Gervasi (University of Perugia, Italy)  
James Glimm (SUNY Stony Brook, USA)  
Christopher Gold (Hong Kong Polytechnic University, Hong Kong, ROC)  
Paul Hovland (Argonne National Laboratory, USA)  
Andres Iglesias (University de Cantabria, Spain)  
Elisabeth Jessup (University of Colorado, USA)  
Chris Johnson (University of Utah, USA)  
Peter Kacsuk (Hungarian Academy of Science, Hungary)  
Deok-Soo Kim (Hanyang University, Korea)  
Vipin Kumar (University of Minnesota, USA)  
Antonio Laganà (University of Perugia, Italy)  
Michael Mascagni (Florida State University, USA)  
Graham Megson (University of Reading, UK)  
Youngsong Mun (Soongsil University, Korea)  
Jiri Nedoma (Academy of Sciences of the Czech Republic, Czech Republic)  
Robert Panoff (Shodor Education Foundation, USA)  
Renée S. Renner (California State University at Chico, USA)  
Heather J. Ruskin (Dublin City University, Ireland)  
Muhammad Sarfraz (King Fahd University of Petroleum and Minerals, Saudi Arabia)  
Edward Seidel (Louisiana State University, (USA) and Albert-Einstein-Institut, Potsdam, Germany)  
Vaclav Skala (University of West Bohemia, Czech Republic)  
Masha Sosonkina (University of Minnesota, (USA))  
David Taniar (Monash University, Australia)  
Ruppa K. Thulasiram (University of Manitoba, Canada)  
Koichi Wada (University of Tsukuba, Japan)

Stephen Wismath (University of Lethbridge, Canada)  
Chee Yap (New York University, USA)  
Osman Yaşar (SUNY at Brockport, USA)

## Sponsoring Organizations

University of Perugia, Perugia, Italy

University of Calgary, Calgary, Canada

University of Minnesota, Minneapolis, MN, USA

The Queen's University of Belfast, UK

Heuchera Technologies, UK

The project **GRID.IT**: *Enabling Platforms for High-Performance Computational Grids Oriented to Scalable Virtual Organizations*, of the Ministry of Science and Education of Italy

COST – European Cooperation in the Field of Scientific and Technical Research



# Table of Contents – Part III

## Workshop on Computational Geometry and Applications (CGA 04)

|                                                                                                                              |    |
|------------------------------------------------------------------------------------------------------------------------------|----|
| Geometric Graphs Realization as Coin Graphs . . . . .                                                                        | 1  |
| <i>Manuel Abellanas, Carlos Moreno-Jiménez</i>                                                                               |    |
| Disc Covering Problem with Application to Digital Halftoning . . . . .                                                       | 11 |
| <i>Tetsuo Asano, Peter Brass, Shinji Sasahara</i>                                                                            |    |
| On Local Transformations in Plane Geometric Graphs Embedded<br>on Small Grids . . . . .                                      | 22 |
| <i>Manuel Abellanas, Prosenjit Bose, Alfredo García, Ferran Hurtado,<br/>Pedro Ramos, Eduardo Rivera-Campo, Javier Tejel</i> |    |
| Reducing the Time Complexity of Minkowski-Sum Based Similarity<br>Calculations by Using Geometric Inequalities . . . . .     | 32 |
| <i>Henk Bekker, Azel Brink</i>                                                                                               |    |
| A Practical Algorithm for Approximating Shortest Weighted Path<br>between a Pair of Points on Polyhedral Surface . . . . .   | 42 |
| <i>Sasanka Roy, Sandip Das, Subhas C. Nandy</i>                                                                              |    |
| Plane-Sweep Algorithm of $O(n \log n)$ for the Inclusion Hierarchy<br>among Circles . . . . .                                | 53 |
| <i>Deok-Soo Kim, Byunghoon Lee, Cheol-Hyung Cho, Kokichi Sugihara</i>                                                        |    |
| Shortest Paths for Disc Obstacles . . . . .                                                                                  | 62 |
| <i>Deok-Soo Kim, Kwangseok Yu, Youngsong Cho, Donguk Kim,<br/>Chee Yap</i>                                                   |    |
| Improving the Global Continuity of the Natural<br>Neighbor Interpolation . . . . .                                           | 71 |
| <i>Hisamoto Hiyoshi, Kokichi Sugihara</i>                                                                                    |    |
| Combinatorics and Triangulations . . . . .                                                                                   | 81 |
| <i>Tomas Hlavaty, Václav Skala</i>                                                                                           |    |
| Approximations for Two Decomposition-Based Geometric<br>Optimization Problems . . . . .                                      | 90 |
| <i>Minghui Jiang, Brendan Mumey, Zhongping Qin, Andrew Tomascak,<br/>Binhai Zhu</i>                                          |    |
| Computing Largest Empty Slabs . . . . .                                                                                      | 99 |
| <i>Jose Miguel Díaz-Báñez, Mario Alberto López, Joan Antoni Sellarès</i>                                                     |    |

|                                                                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 3D-Color-Structure-Code – A New Non-plainness Island Hierarchy . . . . .                                                                               | 109 |
| <i>Patrick Sturm</i>                                                                                                                                   |     |
| Quadratic-Time Linear-Space Algorithms for Generating Orthogonal<br>Polygons with a Given Number of Vertices . . . . .                                 | 117 |
| <i>Ana Paula Tomás, António Leslie Bajuelos</i>                                                                                                        |     |
| Partitioning Orthogonal Polygons by Extension of All Edges<br>Incident to Reflex Vertices: Lower and Upper Bounds<br>on the Number of Pieces . . . . . | 127 |
| <i>António Leslie Bajuelos, Ana Paula Tomás, Fábio Marques</i>                                                                                         |     |
| On the Time Complexity of Rectangular Covering Problems<br>in the Discrete Plane . . . . .                                                             | 137 |
| <i>Stefan Porschen</i>                                                                                                                                 |     |
| Approximating Smallest Enclosing Balls . . . . .                                                                                                       | 147 |
| <i>Frank Nielsen, Richard Nock</i>                                                                                                                     |     |
| Geometry Applied to Designing Spatial Structures:<br>Joining Two Worlds . . . . .                                                                      | 158 |
| <i>José Andrés Díaz, Reinaldo Togores, César Otero</i>                                                                                                 |     |
| A Robust and Fast Algorithm for Computing Exact and<br>Approximate Shortest Visiting Routes . . . . .                                                  | 168 |
| <i>Håkan Jonsson</i>                                                                                                                                   |     |
| Automated Model Generation System Based on Freeform Deformation<br>and Genetic Algorithm . . . . .                                                     | 178 |
| <i>Hyunpung Park, Kwan H. Lee</i>                                                                                                                      |     |
| Speculative Parallelization of a Randomized Incremental Convex<br>Hull Algorithm . . . . .                                                             | 188 |
| <i>Marcelo Cintra, Diego R. Llanos, Belén Palop</i>                                                                                                    |     |
| The Employment of Regular Triangulation for Constrained<br>Delaunay Triangulation . . . . .                                                            | 198 |
| <i>Pavel Maur, Ivana Kolingerová</i>                                                                                                                   |     |
| The Anchored Voronoi Diagram . . . . .                                                                                                                 | 207 |
| <i>Jose Miguel Díaz-Báñez, Francisco Gómez, Immaculada Ventura</i>                                                                                     |     |
| Implementation of the Voronoi-Delaunay Method for Analysis<br>of Intermolecular Voids . . . . .                                                        | 217 |
| <i>A.V. Anikeenko, M.G. Alinchenko, V.P. Voloshin, N.N. Medvedev,<br/>M.L. Gavrilova, P. Jedlovszky</i>                                                |     |
| Approximation of the Boat-Sail Voronoi Diagram and Its Application . . . .                                                                             | 227 |
| <i>Tetsushi Nishida, Kokichi Sugihara</i>                                                                                                              |     |

|                                                                                            |     |
|--------------------------------------------------------------------------------------------|-----|
| Incremental Adaptive Loop Subdivision . . . . .                                            | 237 |
| <i>Hamid-Reza Pakdel, Faramarz F. Samavati</i>                                             |     |
| Reverse Subdivision Multiresolution for Polygonal Silhouette<br>Error Correction . . . . . | 247 |
| <i>Kevin Foster, Mario Costa Sousa, Faramarz F. Samavati,<br/>Brian Wyvill</i>             |     |
| Cylindrical Approximation of a Neuron from<br>Reconstructed Polyhedron . . . . .           | 257 |
| <i>Wenhao Lin, Binhai Zhu, Gwen Jacobs, Gary Orser</i>                                     |     |
| Skeletizing 3D-Objects by Projections . . . . .                                            | 267 |
| <i>David Ménégaux, Dominique Faudot, Hamamache Kheddouci</i>                               |     |

## Track on Computational Geometry

|                                                                                               |     |
|-----------------------------------------------------------------------------------------------|-----|
| An Efficient Algorithm for Determining 3-D Bi-plane<br>Imaging Geometry . . . . .             | 277 |
| <i>Jinhui Xu, Guang Xu, Zhenming Chen, Kenneth R. Hoffmann</i>                                |     |
| Error Concealment Method Using Three-Dimensional<br>Motion Estimation . . . . .               | 288 |
| <i>Dong-Hwan Choi, Sang-Hak Lee, Chan-Sik Hwang</i>                                           |     |
| Confidence Sets for the Aumann Mean of a Random Closed Set . . . . .                          | 298 |
| <i>Raffaello Seri, Christine Choirat</i>                                                      |     |
| An Algorithm of Mapping Additional Scalar Value in 2D Vector<br>Field Visualization . . . . . | 308 |
| <i>Zhigeng Pan, Jianfeng Lu, Minming Zhang</i>                                                |     |
| Network Probabilistic Connectivity: Exact Calculation<br>with Use of Chains . . . . .         | 315 |
| <i>Olga K. Rodionova, Alexey S. Rodionov, Hyunseung Choo</i>                                  |     |
| Curvature Dependent Polygonization by the Edge Spinning . . . . .                             | 325 |
| <i>Martin Čermák, Václav Skala</i>                                                            |     |
| SOM: A Novel Model for Defining Topological Line-Region Relations . . . .                     | 335 |
| <i>Xiaolin Wang, Yingwei Luo, Zhuoqun Xu</i>                                                  |     |

## Track on Adaptive Algorithms

|                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|-----|
| On Automatic Global Error Control in Multistep Methods with<br>Polynomial Interpolation of Numerical Solution . . . . . | 345 |
| <i>Gennady Yu. Kulikov, Sergey K. Shindin</i>                                                                           |     |

|                                                                                                                                              |     |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Approximation Algorithms for $k$ -Source Bottleneck Routing Cost<br>Spanning Tree Problems .....                                             | 355 |
| <i>Yen Hung Chen, Bang Ye Wu, Chuan Yi Tang</i>                                                                                              |     |
| Efficient Sequential and Parallel Algorithms for Popularity<br>Computation on the World Wide Web with Applications<br>against Spamming ..... | 367 |
| <i>Sung-Ryul Kim</i>                                                                                                                         |     |
| Decentralized Inter-agent Message Forwarding Protocols for<br>Mobile Agent Systems .....                                                     | 376 |
| <i>JinHo Ahn</i>                                                                                                                             |     |
| Optimization of Usability on an Authentication System Built from<br>Voice and Neural Networks .....                                          | 386 |
| <i>Tae-Seung Lee, Byong-Won Hwang</i>                                                                                                        |     |
| An Efficient Simple Cooling Schedule for Simulated Annealing .....                                                                           | 396 |
| <i>Mir M. Atiqullah</i>                                                                                                                      |     |
| A Problem-Specific Convergence Bound for Simulated<br>Annealing-Based Local Search .....                                                     | 405 |
| <i>Andreas A. Albrecht</i>                                                                                                                   |     |
| Comparison and Selection of Exact and Heuristic Algorithms .....                                                                             | 415 |
| <i>Joaquín Pérez O., Rodolfo A. Pazos R., Juan Frausto-Solís,<br/>Guillermo Rodríguez O., Laura Cruz R., Héctor Fraire H.</i>                |     |
| Adaptive Texture Recognition in Image Sequences with Prediction<br>through Features Interpolation .....                                      | 425 |
| <i>Sung Baik, Ran Baik</i>                                                                                                                   |     |
| Fuzzy Matching of User Profiles for a Banner Engine .....                                                                                    | 433 |
| <i>Alfredo Milani, Chiara Morici, Radoslaw Niewiadomski</i>                                                                                  |     |

