



# PDCAT 2005 PROGRAM AT A GLANCE

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# Preface

Welcome to the Sixth International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT 2005). PDCAT 2005 is an international conference sponsored by IEICE Information and Systems Society, IEEE Beijing Section, Dalian University of Technology, and Japan Advanced Institute of Science and Technology. It provides a major forum for scientists, engineers, and practitioners throughout the world to present the latest research, results, ideas, development, techniques, and applications in all areas of parallel and distributed computing. PDCAT 2005 focuses on architectures, software systems, algorithms, applications, and technologies in the field of parallel and distributed computing and networking.

This proceeding collects qualified papers selected from 550 submissions from 19 countries/regions worldwide. The overall quality of the submissions is high, making the selection process difficult. Through a careful review process, where each submitted manuscript was reviewed as full paper by at least two Program Committee members or their external referees, the Program Committee accepted about 25% of the submissions.

We are very pleased to have three outstanding researchers to deliver keynote addresses at the conference: “Future Technological Challenges for High Performance Computers” by Dr. Tadashi Watanabe from NEC, Japan; “An Agile Programming Model for Grid End Users” by Prof. Zhiwei Xu from Chinese Academy of Sciences, China; and “Scalable and Practical Nonblocking Switching Networks” by Si Qing Zheng from University of Texas at Dallas, USA. We are grateful to our keynote speakers for their valuable contributions to the conference. The full papers/extended abstracts of their addresses are also contained in this proceedings.

The four-day technical program including a half-day tutorial program consisting of five parallel tutorial sessions contains 50 technical sessions and three keynote sessions. We would like to express our thanks to all authors who submitted their papers for consideration and to all Program Committee members and external referees for their help in the paper review process. We would like to extend our special thanks to the Program Vice Chairs, Robert Li, Chinese University of Hong Kong, China; Teruo Matsuzawa, Japan Advanced Institute of Science and Technology, Japan; and Fuliang Yin, Dalian University of Technology, China, for their excellent work on convening paper reviews of their own tracks. We would also like to express our thanks to Yingwei Jin, Haibin Kan, Keqiu Li, Gui Xie, Chao Peng, and Haibo Zhang for their help in local arrangement, proceedings publication, conference Web page maintenance, and registration. Our appreciation also goes to our tutorial presenters and session chairs who have made visible contributions to the conference.

Last but not least, we wish to thank all attendees for participating in the conference. We hope that you will find your participation in this conference rewarding and your stay in Dalian enjoyable.

**Hong Shen**, *General Chair*  
**Koji Nakano**, *Program Chair*  
*December 2005*

# Conference Organization

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## Information Service

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**Haibo Zhang**, *JAIST*

## CONFERENCE SCHEDULE

*Monday, December 5, 2005*

Time	Event	Venue
08:00-12:30	Registration	Lobby (1 <sup>st</sup> fl.)
08:30-10:00	Tutorials	Rooms 1-5
10:00-10:30	Morning Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
10:30-12:30	Tutorials (cont.)	Rooms 1-5
12:30-13:30	Lunch	Restaurant (2 <sup>nd</sup> fl.)
13:30-15:30	Technical Sessions 1B	Rooms 1-5
15:30-16:00	Afternoon Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
16:00-18:00	Technical Sessions 1C	Rooms 1-5
19:00-21:00	Welcome Reception	Banquet Hall (2 <sup>nd</sup> fl.)

*Tuesday, December 6, 2005*

Time	Event	Venue
07:30-08:30	Registration	Lobby (1 <sup>st</sup> fl.)
08:30-09:00	Opening Ceremony	Room 1
09:00-10:00	Keynote Address by Tadashi Watanabe, Future Technological Challenges for High Performance Computers.	
10:00-10:30	Morning Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
10:30-12:30	Technical Sessions 2A	Rooms 1-5
12:30-13:30	Lunch	Restaurant (2 <sup>nd</sup> fl.)
13:30-15:30	Technical Sessions 2B	Rooms 1-5
15:30-16:00	Afternoon Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
16:00-18:00	Technical Sessions 2C	Rooms 1-5

*Wednesday, December 7, 2005*

Time	Event	Venue
08:00-09:00	Registration	Lobby (1 <sup>st</sup> fl.)
09:00-10:00	Keynote Address by Zheiwei Xu, An Agile Programming Model for Grid End Users.	Room 1
10:00-10:30	Morning Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
10:30-12:30	Technical Sessions 3A	Rooms 1-5
12:30-13:30	Lunch	Restaurant (2 <sup>nd</sup> fl.)
13:30-17:30	Guided Tour	TBD
19:00-21:00	Conference Banquet	Banquet Hall (2 <sup>nd</sup> fl.)

*Thursday, December 8, 2005*

Time	Event	Venue
08:00-09:00	Registration	Lobby (1 <sup>st</sup> fl.)
09:00-10:00	Keynote Address by Si Qing Zheng, Scalable and Practical Nonblocking Switching Network.	Room 1
10:00-10:30	Morning Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
10:30-12:30	Technical Sessions 4A	Rooms 1-5
12:30-13:30	Lunch	Restaurant (2 <sup>nd</sup> fl)
13:30-15:30	Technical Sessions 4B	Rooms 1-5
15:30-16:00	Afternoon Coffee/Tea Break	Foyer (2 <sup>nd</sup> fl.)
16:00-18:00	Technical Sessions 4C	Rooms 1-5

# TECHNICAL SESSIONS

**Monday, December 5, 2005**

Room 1	Room 2	Room 3	Room 4	Room 5
Tutorials: 08:00-10:00; 10:30-12:30				
Tutorial by Shi-Jinn Horng	Tutorial by Yamin Li	Tutorial by Frode Eika Sandnes	Tutorial by Xavier Defago	Tutorial by Jacir Bordim
Session B: 13:30-15:30				
1B1  Interconnection Networks	1B2  Parallelization Techniques	1B3  Wireless Networks and Mobile Computing-I	1B4  Grid Computing Systems-I	1B5  Security, Reliability and Fault-Tolerance -I
Session C: 16:00-18:00				
1C1  Network Architectures	1C2  Communication and Multimedia Systems	1C3  Wireless Networks and Mobile Computing-II	1C4  Optical Networks	1C5  Security, Reliability and Fault-Tolerance -II

**Tuesday, December 6, 2005**

08:30-09:00	Opening Ceremony			
09:00-10:00	Keynote Address by Tadashi Watanabe, Future Technological Challenges for High Performance Computers.			
Room 1	Room 2	Room 3	Room 4	Room 5
Session A: 10:30-12:30				
2A1  Security, Reliability and Fault-Tolerance-I II	2A2  Wireless Networks and Mobile Computing-III	2A3  Ubiquitous Computing Systems	2A4  Internet Computing and Web Technology-I	2A5  Simulation and Performance Evaluation-I
Session B: 13:30-15:30				
2B1  Security, Reliability and Fault-Tolerance -IV	2B2  Grid Computing Systems-II	2B3  Software Technology and Programming Languages	2B4  Agent Technology-I	2B5  Simulation and Performance Evaluation-II
Session C: 16:00-18:00				
2C1  Security, Reliability and Fault-Tolerance- V	2C2  Grid Computing Systems-III	2C3  Internet Computing and Web Technology-II	2C4  Agent Technology-II	2C5  Tools and Environments for Software Development

**Wednesday, December 7, 2005**

09:00-10:00	Keynote Address by Zheiwei Xu, An Agile Programming Model for Grid End Users.			
Room 1	Room 2	Room 3	Room 4	Room 5
Session A: 10:30-12:30				
3A1  Parallel and Distributed Algorithms-I	3A2 Wireless Networks and Mobile Computing-IV	3A3 Resource and Task Scheduling-I	3A4 Image Processing and Computer Graphics-I	A5  Network Routing-I

**Thursday, December 8, 2005**

09:00-10:00	Keynote Address by Si Qing Zheng, Scalable and Practical Nonblocking Switching Network.			
Room 1	Room 2	Room 3	Room 4	Room 5
Session A: 10:30-12:30				
4A1  Network Routing-II	4A2 Parallel and Distributed Algorithms-II	4A3 Applications-I	4A4 P2P Systems	4A5 Image Processing and Computer Graphics-II
Session B: 13:30-15:30				
4B1  Image Processing and Computer Graphics-III	4B2 Applications-II	4B3 Database Applications and Data Mining	4B4 Intelligent Computing and Neural Networks	4B5 Parallel and Distributed Algorithms-III
Session C: 16:00-18:00				
4C1 Parallel and Distributed Algorithms-IV	4C2 Computer Mathematics	4C3 Knowledge Based Systems	4C4 Image Processing and Computer Graphics-IV	4C5 Resource and Task Scheduling-II

## Monday, December 5, 8:30-12:30

### Tutorials:

- A-1: (Room 1)** The solutions to the three main menaces of information security--A machine learning approach to spam mails, spywares and web intrusion detections.  
*Shi-Jinn Horng, National Taiwan University of Science and Technology, Taiwan, China*
- A-2: (Room 2)** Fault-Tolerant Routing in Dual-Cube.  
*Yamin Li, Hosei University, Tokyo, Japan*
- A-3: (Room 3)** Interaction design and usability for ubiquitous, mobile and everyday devices.  
*Frode Eika Sandnes, Oslo University College, Norway*
- A-4: (Room 4)** Failure Detection in Distributed Systems: Retrospective and Recent advances.  
*Xavier DEFAGO, Japan Advanced Institute of Science and Technology, Japan*
- A-5: (Room 5)** Mobile Ad Hoc Networks and Smart Antenna Technology: New Challenges at the MAC Layer  
*Jacir Bordim, Brasilia University, Brazil*