## Track on Biology, Biochemistry, Bioinformatics

|                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|-----|
| Genome Database Integration .....                                                                                       | 443 |
| <i>Andrew Robinson, Wenny Rahayu</i>                                                                                    |     |
| Protein Structure Prediction with Stochastic Optimization Methods:<br>Folding and Misfolding the Villin Headpiece ..... | 454 |
| <i>Thomas Herges, Alexander Schug, Wolfgang Wenzel</i>                                                                  |     |
| High Throughput <i>in-silico</i> Screening against Flexible<br>Protein Receptors .....                                  | 465 |
| <i>Holger Merlitz, Wolfgang Wenzel</i>                                                                                  |     |

|                                                                                              |     |
|----------------------------------------------------------------------------------------------|-----|
| A Sequence-Focused Parallelisation of EMBOSS on a Cluster<br>of Workstations . . . . .       | 473 |
| <i>Karl Podesta, Martin Crane, Heather J. Ruskin</i>                                         |     |
| A Parallel Solution to Reverse Engineering Genetic Networks . . . . .                        | 481 |
| <i>Dorothy Bollman, Edusmildo Orozco, Oscar Moreno</i>                                       |     |
| Deformable Templates for Recognizing the Shape of<br>the Zebra Fish Egg Cell . . . . .       | 489 |
| <i>Ho-Dong Lee, Min-Soo Jang, Seok-Joo Lee, Yong-Guk Kim,<br/>Byungkyu Kim, Gwi-Tae Park</i> |     |
| Multiple Parameterisation of Human Immune Response in HIV:<br>Many-Cell Models . . . . .     | 498 |
| <i>Yu Feng, Heather J. Ruskin, Yongle Liu</i>                                                |     |
| <b>Track on Cluster Computing</b>                                                            |     |
| Semantic Completeness in Sub-ontology Extraction Using<br>Distributed Methods . . . . .      | 508 |
| <i>Mehul Bhatt, Carlo Wouters, Andrew Flahive, Wenny Rahayu,<br/>David Taniar</i>            |     |
| Distributed Mutual Exclusion Algorithms on a Ring of Clusters . . . . .                      | 518 |
| <i>Kayhan Erciyes</i>                                                                        |     |
| A Cluster Based Hierarchical Routing Protocol for Mobile Networks . . . . .                  | 528 |
| <i>Kayhan Erciyes, Geoffrey Marshall</i>                                                     |     |
| Distributed Optimization of Fiber Optic Network Layout<br>Using MATLAB . . . . .             | 538 |
| <i>Roman Pfarrhofer, Markus Kelz, Peter Bachhiesl, Herbert Stögner,<br/>Andreas Uhl</i>      |     |
| Cache Conscious Dynamic Transaction Routing in<br>a Shared Disks Cluster . . . . .           | 548 |
| <i>Kyungoh Ohn, Haengrae Cho</i>                                                             |     |
| A Personalized Recommendation Agent System for<br>E-mail Document Classification . . . . .   | 558 |
| <i>Ok-Ran Jeong, Dong-Sub Cho</i>                                                            |     |
| An Adaptive Prefetching Method for Web Caches . . . . .                                      | 566 |
| <i>Jaeun Jeon, Gunhoon Lee, Ki Dong Lee, Byoungchul Ahn</i>                                  |     |

## Track on Computational Medicine

|                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|-----|
| Image Processing and Retinopathy: A Novel Approach to<br>Computer Driven Tracing of Vessel Network . . . . .            | 575 |
| <i>Annamaria Zaia, Pierluigi Maponi, Maria Marinelli,<br/>Anna Piantanelli, Roberto Giansanti, Roberto Murri</i>        |     |
| Automatic Extension of Korean Predicate-Based Sub-categorization<br>Dictionary from Sense Tagged Corpora . . . . .      | 585 |
| <i>Kyonam Choo, Seokhoon Kang, Hongki Min, Yoseop Woo</i>                                                               |     |
| Information Fusion for Probabilistic Reasoning and Its Application<br>to the Medical Decision Support Systems . . . . . | 593 |
| <i>Michal Wozniak</i>                                                                                                   |     |
| Robust Contrast Enhancement for Microcalcification<br>in Mammography . . . . .                                          | 602 |
| <i>Ho-Kyung Kang, Nguyen N. Thanh, Sung-Min Kim, Yong Man Ro</i>                                                        |     |

## Track on Computational Methods

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| Exact and Approximate Algorithms for Two-Criteria Topological<br>Design Problem of WAN with Budget and Delay Constraints . . . . . | 611 |
| <i>Mariusz Gola, Andrzej Kasprzak</i>                                                                                              |     |
| Data Management with Load Balancing in Distributed Computing . . . . .                                                             | 621 |
| <i>Jong Sik Lee</i>                                                                                                                |     |
| High Performance Modeling with Quantized System . . . . .                                                                          | 630 |
| <i>Jong Sik Lee</i>                                                                                                                |     |
| New Digit-Serial Systolic Arrays for Power-Sum and Division<br>Operation in $GF(2^m)$ . . . . .                                    | 638 |
| <i>Won-Ho Lee, Keon-Jik Lee, Kee-Young Yoo</i>                                                                                     |     |
| Generation of Unordered Binary Trees . . . . .                                                                                     | 648 |
| <i>Brice Effantin</i>                                                                                                              |     |
| A New Systolic Array for Least Significant Digit First<br>Multiplication in $GF(2^m)$ . . . . .                                    | 656 |
| <i>Chang Hoon Kim, Soonhak Kwon, Chun Pyo Hong, Hiecheol Kim</i>                                                                   |     |
| Asymptotic Error Estimate of Iterative Newton-Type Methods and<br>Its Practical Application . . . . .                              | 667 |
| <i>Gennady Yu. Kulikov, Arkadi I. Merkulov</i>                                                                                     |     |
| Numerical Solution of Linear High-Index DAEs . . . . .                                                                             | 676 |
| <i>Mohammad Mahdi Hosseini</i>                                                                                                     |     |

|                                                                                                                                |     |
|--------------------------------------------------------------------------------------------------------------------------------|-----|
| Fast Fourier Transform for Option Pricing: Improved Mathematical Modeling and Design of Efficient Parallel Algorithm . . . . . | 686 |
| <i>Sajib Barua, Ruppa K. Thulasiram, Parimala Thulasiraman</i>                                                                 |     |
| Global Concurrency Control Using Message Ordering of Group Communication in Multidatabase Systems . . . . .                    | 696 |
| <i>Aekyung Moon, Haengrae Cho</i>                                                                                              |     |
| Applications of Fuzzy Data Mining Methods for Intrusion Detection Systems . . . . .                                            | 706 |
| <i>Jian Guan, Da-xin Liu, Tong Wang</i>                                                                                        |     |
| Pseudo-Random Binary Sequences Synchronizer Based on Neural Networks . . . . .                                                 | 715 |
| <i>Jan Borgosz, Boguslaw Cyganek</i>                                                                                           |     |
| Calculation of the Square Matrix Determinant: Computational Aspects and Alternative Algorithms . . . . .                       | 722 |
| <i>Antonio Annibali, Francesco Bellini</i>                                                                                     |     |
| Differential Algebraic Method for Aberration Analysis of Electron Optical Systems . . . . .                                    | 729 |
| <i>Min Cheng, Yilong Lu, Zhenhua Yao</i>                                                                                       |     |
| Optimizing Symmetric FFTs with Prime Edge-Length . . . . .                                                                     | 736 |
| <i>Edusmildo Orozco, Dorothy Bollman</i>                                                                                       |     |
| A Spectral Technique to Solve the Chromatic Number Problem in Circulant Graphs . . . . .                                       | 745 |
| <i>Monia Discepoli, Ivan Gerace, Riccardo Mariani, Andrea Remigi</i>                                                           |     |
| A Method to Establish the Cooling Scheme in Simulated Annealing Like Algorithms . . . . .                                      | 755 |
| <i>Héctor Sanvicente-Sánchez, Juan Frausto-Solís</i>                                                                           |     |
| Packing: Scheduling, Embedding, and Approximating Metrics . . . . .                                                            | 764 |
| <i>Hu Zhang</i>                                                                                                                |     |

## Track on Computational Science Education

|                                                                                                                |     |
|----------------------------------------------------------------------------------------------------------------|-----|
| Design Patterns in Scientific Software . . . . .                                                               | 776 |
| <i>Henry Gardner</i>                                                                                           |     |
| Task Modeling in Computer Supported Collaborative Learning Environments to Adapt to Mobile Computing . . . . . | 786 |
| <i>Ana I. Molina, Miguel A. Redondo, Manuel Ortega</i>                                                         |     |
| Computational Science and Engineering (CSE) Education: Faculty and Student Perspectives . . . . .              | 795 |
| <i>Hasan Dağ, Gürkan Soykan, Şenol Pişkin, Osman Yaşar</i>                                                     |     |

|                                                                                                             |     |
|-------------------------------------------------------------------------------------------------------------|-----|
| Computational Math, Science, and Technology: A New Pedagogical Approach to Math and Science Education ..... | 807 |
| <i>Osman Yaşar</i>                                                                                          |     |

## Track on Computer Modeling and Simulation

|                                                                                                                                           |     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Resonant Tunneling Heterostructure Devices – Dependencies on Thickness and Number of Quantum Wells .....                                  | 817 |
| <i>Nenad Radulovic, Morten Willatzen, Roderick V.N. Melnik</i>                                                                            |     |
| Teletraffic Generation of Self-Similar Processes with Arbitrary Marginal Distributions for Simulation: Analysis of Hurst Parameters ..... | 827 |
| <i>Hae-Duck J. Jeong, Jong-Suk Ruth Lee, Hyoung-Woo Park</i>                                                                              |     |
| Design, Analysis, and Optimization of LCD Backlight Unit Using Ray Tracing Simulation .....                                               | 837 |
| <i>Joonsoo Choi, Kwang-Soo Hahn, Heekyung Seo, Seong-Cheol Kim</i>                                                                        |     |
| An Efficient Parameter Estimation Technique for a Solute Transport Equation in Porous Media .....                                         | 847 |
| <i>Jaemin Ahn, Chung-Ki Cho, Sungkwon Kang, YongHoon Kwon</i>                                                                             |     |
| HierGen: A Computer Tool for the Generation of Activity-on-the-Node Hierarchical Project Networks .....                                   | 857 |
| <i>Miguel Gutiérrez, Alfonso Durán, David Alegre, Francisco Sastrón</i>                                                                   |     |
| Macroscopic Treatment to Polymorphic E-mail Based Viruses .....                                                                           | 867 |
| <i>Cholmin Kim, Soung-uck Lee, Manpyo Hong</i>                                                                                            |     |
| Making Discrete Games .....                                                                                                               | 877 |
| <i>Inmaculada García, Ramón Mollá</i>                                                                                                     |     |
| Speech Driven Facial Animation Using Chinese Mandarin Pronunciation Rules .....                                                           | 886 |
| <i>Mingyu You, Jiajun Bu, Chun Chen, Mingli Song</i>                                                                                      |     |
| Autonomic Protection System Using Adaptive Security Policy .....                                                                          | 896 |
| <i>Sihn-hye Park, Wonil Kim, Dong-kyoo Kim</i>                                                                                            |     |
| A Novel Method to Support User's Consent in Usage Control for Stable Trust in E-business .....                                            | 906 |
| <i>Gunhee Lee, Wonil Kim, Dong-kyoo Kim</i>                                                                                               |     |

## Track on Financial and Economical Modeling

|                                                                                      |     |
|--------------------------------------------------------------------------------------|-----|
| No Trade under Rational Expectations in Economy (A Multi-modal Logic Approach) ..... | 915 |
| <i>Takashi Matsuhisa</i>                                                             |     |

|                                                                               |     |
|-------------------------------------------------------------------------------|-----|
| A New Approach for Numerical Identification of<br>Optimal Exercise Curve..... | 926 |
| <i>Chung-Ki Cho, Sunbu Kang, Taekkeun Kim, YongHoon Kwon</i>                  |     |

|                                                                                                  |     |
|--------------------------------------------------------------------------------------------------|-----|
| Forecasting the Volatility of Stock Index Returns:<br>A Stochastic Neural Network Approach ..... | 935 |
| <i>Chokri Slim</i>                                                                               |     |

## Track on Mobile Computing Systems

|                                                             |     |
|-------------------------------------------------------------|-----|
| A New IP Paging Protocol for Hierarchical Mobile IPv6 ..... | 945 |
| <i>Myung-Kyu Yi, Chong-Sun Hwang</i>                        |     |

|                                                     |     |
|-----------------------------------------------------|-----|
| Security Enhanced WTLS Handshake Protocol .....     | 955 |
| <i>Jin Kwak, Jongsu Han, Soohyun Oh, Dongho Won</i> |     |

|                                                                                                |     |
|------------------------------------------------------------------------------------------------|-----|
| An Adaptive Security Model for Heterogeneous Networks Using<br>MAUT and Simple Heuristics..... | 965 |
| <i>Jongwoo Chae, Ghita Kouadri Mostéfaoui, Mokdong Chung</i>                                   |     |

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| A New Mechanism for SIP over Mobile IPv6 .....                    | 975 |
| <i>Pyung Soo Kim, Myung Eui Lee, Soohong Park, Young Kuen Kim</i> |     |

|                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------|-----|
| A Study for Performance Improvement of Smooth Handoff Using<br>Mobility Management for Mobile IP ..... | 985 |
| <i>Kyu-Tae Oh, Jung-Sun Kim</i>                                                                        |     |

|                                                  |     |
|--------------------------------------------------|-----|
| A Fault-Tolerant Protocol for Mobile Agent ..... | 993 |
| <i>Guiyue Jin, Byoungchul Ahn, Ki Dong Lee</i>   |     |

|                                                                                                       |      |
|-------------------------------------------------------------------------------------------------------|------|
| Performance Analysis of Multimedia Data Transmission with<br>PDA over an Infrastructure Network ..... | 1002 |
| <i>Hye-Sun Hur, Youn-Sik Hong</i>                                                                     |      |

|                                                                                        |      |
|----------------------------------------------------------------------------------------|------|
| A New Synchronization Protocol for Authentication in<br>Wireless LAN Environment ..... | 1010 |
| <i>Hea Suk Jo, Hee Yong Youn</i>                                                       |      |

|                                                                                    |      |
|------------------------------------------------------------------------------------|------|
| A Study on Secure and Efficient Sensor Network Management Scheme<br>Using PTD..... | 1020 |
| <i>Dae-Hee Seo, Im-Yeong Lee</i>                                                   |      |

|                           |             |
|---------------------------|-------------|
| <b>Author Index .....</b> | <b>1029</b> |
|---------------------------|-------------|

# Table of Contents – Part I

## Information Systems and Information Technologies (ISIT) Workshop, Multimedia Session

|                                                                                                                  |    |
|------------------------------------------------------------------------------------------------------------------|----|
| Face Detection by Facial Features with Color Images and Face<br>Recognition Using PCA.....                       | 1  |
| <i>Jin Ok Kim, Sung Jin Seo, Chin Hyun Chung, Jun Hwang,<br/>Woongjae Lee</i>                                    |    |
| A Shakable Snake for Estimation of Image Contours.....                                                           | 9  |
| <i>Jin-Sung Yoon, Joo-Chul Park, Seok-Woo Jang, Gye-Young Kim</i>                                                |    |
| A New Recurrent Fuzzy Associative Memory for Recognizing<br>Time-Series Patterns Contained Ambiguity.....        | 17 |
| <i>Joongjae Lee, Won Kim, Jeonghee Cha, Gyeyoung Kim, Hyungil Choi</i>                                           |    |
| A Novel Approach for Contents-Based E-catalogue Image Retrieval<br>Based on a Differential Color Edge Model..... | 25 |
| <i>Junchul Chun, Goorack Park, Changho An</i>                                                                    |    |
| A Feature-Based Algorithm for Recognizing Gestures<br>on Portable Computers .....                                | 33 |
| <i>Mi Gyung Cho, Am Sok Oh, Byung Kwan Lee</i>                                                                   |    |
| Fingerprint Matching Based on Linking Information Structure<br>of Minutiae .....                                 | 41 |
| <i>JeongHee Cha, HyoJong Jang, GyeYoung Kim, HyungIl Choi</i>                                                    |    |
| Video Summarization Using Fuzzy One-Class Support Vector Machine...                                              | 49 |
| <i>YoungSik Choi, KiJoo Kim</i>                                                                                  |    |
| A Transcode and Prefetch Technique of Multimedia Presentations<br>for Mobile Terminals .....                     | 57 |
| <i>Maria Hong, Euisun Kang, Sungmin Um, Dongho Kim,<br/>Younghwan Lim</i>                                        |    |

## Information Systems and Information Technologies (ISIT) Workshop, Algorithm Session

|                                                                                      |    |
|--------------------------------------------------------------------------------------|----|
| A Study on Generating an Efficient Bottom-up Tree Rewrite Machine<br>for JBang ..... | 65 |
| <i>KyungWoo Kang</i>                                                                 |    |
| A Study on Methodology for Enhancing Reliability of Datapath .....                   | 73 |
| <i>SunWoong Yang, MoonJoon Kim, JaeHeung Park, Hoon Chang</i>                        |    |

|                                                                                                                |     |
|----------------------------------------------------------------------------------------------------------------|-----|
| A Useful Method for Multiple Sequence Alignment<br>and Its Implementation .....                                | 81  |
| <i>Jin Kim, Dong-Hoi Kim, Saangyong Uhm</i>                                                                    |     |
| A Research on the Stochastic Model<br>for Spoken Language Understanding.....                                   | 89  |
| <i>Yong-Wan Roh, Kwang-Seok Hong, Hyon-Gu Lee</i>                                                              |     |
| The Association Rule Algorithm with Missing Data in Data Mining .....                                          | 97  |
| <i>Bobby D. Gerardo, Jaewan Lee, Jungsik Lee, Mingi Park, Malrey Lee</i>                                       |     |
| Constructing Control Flow Graph for Java by Decoupling Exception<br>Flow from Normal Flow .....                | 106 |
| <i>Jang-Wu Jo, Byeong-Mo Chang</i>                                                                             |     |
| On Negation-Based Conscious Agent .....                                                                        | 114 |
| <i>Kang Soo Tae, Hee Yong Youn, Gyung-Leen Park</i>                                                            |     |
| A Document Classification Algorithm Using the Fuzzy Set Theory<br>and Hierarchical Structure of Document ..... | 122 |
| <i>Seok-Woo Han, Hye-Jue Eun, Yong-Sung Kim, László T. Kóczy</i>                                               |     |
| A Supervised Korean Verb Sense Disambiguation Algorithm<br>Based on Decision Lists of Syntactic Features.....  | 134 |
| <i>Kweon Yang Kim, Byong Gul Lee, Dong Kwon Hong</i>                                                           |     |
| <b>Information Systems and Information Technologies (ISIT)<br/>Workshop, Security Session</b>                  |     |
| Network Security Management Using ARP Spoofing.....                                                            | 142 |
| <i>Kyohyeok Kwon, Seongjin Ahn, Jin Wook Chung</i>                                                             |     |
| A Secure and Practical CRT-Based RSA to Resist<br>Side Channel Attacks.....                                    | 150 |
| <i>ChangKyun Kim, JaeCheol Ha, Sung-Hyun Kim, Seokyu Kim,<br/>Sung-Ming Yen, SangJae Moon</i>                  |     |
| A Digital Watermarking Scheme in JPEG-2000 Using the Properties<br>of Wavelet Coefficient Sign .....           | 159 |
| <i>Han-Ki Lee, Geun-Sil Song, Mi-Ae Kim, Kil-Sang Yoo,<br/>Won-Hyung Lee</i>                                   |     |
| A Security Proxy Based Protocol for Authenticating<br>the Mobile IPv6 Binding Updates .....                    | 167 |
| <i>Il-Sun You, Kyungsan Cho</i>                                                                                |     |
| A Fuzzy Expert System for Network Forensics .....                                                              | 175 |
| <i>Jung-Sun Kim, Minsoo Kim, Bong-Nam Noh</i>                                                                  |     |

|                                                                                                                                            |     |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----|
| A Design of Preventive Integrated Security Management System<br>Using Security Labels and a Brief Comparison with Existing<br>Models ..... | 183 |
| <i>D.S. Kim, T.M. Chung</i>                                                                                                                |     |
| The Vulnerability Assessment for Active Networks;<br>Model, Policy, Procedures, and Performance Evaluations .....                          | 191 |
| <i>Young J. Han, Jin S. Yang, Beom H. Chang, Jung C. Na,<br/>Tai M. Chung</i>                                                              |     |
| Authentication of Mobile Node Using AAA in Coexistence of VPN<br>and Mobile IP .....                                                       | 199 |
| <i>Miyoung Kim, Misun Kim, Youngsong Mun</i>                                                                                               |     |
| Survivality Modeling for Quantitative Security Assessment<br>in Ubiquitous Computing Systems* .....                                        | 207 |
| <i>Changyeol Choi, Sungsoo Kim, We-Duke Cho</i>                                                                                            |     |
| New Approach for Secure and Efficient Metering<br>in the Web Advertising .....                                                             | 215 |
| <i>Soon Seok Kim, Sung Kwon Kim, Hong Jin Park</i>                                                                                         |     |
| MLS/SDM: Multi-level Secure Spatial Data Model .....                                                                                       | 222 |
| <i>Young-Hwan Oh, Hae-Young Bae</i>                                                                                                        |     |
| Detection Techniques for ELF Executable File Using Assembly<br>Instruction Searching .....                                                 | 230 |
| <i>Jun-Hyung Park, Min-soo Kim, Bong-Nam Noh</i>                                                                                           |     |
| Secure Communication Scheme Applying MX Resource Record<br>in DNSSEC Domain .....                                                          | 238 |
| <i>Hyung-Jin Lim, Hak-Ju Kim, Tae-Kyung Kim, Tai-Myung Chung</i>                                                                           |     |
| Committing Secure Results with Replicated Servers .....                                                                                    | 246 |
| <i>Byoung Joon Min, Sung Ki Kim, Chaetae Im</i>                                                                                            |     |
| Applied Research of Active Network to Control Network Traffic<br>in Virtual Battlefield .....                                              | 254 |
| <i>Won Goo Lee, Jae Kwang Lee</i>                                                                                                          |     |
| Design and Implementation of the HoneyPot System with Focusing<br>on the Session Redirection .....                                         | 262 |
| <i>Miyoung Kim, Misun Kim, Youngsong Mun</i>                                                                                               |     |
| <b>Information Systems and Information Technologies (ISIT)<br/>Workshop, Network Session</b>                                               |     |
| Analysis of Performance for MCVoD System .....                                                                                             | 270 |
| <i>SeokHoon Kang, IkSoo Kim, Yoseop Woo</i>                                                                                                |     |

|                                                                                                             |     |
|-------------------------------------------------------------------------------------------------------------|-----|
| A QoS Improvement Scheme for Real-Time Traffic<br>Using IPv6 Flow Labels . . . . .                          | 278 |
| <i>In Hwa Lee, Sung Jo Kim</i>                                                                              |     |
| Energy-Efficient Message Management Algorithms in HMIPv6 . . . . .                                          | 286 |
| <i>Sun Ok Yang, SungSuk Kim, Chong-Sun Hwang, SangKeun Lee</i>                                              |     |
| A Queue Management Scheme for Alleviating the Impact<br>of Packet Size on the Achieved Throughput . . . . . | 294 |
| <i>Sungkeun Lee, Wongeun Oh, Myunghyun Song, Hyun Yoe,<br/>JinGwang Koh, Changryul Jung</i>                 |     |
| PTrace: Pushback/SVM Based ICMP Traceback Mechanism<br>against DDoS Attack . . . . .                        | 302 |
| <i>Hyung-Woo Lee, Min-Goo Kang, Chang-Won Choi</i>                                                          |     |
| Traffic Control Scheme of ABR Service Using NLMS in ATM Network . . .                                       | 310 |
| <i>Kwang-Ok Lee, Sang-Hyun Bae, Jin-Gwang Koh, Chang-Hee Kwon,<br/>Chong-Soo Cheung, In-Ho Ra</i>           |     |

## Information Systems and Information Technologies (ISIT) Workshop, Grid Session

|                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------|-----|
| XML-Based Workflow Description Language<br>for Grid Applications . . . . .                                      | 319 |
| <i>Yong-Won Kwon, So-Hyun Ryu, Chang-Sung Jeong,<br/>Hyoungwoo Park</i>                                         |     |
| Placement Algorithm of Web Server Replicas . . . . .                                                            | 328 |
| <i>Seonho Kim, Miyoun Yoon, Yongtae Shin</i>                                                                    |     |
| XML-OGL: UML-Based Graphical Web Query Language<br>for XML Documents . . . . .                                  | 337 |
| <i>Chang Yun Jeong, Yong-Sung Kim, Yan Ha</i>                                                                   |     |
| Layered Web-Caching Technique for VOD Services . . . . .                                                        | 345 |
| <i>Iksoo Kim, Yoseop Woo, Hyunchul Kang, Backhyun Kim,<br/>Jinsong Ouyang</i>                                   |     |
| QoS-Constrained Resource Allocation for a Grid-Based Multiple<br>Source Electrocardiogram Application . . . . . | 352 |
| <i>Dong Su Nam, Chan-Hyun Youn, Bong Hwan Lee, Gari Clifford,<br/>Jennifer Healey</i>                           |     |
| Efficient Pre-fetch and Pre-release Based Buffer Cache Management<br>for Web Applications . . . . .             | 360 |
| <i>Younghun Ko, Jaehyoun Kim, Hyunseung Choo</i>                                                                |     |

|                                                                                        |     |
|----------------------------------------------------------------------------------------|-----|
| A New Architecture Design for Differentiated Resource Sharing<br>on Grid Service ..... | 370 |
| <i>Eui-Nam Huh</i>                                                                     |     |

|                                                                                             |     |
|---------------------------------------------------------------------------------------------|-----|
| An Experiment and Design of Web-Based Instruction Model<br>for Collaboration Learning ..... | 378 |
| <i>Duckki Kim, Youngsong Mun</i>                                                            |     |

## **Information Systems and Information Technologies (ISIT) Workshop, Mobile Session**

|                                                                                                                    |     |
|--------------------------------------------------------------------------------------------------------------------|-----|
| Performance Limitation of STBC OFDM-CDMA Systems<br>in Mobile Fading Channels .....                                | 386 |
| <i>Young-Hwan You, Tae-Won Jang, Min-Goo Kang, Hyung-Woo Lee,<br/>Hwa-Seop Lim, Yong-Soo Choi, Hyoung-Kyu Song</i> |     |

|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
| PMEPR Reduction Algorithms for STBC-OFDM Signals .....                                                       | 394 |
| <i>Hyoung-Kyu Song, Min-Goo Kang, Ou-Seb Lee, Pan-Yuh Joo,<br/>We-Duke Cho, Mi-Jeong Kim, Young-Hwan You</i> |     |

|                                                                                                                           |     |
|---------------------------------------------------------------------------------------------------------------------------|-----|
| An Efficient Image Transmission System Adopting OFDM Based<br>Sequence Reordering Method in Non-flat Fading Channel ..... | 402 |
| <i>JaeMin Kwak, HeeGok Kang, SungEon Cho, Hyun Yoe, JinGwang Koh</i>                                                      |     |

|                                                                                             |     |
|---------------------------------------------------------------------------------------------|-----|
| The Efficient Web-Based Mobile GIS Service System<br>through Reduction of Digital Map ..... | 410 |
| <i>Jong-Woo Kim, Seong-Seok Park, Chang-Soo Kim, Yugyung Lee</i>                            |     |

|                                                 |     |
|-------------------------------------------------|-----|
| Reducing Link Loss in Ad Hoc Networks .....     | 418 |
| <i>Sangjoon Park, Eunjoo Jeong, Byunggi Kim</i> |     |

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| A Web Based Model for Analyzing Compliance of Mobile Content ..... | 426 |
| <i>Woojin Lee, Yongsun Cho, Kiwon Chong</i>                        |     |

|                                                                                                   |     |
|---------------------------------------------------------------------------------------------------|-----|
| Delay and Collision Reduction Mechanism for Distributed Fair<br>Scheduling in Wireless LANs ..... | 434 |
| <i>Kee-Hyun Choi, Kyung-Soo Jang, Dong-Ryeol Shin</i>                                             |     |