## Monday, December 5, 13:30-15:30

### Session 1B1: Interconnection Networks (Room 1)

#### Chair: Wen-Jing Hsu

- Rearrangeability of the Tandem Cascade of Banyan-Type Networks.....*X. Tan, S.-Y. R. Li, and Y. Shen*
- ReCORD: A Distributed Hash Table with Recursive Structure .....*J. Zeng and W.-J. Hsu*
- The Topological Properties and Network Embedding of RP(k).....*F. Liu and L. Xu*
- Theory on Switch Preservation under 2-Stage Interconnection.....*S.-Y. R. Li and X. Tan*
- A Reconfigurable Optical Interconnect System for DSAG.....*L. Li, Z. Cao, M.-Y. Chen, and J.-P. Fan*

### Session 1B2: Parallelization Techniques (Room 2)

#### Chair: Takashi Yokota

- Loop Parallelisation for the Jikes RVM .....*J. Zhao, I. Rogers, C. Kirkham, and I. Watson*
- Eliminating Inter-thread Interference in Register File for SMT Processors .....*H. Yang, G. Cui, and X. Yang*
- Two-Path Limited Speculation Method for Static/Dynamic Optimization  
in Multithreaded Systems .....*T. Yokota, M. Saito, F. Furukawa, K. Ootsu, and T. Baba*
- A New Way to High Performance NFS for Clusters..... *R. Tang, J. Xiong, J. Ma, and D. Meng*
- A Hybrid Parallel Loop Scheduling Scheme on Heterogeneous PC  
Clusters .....*W.-C. Shih, C.-T. Yang, P.-I. Chen, and S.-S. Tseng*
- Table-Driven Code Optimizer .....*S.-L. Yun and S.-M. Oh*

### Session 1B3: Wireless Networks and Mobile Computing—I (Room 3)

#### Chair: D. Manivannan

- A Voronoi-Trajectory Based Hybrid Routing (VTBR) Algorithm for Wireless  
Ad Hoc Networks with Obstacles.....*D. Wu, Y. Qu, and Z. Chi*

A Communication-Induced Checkpointing and Asynchronous Recovery Protocol  
for Mobile Computing Systems.....*T. Tantikul and D. Manivannan*  
An Efficient Distributed Broadcasting Algorithm for Wireless Ad Hoc Networks.....*Y. Li, S. Peng, and W. Chu*  
A Ring Removal Movement-Based Mobility Location Update Scheme.....*Y. Yang, J. Yang, and J. Cao*  
Monte Carlo Simulation of LEACH Protocol for Wireless Sensor Networks.....*Y. Wang and M. Xiong*

### Session 1B4: Grid Computing Systems—I (Room 4)

#### Chair: Xavier DEFAGO

A Scalable Security Architecture for Grid.....*Q. Zhou, G. Yang, J. Shen, and C. Rong*  
Design and Implementation of Grid Monitoring System Based on GMA.....*J. Liao, H. Cai, P. Jiang, and M. Chen*  
A Resource Price-Adjusting Mechanism for Supply and Demand Balance  
in Grid Computing.....*L. Yuan, G. Zeng, and X. Mao*  
Heterogeneous Resource Selection with Portfolio Optimization in Grid  
Economy.....*Y. Hua, C. Wu, H. Zhang, and L. Wu*  
WGMS: A WSRF-Compliant Information Service on Wireless Grids .....*J. Yang, M. Liu, C. Huang, and C. Gao*  
A Novel Security Model Based on Virtual Organization for Grid .....*X. Wu, G. Yang, J. Shen, and Q. Zhou*

### Session 1B5: Security, Reliability, and Fault-Tolerance—I (Room 5)

#### Chair: Yonggang Chu

A Simple Process Calculus for the Analysis of Security Protocols .....*Y. Gu, Y. Fu, and G. Li*  
D-S Evidence Theory and Its Data Fusion Application in Intrusion Detection...*J. Tian, W. Zhao, R. Du, and Z. Zhang*  
Efficient Traitor Tracing Scheme Based on NTRU..... *X. Lv, B. Yang, and C. Pei*  
A Study of Intrusion Signature Based on Honeypot.....*J. Tian, J. Wang, R. Li, and X. Yang*  
The Architecture of the Large-scale Distributed Intrusion Detection System.....*Y. Chu, J. Li, and Y. Yang*