## **Approaches or Methods of Security Engineering Workshop**

|                                                                                                    |     |
|----------------------------------------------------------------------------------------------------|-----|
| Bit-Serial Multipliers for Exponentiation and Division<br>in $GF(2^m)$ Using Irreducible AOP ..... | 442 |
| <i>Yong Ho Hwang, Sang Gyoo Sim, Pil Joong Lee</i>                                                 |     |

|                                                                                                 |     |
|-------------------------------------------------------------------------------------------------|-----|
| Introduction and Evaluation of Development System Security<br>Process of ISO/IEC TR 15504 ..... | 451 |
| <i>Eun-ser Lee, Kyung Whan Lee, Tai-hoon Kim, Il-Hong Jung</i>                                  |     |

|                                                                                                                                   |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| Design on Mobile Secure Electronic Transaction Protocol<br>with Component Based Development .....                                 | 461 |
| <i>Haeng-Kon Kim, Tai-Hoon Kim</i>                                                                                                |     |
| A Distributed Online Certificate Status Protocol Based<br>on GQ Signature Scheme .....                                            | 471 |
| <i>Dae Hyun Yum, Pil Joong Lee</i>                                                                                                |     |
| A Design of Configuration Management Practices and CMPET<br>in Common Criteria Based on Software Process Improvement Activity ... | 481 |
| <i>Sun-Myung Hwang</i>                                                                                                            |     |
| The Design and Development for Risk Analysis Automatic Tool .....                                                                 | 491 |
| <i>Young-Hwan Bang, Yoon-Jung Jung, Injung Kim, Namhoon Lee,<br/>Gang-Soo Lee</i>                                                 |     |
| A Fault-Tolerant Mobile Agent Model in Replicated Secure Services .....                                                           | 500 |
| <i>Kyeongmo Park</i>                                                                                                              |     |
| Computation of Multiplicative Inverses in $GF(2^n)$<br>Using Palindromic Representation.....                                      | 510 |
| <i>Hyeong Seon Yoo, Dongryeol Lee</i>                                                                                             |     |
| A Study on Smart Card Security Evaluation Criteria<br>for Side Channel Attacks.....                                               | 517 |
| <i>HoonJae Lee, ManKi Ahn, SeonGan Lim, SangJae Moon</i>                                                                          |     |
| User Authentication Protocol Based on Human Memorable Password<br>and Using RSA .....                                             | 527 |
| <i>IkSu Park, SeungBae Park, ByeongKyun Oh</i>                                                                                    |     |
| Supporting Adaptive Security Levels in Heterogeneous Environments ...                                                             | 537 |
| <i>Ghita Kouadri Mostéfaoui, Mansoo Kim, Mokdong Chung</i>                                                                        |     |
| Intrusion Detection Using Noisy Training Data .....                                                                               | 547 |
| <i>Yongsu Park, Jaeheung Lee, Yookun Cho</i>                                                                                      |     |
| A Study on Key Recovery Agent Protection Profile Having<br>Composition Function .....                                             | 557 |
| <i>Dae-Hee Seo, Im-Yeong Lee, Hee-Un Park</i>                                                                                     |     |
| Simulation-Based Security Testing for Continuity of Essential<br>Service .....                                                    | 567 |
| <i>Hyung-Jong Kim, JoonMo Kim, KangShin Lee, HongSub Lee,<br/>TaeHo Cho</i>                                                       |     |
| NextPDM: Improving Productivity and Enhancing the Reusability<br>with a Customizing Framework Toolkit .....                       | 577 |
| <i>Ha Jin Hwang, Soung Won Kim</i>                                                                                                |     |

|                                                                                                                                                                                             |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| A Framework for Security Assurance in Component Based Development .<br><i>Hangkon Kim</i>                                                                                                   | 587 |
| An Information Engineering Methodology for the Security Strategy<br>Planning . . . . .<br><i>Sangkyun Kim, Choon Seong Leem</i>                                                             | 597 |
| A Case Study in Applying Common Criteria to Development Process<br>of Virtual Private Network . . . . .<br><i>Sang ho Kim, Choon Seong Leem</i>                                             | 608 |
| A Pointer Forwarding Scheme for Fault-Tolerant Location<br>Management in Mobile Networks . . . . .<br><i>Ihn-Han Bae, Sun-Jin Oh</i>                                                        | 617 |
| Architecture Environments for E-business Agent Based on Security . . . . .<br><i>Ho-Jun Shin, Soo-Gi Lee</i>                                                                                | 625 |
| <b>Authentication Authorization Accounting<br/>(AAA) Workshop</b>                                                                                                                           |     |
| Multi-modal Biometrics System Using Face and Signature . . . . .<br><i>Dae Jong Lee, Keun Chang Kwak, Jun Oh Min, Myung Geun Chun</i>                                                       | 635 |
| Simple and Efficient Group Key Agreement<br>Based on Factoring . . . . .<br><i>Junghyun Nam, Seokhyang Cho, Seungjoo Kim, Dongho Won</i>                                                    | 645 |
| On Facial Expression Recognition Using the Virtual Image Masking<br>for a Security System . . . . .<br><i>Jin Ok Kim, Kyong Sok Seo, Chin Hyun Chung, Jun Hwang,<br/>Woongjae Lee</i>       | 655 |
| Secure Handoff Based on Dual Session Keys in Mobile IP<br>with AAA . . . . .<br><i>Yumi Choi, Hyunseung Choo, Byong-Lyol Lee</i>                                                            | 663 |
| Detection and Identification Mechanism against Spoofed Traffic<br>Using Distributed Agents . . . . .<br><i>Mihui Kim, Kijoon Chae</i>                                                       | 673 |
| DMKB : A Defense Mechanism Knowledge Base . . . . .<br><i>Eun-Jung Choi, Hyung-Jong Kim, Myuhng-Joo Kim</i>                                                                                 | 683 |
| A Fine-Grained Taxonomy of Security Vulnerability<br>in Active Network Environments . . . . .<br><i>Jin S. Yang, Young J. Han, Dong S. Kim, Beom H. Chang,<br/>Tai M. Chung, Jung C. Na</i> | 693 |

|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
| A New Role-Based Authorization Model<br>in a Corporate Workflow Systems .....                                | 701 |
| <i>HyungHyo Lee, SeungYong Lee, Bong-Nam Noh</i>                                                             |     |
| A New Synchronization Protocol for Authentication<br>in Wireless LAN Environment .....                       | 711 |
| <i>Hea Suk Jo, Hee Yong Youn</i>                                                                             |     |
| A Robust Image Authentication Method Surviving Acceptable<br>Modifications .....                             | 722 |
| <i>Mi-Ae Kim, Geun-Sil Song, Won-Hyung Lee</i>                                                               |     |
| Practical Digital Signature Generation Using Biometrics .....                                                | 728 |
| <i>Taekyoung Kwon, Jae-il Lee</i>                                                                            |     |
| Performance Improvement in Mobile IPv6 Using AAA<br>and Fast Handoff .....                                   | 738 |
| <i>Changnam Kim, Young-Sin Kim, Eui-Nam Huh, Youngsong Mun</i>                                               |     |
| An Efficient Key Agreement Protocol for Secure Authentication .....                                          | 746 |
| <i>Young-Sin Kim, Eui-Nam Huh, Jun Hwang, Byung-Wook Lee</i>                                                 |     |
| A Policy-Based Security Management Architecture Using XML<br>Encryption Mechanism for Improving SNMPv3 ..... | 755 |
| <i>Choong Seon Hong, Joon Heo</i>                                                                            |     |
| IDentification Key Based AAA Mechanism in Mobile IP Networks .....                                           | 765 |
| <i>Hoseong Jeon, Hyunseung Choo, Jai-Ho Oh</i>                                                               |     |
| An Integrated XML Security Mechanism for Mobile Grid Application....                                         | 776 |
| <i>Kiyoung Moon, Namje Park, Jongsu Jang, Sungwon Sohn,<br/>Jaechol Ryou</i>                                 |     |
| Development of XKMS-Based Service Component for Using PKI<br>in XML Web Services Environment .....           | 784 |
| <i>Namje Park, Kiyoung Moon, Jongsu Jang, Sungwon Sohn</i>                                                   |     |
| A Scheme for Improving WEP Key Transmission between APs<br>in Wireless Environment .....                     | 792 |
| <i>Chi Hyung In, Choong Seon Hong, Il Gyu Song</i>                                                           |     |
| <b>Internet Communication Security Workshop</b>                                                              |     |
| Generic Construction of Certificateless Encryption .....                                                     | 802 |
| <i>Dae Hyun Yum, Pil Joong Lee</i>                                                                           |     |
| Security Issues in Network File Systems.....                                                                 | 812 |
| <i>Antonio Izquierdo, Jose María Sierra, Julio César Hernández,<br/>Arturo Ribagorda</i>                     |     |

|                                                                                                                                                                            |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| A Content-Independent Scalable Encryption Model . . . . .                                                                                                                  | 821 |
| <i>Stefan Lindskog, Johan Strandbergh, Mikael Hackman,<br/>Erland Jonsson</i>                                                                                              |     |
| Fair Exchange to Achieve Atomicity in Payments<br>of High Amounts Using Electronic Cash . . . . .                                                                          | 831 |
| <i>Magdalena Payeras-Capella, Josep Lluís Ferrer-Gomila,<br/>Llorenç Huguet-Rotger</i>                                                                                     |     |
| N3: A Geometrical Approach for Network Intrusion Detection<br>at the Application Layer . . . . .                                                                           | 841 |
| <i>Juan M. Estévez-Tapiador, Pedro García-Teodoro,<br/>Jesús E. Díaz-Verdejo</i>                                                                                           |     |
| Validating the Use of BAN LOGIC . . . . .                                                                                                                                  | 851 |
| <i>José María Sierra, Julio César Hernández, Almudena Alcaide,<br/>Joaquín Torres</i>                                                                                      |     |
| Use of Spectral Techniques in the Design<br>of Symmetrical Cryptosystems . . . . .                                                                                         | 859 |
| <i>Luis Javier García Villalba</i>                                                                                                                                         |     |
| Load Balancing and Survivability for Network Services<br>Based on Intelligent Agents . . . . .                                                                             | 868 |
| <i>Robson de Oliveira Albuquerque, Rafael T. de Sousa Jr.,<br/>Tamer Américo da Silva, Ricardo S. Puttini,<br/>Clàudia Jacy Barenco Abbas, Luis Javier García Villalba</i> |     |
| A Scalable PKI for Secure Routing in the Internet . . . . .                                                                                                                | 882 |
| <i>Francesco Palmieri</i>                                                                                                                                                  |     |
| Cryptanalysis and Improvement of Password Authenticated Key<br>Exchange Scheme between Clients with Different Passwords . . . . .                                          | 895 |
| <i>Jeeyeon Kim, Seungjoo Kim, Jin Kwak, Dongho Won</i>                                                                                                                     |     |
| Timeout Estimation Using a Simulation Model<br>for Non-repudiation Protocols . . . . .                                                                                     | 903 |
| <i>Mildrey Carbonell, Jose A. Onieva, Javier Lopez, Deborah Galpert,<br/>Jianying Zhou</i>                                                                                 |     |
| DDoS Attack Defense Architecture Using<br>Active Network Technology . . . . .                                                                                              | 915 |
| <i>Choong Seon Hong, Yoshiaki Kasahara, Dea Hwan Lee</i>                                                                                                                   |     |
| A Voting System with Trusted Verifiable Services . . . . .                                                                                                                 | 924 |
| <i>Macià Mut Puigserver, Josep Lluís Ferrer Gomila,<br/>Llorenç Huguet i Rotger</i>                                                                                        |     |

|                                                                                              |     |
|----------------------------------------------------------------------------------------------|-----|
| Chaotic Protocols . . . . .                                                                  | 938 |
| <i>Mohamed Mejri</i>                                                                         |     |
| Security Consequences of Messaging Hubs in Many-to-Many<br>E-procurement Solutions . . . . . | 949 |
| <i>Eva Ponce, Alfonso Durán, Teresa Sánchez</i>                                              |     |
| The SAC Test: A New Randomness Test, with Some Applications<br>to PRNG Analysis . . . . .    | 960 |
| <i>Julio César Hernandez, José María Sierra, Andre Seznec</i>                                |     |
| A Survey of Web Services Security . . . . .                                                  | 968 |
| <i>Carlos Gutiérrez, Eduardo Fernández-Medina, Mario Piattini</i>                            |     |
| Fair Certified E-mail Protocols with Delivery Deadline Agreement . . . . .                   | 978 |
| <i>Yongsu Park, Yookun Cho</i>                                                               |     |

## **Location Management and the Security in the Next Generation Mobile Networks Workshop**

|                                                                                                                    |      |
|--------------------------------------------------------------------------------------------------------------------|------|
| QS-Ware: The Middleware for Providing QoS and Secure Ability<br>to Web Server . . . . .                            | 988  |
| <i>Seung-won Shin, Kwang-ho Baik, Ki-Young Kim, Jong-Soo Jang</i>                                                  |      |
| Implementation and Performance Evaluation of High-Performance<br>Intrusion Detection and Response System . . . . . | 998  |
| <i>Hyeong-Ju Kim, Byoung-Koo Kim, Ik-Kyun Kim</i>                                                                  |      |
| Efficient Key Distribution Protocol for Secure Multicast<br>Communication . . . . .                                | 1007 |
| <i>Bonghan Kim, Hanjin Cho, Jae Kwang Lee</i>                                                                      |      |
| A Bayesian Approach for Estimating Link Travel Time<br>on Urban Arterial Road Network . . . . .                    | 1017 |
| <i>Taehyung Park, Sangkeon Lee</i>                                                                                 |      |
| Perimeter Defence Policy Model of Cascade MPLS VPN Networks . . . . .                                              | 1026 |
| <i>Won Shik Na, Jeom Goo Kim, Intae Ryoo</i>                                                                       |      |
| Design of Authentication and Key Exchange Protocol<br>in Ethernet Passive Optical Networks . . . . .               | 1035 |
| <i>Sun-Sik Roh, Su-Hyun Kim, Gwang-Hyun Kim</i>                                                                    |      |
| Detection of Moving Objects Edges to Implement Home Security<br>System in a Wireless Environment . . . . .         | 1044 |
| <i>Yonghak Ahn, Kiok Ahn, Oksam Chae</i>                                                                           |      |
| Reduction Method of Threat Phrases by Classifying Assets . . . . .                                                 | 1052 |
| <i>Tai-Hoon Kim, Dong Chun Lee</i>                                                                                 |      |

|                                                                                                                   |      |
|-------------------------------------------------------------------------------------------------------------------|------|
| Anomaly Detection Using Sequential Properties of Packets<br>in Mobile Environment .....                           | 1060 |
| <i>Seong-sik Hong, Hwang-bin Ryou</i>                                                                             |      |
| A Case Study in Applying Common Criteria to Development Process<br>to Improve Security of Software Products ..... | 1069 |
| <i>Sang Ho Kim, Choon Seong Leem</i>                                                                              |      |
| A New Recovery Scheme with Reverse Shared Risk Link Group<br>in GMPLS-Based WDM Networks .....                    | 1078 |
| <i>Hyuncheol Kim, Seongjin Ahn, Daeho Kim, Sunghae Kim,<br/>Jin Wook Chung</i>                                    |      |
| Real Time Estimation of Bus Arrival Time under Mobile Environment...                                              | 1088 |
| <i>Taehyung Park, Sangkeon Lee, Young-Jun Moon</i>                                                                |      |
| Call Tracking and Location Updating Using DHS in Mobile Networks ...                                              | 1097 |
| <i>Dong Chun Lee</i>                                                                                              |      |
| <b>Routing and Handoff Workshop</b>                                                                               |      |
| Improving TCP Performance over Mobile IPv6 .....                                                                  | 1105 |
| <i>Young-Chul Shim, Nam-Chang Kim, Ho-Seok Kang</i>                                                               |      |
| Design of Mobile Network Route Optimization Based<br>on the Hierarchical Algorithm .....                          | 1115 |
| <i>Dongkeun Lee, Keecheon Kim, Sunyoung Han</i>                                                                   |      |
| On Algorithms for Minimum-Cost Quickest Paths<br>with Multiple Delay-Bounds .....                                 | 1125 |
| <i>Young-Cheol Bang, Inki Hong, Sungchang Lee, Byungjun Ahn</i>                                                   |      |
| A Fast Handover Protocol for Mobile IPv6 Using Mobility<br>Prediction Mechanism .....                             | 1134 |
| <i>Dae Sun Kim, Choong Seon Hong</i>                                                                              |      |
| The Layer 2 Handoff Scheme for Mobile IP<br>over IEEE 802.11 Wireless LAN .....                                   | 1144 |
| <i>Jongjin Park, Youngsong Mun</i>                                                                                |      |
| Session Key Exchange Based on Dynamic Security Association for<br>Mobile IP Fast Handoff .....                    | 1151 |
| <i>Hyun Gon Kim, Doo Ho Choi</i>                                                                                  |      |
| A Modified AODV Protocol with Multi-paths Considering Classes<br>of Services .....                                | 1159 |
| <i>Min-Su Kim, Ki Jin Kwon, Min Young Chung, Tae-Jin Lee,<br/>Jaehyung Park</i>                                   |      |
| <b>Author Index</b> .....                                                                                         | 1169 |

# Table of Contents – Part II

## Grid Computing Workshop

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Advanced Simulation Technique for Modeling Multiphase Fluid Flow<br>in Porous Media .....       | 1  |
| <i>Jong G. Kim, Hyoung Woo Park</i>                                                             |    |
| The P-GRADE Grid Portal .....                                                                   | 10 |
| <i>Csaba Németh, Gábor Dózsa, Róbert Lovas, Péter Kacsuk</i>                                    |    |
| A Smart Agent-Based Grid Computing Platform .....                                               | 20 |
| <i>Kwang-Won Koh, Hie-Cheol Kim, Kyung-Lang Park, Hwang-Jik Lee,<br/>Shin-Dug Kim</i>           |    |
| Publishing and Executing Parallel Legacy Code Using an OGS<br>Grid Service .....                | 30 |
| <i>T. Delaitre, A. Goyeneche, T. Kiss, S.C. Winter</i>                                          |    |
| The PROVE Trace Visualisation Tool as a Grid Service .....                                      | 37 |
| <i>Gergely Sipos, Péter Kacsuk</i>                                                              |    |
| Privacy Protection in Ubiquitous Computing Based on Privacy Label<br>and Information Flow ..... | 46 |
| <i>Seong Oun Hwang, Ki Song Yoon</i>                                                            |    |

## Resource Management and Scheduling Techniques for Cluster and Grid Computing Systems Workshop

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Application-Oriented Scheduling in the KNOWLEDGE GRID:<br>A Model and Architecture .....        | 55 |
| <i>Andrea Pugliese, Domenico Talia</i>                                                          |    |
| A Monitoring and Prediction Tool for Time-Constraint<br>Grid Application .....                  | 66 |
| <i>Abdulla Othman, Karim Djemame, Iain Gourlay</i>                                              |    |
| Optimal Server Allocation in Reconfigurable Clusters with<br>Multiple Job Types .....           | 76 |
| <i>J. Palmer, I. Mitrani</i>                                                                    |    |
| Design and Evaluation of an Agent-Based Communication Model for a<br>Parallel File System ..... | 87 |
| <i>María S. Pérez, Alberto Sánchez, Jemal Abawajy, Víctor Robles,<br/>José M. Peña</i>          |    |

|                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------|-----|
| Task Allocation for Minimizing Programs Completion Time in<br>Multicomputer Systems . . . . .                   | 97  |
| <i>Gamal Attiya, Yskandar Hamam</i>                                                                             |     |
| Fault Detection Service Architecture for Grid Computing Systems . . . . .                                       | 107 |
| <i>J.H. Abawajy</i>                                                                                             |     |
| Adaptive Interval-Based Caching Management Scheme for Cluster<br>Video Server . . . . .                         | 116 |
| <i>Qin Zhang, Hai Jin, Yufu Li, Shengli Li</i>                                                                  |     |
| A Scalable Streaming Proxy Server Based on<br>Cluster Architecture . . . . .                                    | 126 |
| <i>Hai Jin, Jie Chu, Kaiqin Fan, Zhi Dong, Zhiling Yang</i>                                                     |     |
| The Measurement of an Optimum Load Balancing Algorithm in a<br>Master/Slave Architecture . . . . .              | 136 |
| <i>Finbarr O'Loughlin, Desmond Chambers</i>                                                                     |     |
| Data Discovery Mechanism for a Large Peer-to-Peer Based<br>Scientific Data Grid Environment . . . . .           | 146 |
| <i>Azizol Abdullah, Mohamed Othman, Md Nasir Sulaiman,<br/>Hamidah Ibrahim, Abu Talib Othman</i>                |     |
| A DAG-Based XCIGS Algorithm for Dependent Tasks in<br>Grid Environments . . . . .                               | 158 |
| <i>Changqin Huang, Deren Chen, Qinghuai Zeng, Hualiang Hu</i>                                                   |     |
| Running Data Mining Applications on the Grid:<br>A Bag-of-Tasks Approach . . . . .                              | 168 |
| <i>Fab  rio A.B. da Silva, S  lvia Carvalho, Hermes Senger,<br/>Eduardo R. Hruschka, Cl  ver R.G. de Farias</i> |     |
| <b>Parallel and Distributed Computing Workshop</b>                                                              |     |
| Application of Block Design to a Load Balancing Algorithm on<br>Distributed Networks . . . . .                  | 178 |
| <i>Yeijin Lee, Okbin Lee, Taehoon Lee, Ilyong Chung</i>                                                         |     |
| Maintenance Strategy for Efficient Communication at Data Warehouse . .                                          | 186 |
| <i>Hyun Chang Lee, Sang Hyun Bae</i>                                                                            |     |
| Conflict Resolution of Data Synchronization in Mobile Environment . . . . .                                     | 196 |
| <i>YoungSeok Lee, YounSoo Kim, Hoon Choi</i>                                                                    |     |
| A Framework for Orthogonal Data and Control<br>Parallelism Exploitation . . . . .                               | 206 |
| <i>S. Campa, M. Danelutto</i>                                                                                   |     |

|                                                                                                                                                                   |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Multiplier with Parallel CSA Using CRT's Specific Moduli<br>( $2^k-1$ , $2^k$ , $2^k+1$ ) .....                                                                   | 216 |
| <i>Wu Woan Kim, Sang-Dong Jang</i>                                                                                                                                |     |
| Unified Development Solution for Cluster and Grid Computing and<br>Its Application in Chemistry .....                                                             | 226 |
| <i>Róbert Lovas, Péter Kacsuk, István Lagzi, Tamás Turányi</i>                                                                                                    |     |
| Remote Visualization Based on Grid Computing .....                                                                                                                | 236 |
| <i>Zhigeng Pan, Bailin Yang, Mingmin Zhang, Qizhi Yu, Hai Lin</i>                                                                                                 |     |
| Avenues for High Performance Computation on a PC .....                                                                                                            | 246 |
| <i>Yu-Fai Fung, M. Fikret Ercan, Wai-Leung Cheung, Gujit Singh</i>                                                                                                |     |
| A Modified Parallel Computation Model Based on Cluster .....                                                                                                      | 252 |
| <i>Xiaotu Li, Jizhou Sun, Jiawan Zhang, Zhaohui Qi, Gang Li</i>                                                                                                   |     |
| Parallel Testing Method by Partitioning Circuit Based on the<br>Exhaustive Test .....                                                                             | 262 |
| <i>Wu Woan Kim</i>                                                                                                                                                |     |
| A Parallel Volume Splatting Algorithm Based on PC-Clusters .....                                                                                                  | 272 |
| <i>Jiawan Zhang, Jizhou Sun, Yi Zhang, Qianqian Han, Zhou Jin</i>                                                                                                 |     |
| <b>Molecular Processes Simulation Workshop</b>                                                                                                                    |     |
| Three-Center Nuclear Attraction Integrals for Density Functional<br>Theory and Nonlinear Transformations .....                                                    | 280 |
| <i>Hassan Safouhi</i>                                                                                                                                             |     |
| Parallelization of Reaction Dynamics Codes Using P-GRADE:<br>A Case Study .....                                                                                   | 290 |
| <i>Ákos Bencsura, György Lendvay</i>                                                                                                                              |     |
| Numerical Implementation of Quantum Fluid Dynamics:<br>A Working Example .....                                                                                    | 300 |
| <i>Fabrizio Esposito</i>                                                                                                                                          |     |
| Numerical Revelation and Analysis of Critical Ignition Conditions<br>for Branch Chain Reactions by Hamiltonian Systematization Methods of<br>Kinetic Models ..... | 313 |
| <i>Gagik A. Martoyan, Levon A. Tavadyan</i>                                                                                                                       |     |
| Computer Simulations in Ion-Atom Collisions .....                                                                                                                 | 321 |
| <i>S.F.C. O'Rourke, R.T. Pedlow, D.S.F. Crothers</i>                                                                                                              |     |
| Bond Order Potentials for a priori Simulations of<br>Polyatomic Reactions .....                                                                                   | 328 |
| <i>Ernesto Garcia, Carlos Sánchez, Margarita Albertí, Antonio Laganà</i>                                                                                          |     |

|                                                                                                                                                                               |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Inorganic Phosphates Investigation by Support Vector Machine . . . . .                                                                                                        | 338 |
| <i>Cinzia Pierro, Francesco Capitelli</i>                                                                                                                                     |     |
| Characterization of Equilibrium Structure for N <sub>2</sub> -N <sub>2</sub> Dimer in<br>1.2Å≤R≤2.5Å Region Using DFT Method . . . . .                                        | 350 |
| <i>Ajmal H. Hamdani, S. Shahdin</i>                                                                                                                                           |     |
| A Time Dependent Study of the Nitrogen Atom Nitrogen<br>Molecule Reaction . . . . .                                                                                           | 357 |
| <i>Antonio Laganà, Leonardo Pacifici, Dimitris Skouteris</i>                                                                                                                  |     |
| From DFT Cluster Calculations to Molecular Dynamics Simulation of<br>N <sub>2</sub> Formation on a Silica Model Surface . . . . .                                             | 366 |
| <i>M. Cacciatore, A. Pieretti, M. Rutigliano, N. Sanna</i>                                                                                                                    |     |
| Molecular Mechanics and Dynamics Calculations to Bridge Molecular<br>Structure Information and Spectroscopic Measurements on Complexes<br>of Aromatic Compounds . . . . .     | 374 |
| <i>G. Pietraperzia, R. Chelli, M. Becucci, Antonio Riganelli,<br/>Margarita Alberti, Antonio Laganà</i>                                                                       |     |
| Direct Simulation Monte Carlo Modeling of Non Equilibrium<br>Reacting Flows. Issues for the Inclusion into a ab initio<br>Molecular Processes Simulator . . . . .             | 383 |
| <i>D. Bruno, M. Capitelli, S. Longo, P. Minelli</i>                                                                                                                           |     |
| Molecular Simulation of Reaction and Adsorption in Nanochemical<br>Devices: Increase of Reaction Conversion by Separation of a Product<br>from the Reaction Mixture . . . . . | 392 |
| <i>William R. Smith, Martin Lísal</i>                                                                                                                                         |     |
| Quantum Generalization of Molecular Dynamics Method.<br>Wigner Approach . . . . .                                                                                             | 402 |
| <i>V. Filinov, M. Bonitz, V. Fortov, P. Levashov</i>                                                                                                                          |     |
| C <sub>6</sub> NH <sub>6</sub> <sup>+</sup> Ions as Intermediates in the Reaction between<br>Benzene and N <sup>+</sup> Ions . . . . .                                        | 412 |
| <i>Marco Di Stefano, Marzio Rosi, Antonio Sgamellotti</i>                                                                                                                     |     |
| Towards a Full Dimensional Exact Quantum Calculation<br>of the Li + HF Reactive Cross Section . . . . .                                                                       | 422 |
| <i>Antonio Laganà, Stefano Crocchianti, Valentina Piermarini</i>                                                                                                              |     |
| Conformations of 1,2,4,6-Tetrathiepane . . . . .                                                                                                                              | 432 |
| <i>Issa Yavari, Arash Jabbari, Shahram Moradi</i>                                                                                                                             |     |
| Fine Grain Parallelization of a Discrete Variable Wavepacket<br>Calculation Using ASSIST-CL . . . . .                                                                         | 437 |
| <i>Stefano Gregori, Sergio Tasso, Antonio Laganà</i>                                                                                                                          |     |

## Numerical Models in Biomechanics Session

|                                                                                                                                      |     |
|--------------------------------------------------------------------------------------------------------------------------------------|-----|
| On the Solution of Contact Problems with Visco-Plastic Friction<br>in the Bingham Rheology: An Application in Biomechanics . . . . . | 445 |
| <i>Jiří Nedoma</i>                                                                                                                   |     |
| On the Stress-Strain Analysis of the Knee Replacement . . . . .                                                                      | 456 |
| <i>J. Daněk, F. Denk, I. Hlaváček, Jiří Nedoma, J. Stehlík,<br/>P. Vavřík</i>                                                        |     |
| Musculoskeletal Modeling of Lumbar Spine under Follower Loads . . . . .                                                              | 467 |
| <i>Yoon Hyuk Kim, Kyungsoo Kim</i>                                                                                                   |     |
| Computational Approach to Optimal Transport Network Construction<br>in Biomechanics . . . . .                                        | 476 |
| <i>Natalya Kizilova</i>                                                                                                              |     |
| Encoding Image Based on Retinal Ganglion Cell . . . . .                                                                              | 486 |
| <i>Sung-Kwan Je, Eui-Young Cha, Jae-Hyun Cho</i>                                                                                     |     |

## Scientific Computing Environments (SCE's) for Imaging in Science Session

|                                                                                                                                       |     |
|---------------------------------------------------------------------------------------------------------------------------------------|-----|
| A Simple Data Analysis Method for Kinetic Parameters Estimation<br>from Renal Measurements with a Three-Headed SPECT System . . . . . | 495 |
| <i>Eleonora Vanzi, Andreas Robert Formiconi</i>                                                                                       |     |
| Integrating Medical Imaging into a Grid Based<br>Computing Infrastructure . . . . .                                                   | 505 |
| <i>Paola Bonetto, Mario Guarracino, Fabrizio Inguglia</i>                                                                             |     |
| Integrating Scientific Software Libraries in Problem Solving<br>Environments: A Case Study with ScaLAPACK . . . . .                   | 515 |
| <i>L. D'Amore, Mario R. Guarracino, G. Laccetti, A. Murli</i>                                                                         |     |
| Parallel/Distributed Film Line Scratch Restoration by<br>Fusion Techniques . . . . .                                                  | 525 |
| <i>G. Laccetti, L. Maddalena, A. Petrosino</i>                                                                                        |     |
| An Interactive Distributed Environment for Digital Film Restoration . . . .                                                           | 536 |
| <i>F. Collura, A. Machì, F. Nicotra</i>                                                                                               |     |

## Computer Graphics and Geometric Modeling Workshop (TSCG 2004)

|                             |     |
|-----------------------------|-----|
| On Triangulations . . . . . | 544 |
| <i>Ivana Kolingerová</i>    |     |

|                                                                                                          |     |
|----------------------------------------------------------------------------------------------------------|-----|
| Probability Distribution of Op-Codes in Edgebreaker .....                                                | 554 |
| <i>Deok-Soo Kim, Cheol-Hyung Cho, Youngsong Cho, Chang Wook Kang,<br/>Hyun Chan Lee, Joon Young Park</i> |     |
| Polyhedron Splitting Algorithm for 3D Layer Generation .....                                             | 564 |
| <i>Jaeho Lee, Joon Young Park, Deok-Soo Kim, Hyun Chan Lee</i>                                           |     |
| Synthesis of Mechanical Structures Using a Genetic Algorithm .....                                       | 573 |
| <i>In-Ho Lee, Joo-Heon Cha, Jay-Jung Kim, M.-W. Park</i>                                                 |     |
| Optimal Direction for Monotone Chain Decomposition .....                                                 | 583 |
| <i>Hayong Shin, Deok-Soo Kim</i>                                                                         |     |
| GTVIS: Fast and Efficient Rendering System for<br>Real-Time Terrain Visualization .....                  | 592 |
| <i>Russel A. Apu, Marina L. Gavrilova</i>                                                                |     |
| Target Data Projection in Multivariate Visualization<br>– An Application to Mine Planning .....          | 603 |
| <i>Leonardo Soto, Ricardo Sánchez, Jorge Amaya</i>                                                       |     |
| Parametric Freehand Sketches .....                                                                       | 613 |
| <i>Ferran Naya, Manuel Contero, Nuria Aleixos, Joaquim Jorge</i>                                         |     |
| Variable Level of Detail Strips .....                                                                    | 622 |
| <i>J.F. Ramos, M. Chover</i>                                                                             |     |
| Bézier Solutions of the Wave Equation .....                                                              | 631 |
| <i>J.V. Beltran, J. Monterde</i>                                                                         |     |
| Matlab Toolbox for a First Computer Graphics Course for Engineers ....                                   | 641 |
| <i>Akemi Gálvez, A. Iglesias, César Otero, Reinaldo Togores</i>                                          |     |
| A Differential Method for Parametric Surface Intersection .....                                          | 651 |
| <i>A. Gálvez, J. Puig-Pey, A. Iglesias</i>                                                               |     |
| A Comparison Study of Metaheuristic Techniques for Providing QoS<br>to Avatars in DVE Systems .....      | 661 |
| <i>P. Morillo, J.M. Orduña, Marcos Fernández, J. Duato</i>                                               |     |
| Visualization of Large Terrain Using Non-restricted<br>Quadtree Triangulations .....                     | 671 |
| <i>Mariano Pérez, Ricardo Olanda, Marcos Fernández</i>                                                   |     |
| Boundary Filtering in Surface Reconstruction .....                                                       | 682 |
| <i>Michal Varnuška, Ivana Kolingerová</i>                                                                |     |
| Image Coherence Based Adaptive Sampling for Image Synthesis .....                                        | 693 |
| <i>Qing Xu, Roberto Brunelli, Stefano Messelodi, Jiawan Zhang,<br/>Mingchu Li</i>                        |     |

|                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------|-----|
| A Comparison of Multiresolution Modelling in<br>Real-Time Terrain Visualisation .....                      | 703 |
| <i>C. Rebollo, I. Remolar, M. Chover, J.F. Ramos</i>                                                       |     |
| Photo-realistic 3D Head Modeling Using Multi-view Images .....                                             | 713 |
| <i>Tong-Yee Lee, Ping-Hsien Lin, Tz-Hsien Yang</i>                                                         |     |
| Texture Mapping on Arbitrary 3D Surfaces .....                                                             | 721 |
| <i>Tong-Yee Lee, Shaur-Wei Yan</i>                                                                         |     |
| Segmentation-Based Interpolation of 3D Medical Images .....                                                | 731 |
| <i>Zhigeng Pan, Xuesong Yin, Guohua Wu</i>                                                                 |     |
| A Bandwidth Reduction Scheme for 3D Texture-Based Volume<br>Rendering on Commodity Graphics Hardware ..... | 741 |
| <i>Won-Jong Lee, Woo-Chan Park, Jung-Woo Kim, Tack-Don Han,<br/>Sung-Bong Yang, Francis Neelamkavil</i>    |     |
| An Efficient Image-Based 3D Reconstruction Algorithm for Plants .....                                      | 751 |
| <i>Zhigeng Pan, Weixi Hu, Xinyu Guo, Chunjiang Zhao</i>                                                    |     |
| Where the Truth Lies (in Automatic Theorem Proving in<br>Elementary Geometry) .....                        | 761 |
| <i>T. Recio, F. Botana</i>                                                                                 |     |
| Helical Curves on Surfaces for Computer-Aided Geometric Design<br>and Manufacturing .....                  | 771 |
| <i>J. Puig-Pey, Akemi Gálvez, A. Iglesias</i>                                                              |     |
| An Application of Computer Graphics for Landscape<br>Impact Assessment .....                               | 779 |
| <i>César Otero, Viola Bruschi, Antonio Cendrero, Akemi Gálvez,<br/>Miguel Lázaro, Reinaldo Togo</i>        |     |
| Fast Stereo Matching Using Block Similarity .....                                                          | 789 |
| <i>Han-Suh Koo, Chang-Sung Jeong</i>                                                                       |     |
| View Morphing Based on Auto-calibration for Generation of<br>In-between Views .....                        | 799 |
| <i>Jin-Young Song, Yong-Ho Hwang, Hyun-Ki Hong</i>                                                         |     |
| <b>Virtual Reality in Scientific Applications and Learning<br/>(VRSAL 2004) Workshop</b>                   |     |
| Immersive Displays Based on a Multi-channel PC Clustered System .....                                      | 809 |
| <i>Hunjoo Lee, Kijong Byun</i>                                                                             |     |
| Virtual Reality Technology Applied to Simulate<br>Construction Processes .....                             | 817 |
| <i>Alcnia Zita Sampaio, Pedro Gameiro Henriques, Pedro Studer</i>                                         |     |

|                                                                                                         |     |
|---------------------------------------------------------------------------------------------------------|-----|
| Virtual Reality Applied to Molecular Sciences .....                                                     | 827 |
| <i>Oswaldo Gervasi, Antonio Riganelli, Antonio Laganà</i>                                               |     |
| Design and Implementation of an Online 3D Game Engine .....                                             | 837 |
| <i>Hunjoo Lee, Taejoon Park</i>                                                                         |     |
| Dynamically Changing Road Networks – Modelling and<br>Visualization in Real Time .....                  | 843 |
| <i>Christian Mark, Armin Kaußner, Martin Grein, Hartmut Noltemeier</i>                                  |     |
| EoL: A Web-Based Distance Assessment System .....                                                       | 854 |
| <i>Oswaldo Gervasi, Antonio Laganà</i>                                                                  |     |
| Discovery Knowledge of User Preferences: Ontologies in Fashion<br>Design Recommender Agent System ..... | 863 |
| <i>Kyung-Yong Jung, Young-Joo Na, Dong-Hyun Park, Jung-Hyun Lee</i>                                     |     |
| When an Ivy League University Puts Its Courses Online, Who's<br>Going to Need a Local University? ..... | 873 |
| <i>Matthew C.F. Lau, Rebecca B.N. Tan</i>                                                               |     |

## Web-Based Learning Session

|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
| Threads in an Undergraduate Course: A Java Example Illuminating<br>Different Multithreading Approaches ..... | 882 |
| <i>H. Martin Bückner, Bruno Lang, Hans-Joachim Pflug,<br/>Andre Vehreschild</i>                              |     |
| A Comparison of Web Searching Strategies According to Cognitive<br>Styles of Elementary Students .....       | 892 |
| <i>Hanil Kim, Miso Yun, Pankoo Kim</i>                                                                       |     |
| The Development and Application of a Web-Based Information<br>Communication Ethics Education System .....    | 902 |
| <i>Suk-Ki Hong, Woochun Jun</i>                                                                              |     |
| An Interaction Model for Web-Based Learning: Cooperative Project .....                                       | 913 |
| <i>Eunhee Choi, Woochun Jun, Suk-Ki Hong, Young-Cheol Bang</i>                                               |     |
| Observing Standards for Web-Based Learning from the Web .....                                                | 922 |
| <i>Luis Anido, Judith Rodríguez, Manuel Caeiro, Juan Santos</i>                                              |     |

## Matrix Approximations with Applications to Science, Engineering, and Computer Science Workshop

|                                                                                  |     |
|----------------------------------------------------------------------------------|-----|
| On Computing the Spectral Decomposition of<br>Symmetric Arrowhead Matrices ..... | 932 |
| <i>Fasma Diele, Nicola Mastronardi, Marc Van Barel, Ellen Van Camp</i>           |     |

|                                                                                                                             |      |
|-----------------------------------------------------------------------------------------------------------------------------|------|
| Relevance Feedback for Content-Based Image Retrieval Using<br>Proximal Support Vector Machine.....                          | 942  |
| <i>YoungSik Choi, JiSung Noh</i>                                                                                            |      |
| Orthonormality-Constrained INDSCAL with Nonnegative Saliences .....                                                         | 952  |
| <i>Nikolay T. Trendafilov</i>                                                                                               |      |
| Optical Flow Estimation via Neural Singular Value<br>Decomposition Learning .....                                           | 961  |
| <i>Simone Fiori, Nicoletta Del Buono, Tiziano Politi</i>                                                                    |      |
| Numerical Methods Based on Gaussian Quadrature and Continuous<br>Runge-Kutta Integration for Optimal Control Problems ..... | 971  |
| <i>Fasma Diele, Carmela Marangi, Stefania Ragni</i>                                                                         |      |
| Graph Adjacency Matrix Associated with a Data Partition .....                                                               | 979  |
| <i>Giuseppe Acciani, Girolamo Fornarelli, Luciano Liturri</i>                                                               |      |
| A Continuous Technique for the Weighted Low-Rank<br>Approximation Problem .....                                             | 988  |
| <i>Nicoletta Del Buono, Tiziano Politi</i>                                                                                  |      |
| <b>Spatial Statistics and Geographical Information Systems:<br/>Algorithms and Applications</b>                             |      |
| A Spatial Multivariate Approach to the Analysis of Accessibility<br>to Health Care Facilities in Canada .....               | 998  |
| <i>Stefania Bertazzon</i>                                                                                                   |      |
| Density Analysis on Large Geographical Databases. Search for an<br>Index of Centrality of Services at Urban Scale .....     | 1009 |
| <i>Giuseppe Borruso, Gabriella Schoier</i>                                                                                  |      |
| An Exploratory Spatial Data Analysis (ESDA) Toolkit for the<br>Analysis of Activity/Travel Data .....                       | 1016 |
| <i>Ronald N. Buliung, Pavlos S. Kanaroglou</i>                                                                              |      |
| Using Formal Ontology for Integrated Spatial Data Mining .....                                                              | 1026 |
| <i>Sungsoon Hwang</i>                                                                                                       |      |
| G.I.S. and Fuzzy Sets for the Land Suitability Analysis .....                                                               | 1036 |
| <i>Beniamino Murgante, Giuseppe Las Casas</i>                                                                               |      |
| Intelligent Gis and Retail Location Dynamics: A Multi Agent<br>System Integrated with ArcGis .....                          | 1046 |
| <i>S. Lombardo, M. Petri, D. Zotta</i>                                                                                      |      |
| ArcObjects Development in Zone Design Using<br>Visual Basic for Applications .....                                          | 1057 |
| <i>Sergio Palladini</i>                                                                                                     |      |

|                                                                                                                                                                                                                                                  |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Searching for 2D Spatial Network Holes . . . . .                                                                                                                                                                                                 | 1069        |
| <i>Femke Reitsma, Shane Engel</i>                                                                                                                                                                                                                |             |
| Extension of Geography Markup Language (GML) for Mobile and<br>Location-Based Applications . . . . .                                                                                                                                             | 1079        |
| <i>Young Soo Ahn, Soon-Young Park, Sang Bong Yoo, Hae-Young Bae</i>                                                                                                                                                                              |             |
| A Clustering Method for Large Spatial Databases . . . . .                                                                                                                                                                                        | 1089        |
| <i>Gabriella Schoier, Giuseppe Borruso</i>                                                                                                                                                                                                       |             |
| GeoSurveillance: Software for Monitoring Change in<br>Geographic Patterns . . . . .                                                                                                                                                              | 1096        |
| <i>Peter Rogerson, Ikuho Yamada</i>                                                                                                                                                                                                              |             |
| From Axial Maps to Mark Point Parameter Analysis (Ma.P.P.A.) –<br>A GIS Implemented Method to Automate Configurational Analysis . . . . .                                                                                                        | 1107        |
| <i>V. Cutini, M. Petri, A. Santucci</i>                                                                                                                                                                                                          |             |
| Computing Foraging Paths for Shore-Birds Using Fractal Dimensions<br>and Pecking Success from Footprint Surveys on Mudflats:<br>An Application for Red-Necked Stints in the Moroshechnaya<br>River Estuary, Kamchatka-Russian Far East . . . . . | 1117        |
| <i>Falk Huettmann</i>                                                                                                                                                                                                                            |             |
| <b>Author Index . . . . .</b>                                                                                                                                                                                                                    | <b>1129</b> |

# Table of Contents – Part IV

## Track on Numerical Methods and Algorithms

|                                                                                                                                 |    |
|---------------------------------------------------------------------------------------------------------------------------------|----|
| New Techniques in Designing Finite Difference Domain<br>Decomposition Algorithm for the Heat Equation . . . . .                 | 1  |
| <i>Weidong Shen, Shulin Yang</i>                                                                                                |    |
| A Fast Construction Algorithm for the Incidence Matrices<br>of a Class of Symmetric Balanced Incomplete Block Designs . . . . . | 11 |
| <i>Ju-Hyun Lee, Sungkwon Kang, Hoo-Kyun Choi</i>                                                                                |    |
| ILUTP_Mem: A Space-Efficient Incomplete LU Preconditioner . . . . .                                                             | 20 |
| <i>Tzu-Yi Chen</i>                                                                                                              |    |
| Optimal Gait Control for a Biped Locomotion<br>Using Genetic Algorithm . . . . .                                                | 29 |
| <i>Jin Geol Kim, SangHo Choi, Ki heon Park</i>                                                                                  |    |
| A Bayes Algorithm for the Multitask Pattern Recognition Problem<br>– Direct and Decomposed Independent Approaches . . . . .     | 39 |
| <i>Edward Puchala</i>                                                                                                           |    |
| Energy Efficient Routing with Power Management<br>to Increase Network Lifetime in Sensor Networks . . . . .                     | 46 |
| <i>Hyung-Wook Yoon, Bo-Hyeong Lee, Tae-Jin Lee, Min Young Chung</i>                                                             |    |
| New Parameter for Balancing Two Independent Measures<br>in Routing Path . . . . .                                               | 56 |
| <i>Moonseong Kim, Young-Cheol Bang, Hyunseung Choo</i>                                                                          |    |
| A Study on Efficient Key Distribution and Renewal<br>in Broadcast Encryption . . . . .                                          | 66 |
| <i>Deok-Gyu Lee, Im-Yeong Lee</i>                                                                                               |    |

## Track on Parallel and Distributed Computing

|                                                                                                                             |    |
|-----------------------------------------------------------------------------------------------------------------------------|----|
| Self-Tuning Mechanism for Genetic Algorithms Parameters,<br>an Application to Data-Object Allocation in the Web . . . . .   | 77 |
| <i>Joaquín Pérez, Rodolfo A. Pazos, Juan Frausto,<br/>Guillermo Rodríguez, Laura Cruz, Graciela Mora,<br/>Héctor Fraire</i> |    |
| Digit-Serial $AB^2$ Systolic Array for Division in $GF(2^m)$ . . . . .                                                      | 87 |
| <i>Nam-Yeun Kim, Kee-Young Yoo</i>                                                                                          |    |

|                                                                                                                                                          |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Design and Experiment of a Communication-Aware Parallel Quicksort<br>with Weighted Partition of Processors . . . . .                                     | 97  |
| <i>Sangman Moh, Chansu Yu, Dongsoo Han</i>                                                                                                               |     |
| A Linear Systolic Array for Multiplication in $GF(2^m)$<br>for High Speed Cryptographic Processors . . . . .                                             | 106 |
| <i>Soonhak Kwon, Chang Hoon Kim, Chun Pyo Hong</i>                                                                                                       |     |
| Price Driven Market Mechanism for Computational<br>Grid Resource Allocation . . . . .                                                                    | 117 |
| <i>Chunlin Li, Zhengding Lu, Layuan Li</i>                                                                                                               |     |
| A Novel LMS Method for Real-Time Network Traffic Prediction . . . . .                                                                                    | 127 |
| <i>Yang Xinyu, Zeng Ming, Zhao Rui, Shi Yi</i>                                                                                                           |     |
| Dynamic Configuration between Proxy Caches within an Intranet . . . . .                                                                                  | 137 |
| <i>Víctor J. Sosa Sosa, Juan G. González Serna, Xochitl Landa Miguez,<br/>Francisco Verduzco Medina, Manuel A. Valdés Marrero</i>                        |     |
| A Market-Based Scheduler for JXTA-Based Peer-to-Peer<br>Computing System . . . . .                                                                       | 147 |
| <i>Tan Tien Ping, Gian Chand Sodhy, Chan Huah Yong, Fazilah Haron,<br/>Rajkumar Buyya</i>                                                                |     |
| Reducing on the Number of Testing Items in the Branches<br>of Decision Trees . . . . .                                                                   | 158 |
| <i>Hyontai Sug</i>                                                                                                                                       |     |
| CORBA-Based, Multi-threaded Distributed Simulation of<br>Hierarchical DEVS Models: Transforming Model Structure<br>into a Non-hierarchical One . . . . . | 167 |
| <i>Ki-Hyung Kim, Won-Seok Kang</i>                                                                                                                       |     |
| The Effects of Network Topology on Epidemic Algorithms . . . . .                                                                                         | 177 |
| <i>Jesús Acosta-Elías, Ulises Pineda, Jose Martin Luna-Rivera,<br/>Enrique Stevens-Navarro, Isaac Campos-Canton,<br/>Leandro Navarro-Moldes</i>          |     |
| A Systematic Database Summary Generation Using<br>the Distributed Query Discovery System . . . . .                                                       | 185 |
| <i>Tae W. Ryu, Christoph F. Eick</i>                                                                                                                     |     |
| Parallel Montgomery Multiplication and Squaring over $GF(2^m)$<br>Based on Cellular Automata . . . . .                                                   | 196 |
| <i>Kyo Min Ku, Kyeong Ju Ha, Wi Hyun Yoo, Kee Young Yoo</i>                                                                                              |     |
| A Decision Tree Algorithm for Distributed Data Mining:<br>Towards Network Intrusion Detection . . . . .                                                  | 206 |
| <i>Sung Baik, Jerzy Bala</i>                                                                                                                             |     |

|                                                                                               |     |
|-----------------------------------------------------------------------------------------------|-----|
| Maximizing Parallelism for Nested Loops<br>with Non-uniform Dependences .....                 | 213 |
| <i>Sam Jin Jeong</i>                                                                          |     |
| Fair Exchange to Achieve Atomicity in Payments of High Amounts<br>Using Electronic Cash ..... | 223 |
| <i>Magdalena Payeras-Capella, Josep Lluís Ferrer-Gomila,<br/>Llorenç Huguet-Rotger</i>        |     |
| Gossip Based Causal Order Broadcast Algorithm .....                                           | 233 |
| <i>ChaYoung Kim, JinHo Ahn, ChongSun Hwang</i>                                                |     |

## Track on Signal Processing

|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
| Intermediate View Synthesis from Stereoscopic<br>Videoconference Images .....                                | 243 |
| <i>Chaohui Lu, Ping An, Zhaoyang Zhang</i>                                                                   |     |
| Extract Shape from Clipart Image Using Modified Chain Code –<br>Rectangle Representation .....               | 251 |
| <i>Chang-Gyu Choi, Yongseok Chang, Jung-Hyun Cho, Sung-Ho Kim</i>                                            |     |
| Control Messaging Channel for Distributed Computer Systems .....                                             | 261 |
| <i>Bogusław Cyganek, Jan Borgosz</i>                                                                         |     |
| Scene-Based Video Watermarking for Broadcasting Systems .....                                                | 271 |
| <i>Uk-Chul Choi, Yoon-Hee Choi, Dae-Chul Kim, Tae-Sun Choi</i>                                               |     |
| Distortion-Free of General Information with Edge Enhanced Error<br>Diffusion Halftoning .....                | 281 |
| <i>Byong-Won Hwang, Tae-Ha Kang, Tae-Seung Lee</i>                                                           |     |
| Enhanced Video Coding with Error Resilience Based<br>on Macroblock Data Manipulation .....                   | 291 |
| <i>Tanzeem Muzaffar, Tae-Sun Choi</i>                                                                        |     |
| Filtering of Colored Noise for Signal Enhancement .....                                                      | 301 |
| <i>Myung Eui Lee, Pyung Soo Kim</i>                                                                          |     |
| Model-Based Human Motion Tracking and Behavior Recognition<br>Using Hierarchical Finite State Automata ..... | 311 |
| <i>Jihun Park, Sunghun Park, J.K. Aggarwal</i>                                                               |     |
| Effective Digital Watermarking Algorithm by Contour Detection .....                                          | 321 |
| <i>Won-Hyuck Choi, Hye-jin Shim, Jung-Sun Kim</i>                                                            |     |
| New Packetization Method for Error Resilient Video Communications ...                                        | 329 |
| <i>Kook-yeol Yoo</i>                                                                                         |     |

|                                                                                                                                   |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| A Video Mosaicking Technique with Self Scene Segmentation<br>for Video Indexing .....                                             | 338 |
| <i>Yoon-Hee Choi, Yeong Kyeong Seong, Joo-Young Kim,<br/>Tae-Sun Choi</i>                                                         |     |
| Real-Time Video Watermarking for MPEG Streams .....                                                                               | 348 |
| <i>Kyung-Pyo Kang, Yoon-Hee Choi, Tae-Sun Choi</i>                                                                                |     |
| A TCP-Friendly Congestion Control Scheme Using Hybrid Approach<br>for Reducing Transmission Delay of Real-Time Video Stream ..... | 359 |
| <i>Jong-Un Yang, Jeong-Hyun Cho, Sang-Hyun Bae, In-Ho Ra</i>                                                                      |     |
| Object Boundary Edge Selection Using Level-of-Detail Canny Edges .....                                                            | 369 |
| <i>Jihun Park, Sunghun Park</i>                                                                                                   |     |
| Inverse Dithering through IMAP Estimation .....                                                                                   | 379 |
| <i>Monia Discepoli, Ivan Gerace</i>                                                                                               |     |
| A Study on Neural Networks Using Taylor Series Expansion<br>of Sigmoid Activation Function .....                                  | 389 |
| <i>Fevzullah Temurtas, Ali Gulbag, Nejat Yumusak</i>                                                                              |     |
| A Study on Neural Networks with Tapped Time Delays:<br>Gas Concentration Estimation .....                                         | 398 |
| <i>Fevzullah Temurtas, Cihat Tasaltin, Hasan Temurtas,<br/>Nejat Yumusak, Zafer Ziya Ozturk</i>                                   |     |
| Speech Emotion Recognition and Intensity Estimation .....                                                                         | 406 |
| <i>Mingli Song, Chun Chen, Jiajun Bu, Mingyu You</i>                                                                              |     |
| Speech Hiding Based on Auditory Wavelet .....                                                                                     | 414 |
| <i>Liran Shen, Xueyao Li, Huiqiang Wang, Rubo Zhang</i>                                                                           |     |
| Automatic Selecting Coefficient for Semi-blind Watermarking .....                                                                 | 421 |
| <i>Sung-kwan Je, Jae-Hyun Cho, Eui-young Cha</i>                                                                                  |     |

## Track on Telecommunications

|                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------|-----|
| Network Probabilistic Connectivity: Optimal Structures .....                                           | 431 |
| <i>Olga K. Rodionova, Alexey S. Rodionov, Hyunseung Choo</i>                                           |     |
| Differentiated Web Service System through Kernel-Level Realtime<br>Scheduling and Load Balancing ..... | 441 |
| <i>Myung-Sub Lee, Chang-Hyeon Park, Young-Ho Sohn</i>                                                  |     |
| Adaptive CBT/Anycast Routing Algorithm<br>for Multimedia Traffic Overload .....                        | 451 |
| <i>Kwnag-Jae Lee, Won-Hyuck Choi, Jung-Sun Kim</i>                                                     |     |

|                                                                                      |     |
|--------------------------------------------------------------------------------------|-----|
| Achieving Fair New Call CAC for Heterogeneous Services<br>in Wireless Networks ..... | 460 |
| <i>SungKee Noh, YoungHa Hwang, KiIl Kim, SangHa Kim</i>                              |     |

## Track on Visualization and Virtual and Augmented Reality

|                                                                             |     |
|-----------------------------------------------------------------------------|-----|
| Application of MCDF Operations<br>in Digital Terrain Model Processing ..... | 471 |
| <i>Zhiqiang Ma, Anthony Watson, Wanwu Guo</i>                               |     |
| Visual Mining of Market Basket Association Rules .....                      | 479 |
| <i>Kesaraporn Techapichetvanich, Amitava Datta</i>                          |     |
| Visualizing Predictive Models in Decision Tree Generation .....             | 489 |
| <i>Sung Baik, Jerzy Bala, Sung Ahn</i>                                      |     |

## Track on Software Engineering

|                                                                                                               |     |
|---------------------------------------------------------------------------------------------------------------|-----|
| A Model for Use Case Priorization Using Criticality Analysis .....                                            | 496 |
| <i>José Daniel García, Jesús Carretero, José María Pérez,<br/>Félix García</i>                                |     |
| Using a Goal-Refinement Tree to Obtain and Refine<br>Organizational Requirements .....                        | 506 |
| <i>Hugo Estrada, Oscar Pastor, Alicia Martínez, Jose Torres-Jimenez</i>                                       |     |
| Using C++ Functors with Legacy C Libraries .....                                                              | 514 |
| <i>Jan Broeckhove, Kurt Vanmechelen</i>                                                                       |     |
| Debugging of Java Programs Using HDT with Program Slicing .....                                               | 524 |
| <i>Hoon-Joon Kouh, Ki-Tae Kim, Sun-Moon Jo, Weon-Hee Yoo</i>                                                  |     |
| Frameworks as Web Services .....                                                                              | 534 |
| <i>Olivia G. Fragoso Diaz, René Santaolaya Salgado,<br/>Isaac M. Vásquez Mendez, Manuel A. Valdés Marrero</i> |     |
| Exception Rules Mining Based on Negative Association Rules .....                                              | 543 |
| <i>Olena Daly, David Taniar</i>                                                                               |     |
| A Reduced Codification for the Logical Representation<br>of Job Shop Scheduling Problems .....                | 553 |
| <i>Juan Frausto-Solis, Marco Antonio Cruz-Chavez</i>                                                          |     |
| Action Reasoning with Uncertain Resources .....                                                               | 563 |
| <i>Alfredo Milani, Valentina Poggioni</i>                                                                     |     |

## Track on Security Engineering

|                                                              |     |
|--------------------------------------------------------------|-----|
| Software Rejuvenation Approach to Security Engineering ..... | 574 |
| <i>Khin Mi Mi Aung, Jong Sou Park</i>                        |     |

|                                                                                                                      |     |
|----------------------------------------------------------------------------------------------------------------------|-----|
| A Rollback Recovery Algorithm for Intrusion Tolerant Intrusion<br>Detection System .....                             | 584 |
| <i>Myung-Kyu Yi, Chong-Sun Hwang</i>                                                                                 |     |
| Design and Implementation of High-Performance<br>Intrusion Detection System.....                                     | 594 |
| <i>Byoung-Koo Kim, Ik-Kyun Kim, Ki-Young Kim,<br/>Jong-Soo Jang</i>                                                  |     |
| An Authenticated Key Agreement Protocol Resistant<br>to a Dictionary Attack.....                                     | 603 |
| <i>Eun-Kyung Ryu, Kee-Won Kim, Kee-Young Yoo</i>                                                                     |     |
| A Study on Marking Bit Size for Path Identification Method:<br>Deploying the Pi Filter at the End Host .....         | 611 |
| <i>Soon-Dong Kim, Man-Pyo Hong, Dong-Kyoo Kim</i>                                                                    |     |
| Efficient Password-Based Authenticated Key Agreement Protocol .....                                                  | 617 |
| <i>Sung-Woon Lee, Woo-Hun Kim, Hyun-Sung Kim,<br/>Kee-Young Yoo</i>                                                  |     |
| A Two-Public Key Scheme Omitting Collision Problem<br>in Digital Signature .....                                     | 627 |
| <i>Sung Keun Song, Hee Yong Youn, Chang Won Park</i>                                                                 |     |
| A Novel Data Encryption and Distribution Approach<br>for High Security and Availability Using LU Decomposition ..... | 637 |
| <i>Sung Jin Choi, Hee Yong Youn</i>                                                                                  |     |
| An Efficient Conference Key Distribution System Based<br>on Symmetric Balanced Incomplete Block Design .....         | 647 |
| <i>Youngjoo Cho, Changkyun Chi, Ilyong Chung</i>                                                                     |     |
| Multiparty Key Agreement Protocol with Cheater Identification<br>Based on Shamir Secret Sharing .....                | 655 |
| <i>Kee-Young Yoo, Eun-Kyung Ryu, Jae-Yuel Im</i>                                                                     |     |
| Security of Shen et al.'s Timestamp-Based Password<br>Authentication Scheme .....                                    | 665 |
| <i>Eun-Jun Yoon, Eun-Kyung Ryu, Kee-Young Yoo</i>                                                                    |     |
| ID-Based Authenticated Multiple-Key Agreement Protocol<br>from Pairings.....                                         | 672 |
| <i>Kee-Won Kim, Eun-Kyung Ryu, Kee-Young Yoo</i>                                                                     |     |
| A Fine-Grained Taxonomy of Security Vulnerability<br>in Active Network Environments .....                            | 681 |
| <i>Jin S. Yang, Young J. Han, Dong S. Kim, Beom H. Chang,<br/>Tai M. Chung, Jung C. Na</i>                           |     |

|                                                                                                                                                    |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| A Secure and Flexible Multi-signcryption Scheme .....                                                                                              | 689 |
| <i>Seung-Hyun Seo, Sang-Ho Lee</i>                                                                                                                 |     |
| User Authentication Protocol Based on Human Memorable Password<br>and Using RSA .....                                                              | 698 |
| <i>IkSu Park, SeungBae Park, ByeongKyun Oh</i>                                                                                                     |     |
| Effective Packet Marking Approach to Defend against DDoS Attack .....                                                                              | 708 |
| <i>Heeran Lim, Manpyo Hong</i>                                                                                                                     |     |
| A Relationship between Security Engineering and Security Evaluation ...                                                                            | 717 |
| <i>Tai-hoon Kim, Haeng-kon Kim</i>                                                                                                                 |     |
| A Relationship of Configuration Management Requirements<br>between KISEC and ISO/IEC 15408 .....                                                   | 725 |
| <i>Hae-ki Lee, Jae-sun Shim, Seung Lee, Jong-bu Kim</i>                                                                                            |     |
| <b>Track on Information Systems and<br/>Information Technology</b>                                                                                 |     |
| Term-Specific Language Modeling Approach to Text Categorization .....                                                                              | 735 |
| <i>Seung-Shik Kang</i>                                                                                                                             |     |
| Context-Based Proofreading of Structured Documents .....                                                                                           | 743 |
| <i>Won-Sung Sohn, Teuk-Seob Song, Jae-Kyung Kim, Yoon-Chul Choy,<br/>Kyong-Ho Lee, Sung-Bong Yang, Francis Neelamkavil</i>                         |     |
| Implementation of New CTI Service Platform Using Voice XML .....                                                                                   | 754 |
| <i>Jeong-Hoon Shin, Kwang-Seok Hong, Sung-Kyun Eom</i>                                                                                             |     |
| Storing Together the Structural Information of XML Documents<br>in Relational Databases .....                                                      | 763 |
| <i>Min Jin, Byung-Joo Shin</i>                                                                                                                     |     |
| Annotation Repositioning Methods in the XML Documents:<br>Context-Based Approach .....                                                             | 772 |
| <i>Won-Sung Sohn, Myeong-Cheol Ko, Hak-Keun Kim, Soon-Bum Lim,<br/>Yoon-Chul Choy</i>                                                              |     |
| Isolating and Specifying the Relevant Information of an<br>Organizational Model: A Process Oriented<br>Towards Information System Generation ..... | 783 |
| <i>Alicia Martínez, Oscar Pastor, Hugo Estrada</i>                                                                                                 |     |
| A Weighted Fuzzy Min-Max Neural Network for Pattern<br>Classification and Feature Extraction .....                                                 | 791 |
| <i>Ho J. Kim, Tae W. Ryu, Thai T. Nguyen, Joon S. Lim,<br/>Sudhir Gupta</i>                                                                        |     |
| The eSAIDA Stream Authentication Scheme .....                                                                                                      | 799 |
| <i>Yongsu Park, Yookun Cho</i>                                                                                                                     |     |

|                                                                                                                                          |     |
|------------------------------------------------------------------------------------------------------------------------------------------|-----|
| An Object-Oriented Metric to Measure the Degree of Dependency<br>Due to Unused Interfaces .....                                          | 808 |
| <i>René Santaolaya Salgado, Olivia G. Fragoso Diaz,<br/>Manuel A. Valdés Marrero, Isaac M. Vásquez Mendez,<br/>Sheila L. Delfín Lara</i> |     |

|                                                         |     |
|---------------------------------------------------------|-----|
| End-to-End QoS Management for VoIP Using DiffServ ..... | 818 |
| <i>Eun-Ju Ha, Byeong-Soo Yun</i>                        |     |

|                                                                       |     |
|-----------------------------------------------------------------------|-----|
| Multi-modal Biometrics System Using Face and Signature.....           | 828 |
| <i>Dae Jong Lee, Keun Chang Kwak, Jun Oh Min,<br/>Myung Geun Chun</i> |     |

## Track on Information Retrieval

|                                                                              |     |
|------------------------------------------------------------------------------|-----|
| Using 3D Spatial Relationships for Image Retrieval<br>by XML Annotation..... | 838 |
| <i>SooCheol Lee, EenJun Hwang, YangKyo Lee</i>                               |     |

|                                                                      |     |
|----------------------------------------------------------------------|-----|
| Association Inlining for Mapping XML DTDs to Relational Tables ..... | 849 |
| <i>Byung-Joo Shin, Min Jin</i>                                       |     |

|                                                                                         |     |
|-----------------------------------------------------------------------------------------|-----|
| XCRAW: A Content and Annotation-Based Multimedia Indexing<br>and Retrieval System ..... | 859 |
| <i>SeungMin Rho, SooCheol Lee, EenJun Hwang, YangKyo Lee</i>                            |     |

|                                                                      |     |
|----------------------------------------------------------------------|-----|
| An Efficient Cache Conscious Multi-dimensional Index Structure ..... | 869 |
| <i>Jeong Min Shim, Seok Il Song, Young Soo Min, Jae Soo Yoo</i>      |     |

## Track on Image Processing

|                                                                                                               |     |
|---------------------------------------------------------------------------------------------------------------|-----|
| Tracking of Moving Objects Using Morphological Segmentation,<br>Statistical Moments, and Radon Transform..... | 877 |
| <i>Muhammad Bilal Ahmad, Min Hyuk Chang, Seung Jin Park,<br/>Jong An Park, Tae Sun Choi</i>                   |     |

|                                                                                                    |     |
|----------------------------------------------------------------------------------------------------|-----|
| Feature Extraction and Correlation for Time-to-Impact<br>Segmentation Using Log-Polar Images ..... | 887 |
| <i>Fernando Pardo, Jose A. Boluda, Esther De Ves</i>                                               |     |

|                                                                                                                              |     |
|------------------------------------------------------------------------------------------------------------------------------|-----|
| Object Mark Segmentation Algorithm Using Dynamic Programming<br>for Poor Quality Images in Automated Inspection Process..... | 896 |
| <i>Dong-Joong Kang, Jong-Eun Ha, In-Mo Ahn</i>                                                                               |     |

|                                                                                      |     |
|--------------------------------------------------------------------------------------|-----|
| A Line-Based Pose Estimation Algorithm for 3-D Polyhedral<br>Object Recognition..... | 906 |
| <i>Tae-Jung Lho, Dong-Joong Kang, Jong-Eun Ha</i>                                    |     |

|                                                                                                                         |             |
|-------------------------------------------------------------------------------------------------------------------------|-------------|
| Initialization Method for the Self-Calibration<br>Using Minimal Two Images . . . . .                                    | 915         |
| <i>Jong-Eun Ha, Dong-Joong Kang</i>                                                                                     |             |
| Face Recognition for Expressive Face Images . . . . .                                                                   | 924         |
| <i>Hyoun-Joo Go, Keun Chang Kwak, Sung-Suk Kim,<br/>Myung-Geun Chun</i>                                                 |             |
| Kolmogorov-Smirnov Test for Image Comparison . . . . .                                                                  | 933         |
| <i>Eugene Demidenko</i>                                                                                                 |             |
| Modified Radius-Vector Function for Shape Contour Description . . . . .                                                 | 940         |
| <i>Sung Kwan Kang, Muhammad Bilal Ahmad, Jong Hun Chun,<br/>Pan Koo Kim, Jong An Park</i>                               |             |
| Image Corner Detection Using Radon Transform . . . . .                                                                  | 948         |
| <i>Seung Jin Park, Muhammad Bilal Ahmad, Rhee Seung-Hak,<br/>Seung Jo Han, Jong An Park</i>                             |             |
| Analytical Comparison of Conventional and MCDF Operations<br>in Image Processing . . . . .                              | 956         |
| <i>Yinghua Lu, Wanwu Guo</i>                                                                                            |             |
| On Extraction of Facial Features from Color Images . . . . .                                                            | 964         |
| <i>Jin Ok Kim, Jin Soo Kim, Young Ro Seo, Bum Ro Lee,<br/>Chin Hyun Chung, Key Seo Lee, Wha Young Yim, Sang Hyo Lee</i> |             |
| <b>Track on Networking</b>                                                                                              |             |
| An Architecture for Mobility Management<br>in Mobile Computing Networks . . . . .                                       | 974         |
| <i>Dohyeon Kim, Beongku An</i>                                                                                          |             |
| An Adaptive Security Model for Heterogeneous Networks<br>Using MAUT and Simple Heuristics . . . . .                     | 983         |
| <i>Jongwoo Chae, Ghita Kouadri Mostéfaoui, Mokdong Chung</i>                                                            |             |
| A Hybrid Restoration Scheme Based on Threshold Reaction Time<br>in Optical Burst-Switched Networks . . . . .            | 994         |
| <i>Hae-Joung Lee, Kyu-Yeop Song, Won-Ho So, Jing Zhang,<br/>Debasish Datta, Biswanath Mukherjee, Young-Chon Kim</i>     |             |
| <b>Author Index . . . . .</b>                                                                                           | <b>1005</b> |