## Monday, December 5, 16:00-18:00

### Session 1C1: Network Architectures (Room 1)

#### Chair: Keqiu Li

Active Probe of Available Bandwidth: Analysis and Improvement.....*C. Zhu, C. Pei, Y. Yi, and D. Quan*  
CISOQ: A Practical High-Performance Packet Switch Architecture  
for the Support of Multicast Traffic..... *X. Hu, J. Qu, B. Wang, and X. Li*  
Overlay Multicasting over Multihomed Proxies.....*X. Chen, R. Yang, Q. Xia, H. Shao, and W. Wang*  
Research on New Types of Network Architecture .....*Y. Wang, M. Xia, F. Yi, and J. Zeng*  
Study on Network Topology Visualization Algorithm and Implement  
Based on A\* Algorithm.....*W. Yuan, C. Pei, H. Xiao, C. Zhu, N. Chen, and Y. Yi*

### Session 1C2: Communication and Multimedia Systems (Room 2)

#### Chair: Teruo Matuzawa

Construction of a Prototype of a Volume Communications Environment.....*M. Watanabe, M. Okuda, T. Matsuzawa*  
VoD Service Model and Performance Evaluation on the China's High Performance  
Broadband Information Network (3Tnet).....*F. Lin, X. Wang, and X. Xue*  
Detecting BGP Misconfiguration for BGP/MPLS VPNs.....*H. Liang, G. Teng, H. Wang, D. Wang, and Y. Gao*

A New Tunnel Scheme for Multimedia Communications Traversing  
 NAT/Firewall in NGN.....G. Zheng, Z. Xie, B. Wang, and G. He  
 Study of Channel Characteristics of Power Line Communications Networks .....M. Zhai, C. Liu, and H. Bi  
 The Maximal Rates of More General Complex Orthogonal Designs.....H. Kan and H. Shen

### Session 1C3: Wireless Networks and Mobile Computing—II (Room 3)

**Chair: Tian Hui**

Research on Multi-constrained QoS Routing Scheme Using Mean Field Annealing .....L. Liu and G. Feng  
 Data Dissemination Model for Location-Based Services .....K. Park, M. Song, and K.-S. Kong  
 A Cluster-Based Energy-Efficient Scheme for Sensor Networks.....J. Zhang, B. Huang, L. Tu, and F. Zhang  
 Random Walk Routing for Wireless Sensor Networks .....H. Tian, H. Shen, and T. Matsuzawa  
 Secure Protocols Enhancement Based on Radio-Propagation Related Looser  
 Assumptions in Mobile Ad Hoc Networks.....R. Yang , Q. Xia , Q. Pan , X. Huang, W. Wang, and M. Li

### Session 1C4: Optical Networks (Room 4)

**Chair: Zhanqi XU**

Dynamic Shared Path Protection Algorithm in WDM Mesh Networks  
 under Service Level Agreement Constraints .....R. He, B. Lin, L. Li, and C. Gu  
 A Unified Framing Protocol for Hybrid Data Transport .....Z. Xu, C. Wang, C. Pei, and A. Wen  
 On-Line Routing in WDM-TDM Switched Optical Mesh Networks.....A. Vishwanath and W. Liang  
 Wavelength Assignment for Parallel FFT Communication Pattern  
 on Linear Arrays by Lattice Embedding.....Y. Chen and H. Shen  
 Splitter Placement Problem on Directed Fiber Trees.....T. Hu and B.-H. Zhao

### Session 1C5: Security, Reliability, and Fault-Tolerance—II (Room 5)

**Chair: Kun Wang**

On the Effectiveness of Multi-similarity for Early Detection of Worms.....H. He, M. Hu, H. Zhang, and Z. Tang  
 Intrusion Detection Based on an Improved ART2 Neural Network.....D. Wu, J. Dai, and Z. Chi  
 Privacy Preserving ID3 Algorithm over Horizontally Partitioned Data ...M.J. Xiao, L.S. Huang, H. Shen, Y.L. Luo  
 Computing the Reliability for Clustered Ad Hoc Networks.....D. Wu, Q. Li, and Z. Chi  
 A Disaster Recovery System Model in an E-Government System.....K. Wang, Z. Cai, Z. Li, and L. Zhou

## Tuesday, December 6, 9:00-12:30

keynote Session K-1: (Room 1)

**Chair: Susumu Horiguchi**

*Future Technological Challenges for High Performance Computers*

**Dr. Tadashi Watanabe, NEC Corp., Japan**

Session 2A1: Security, Reliability, and Fault-Tolerance—III (Room 1)

**Chair: Zonghua Zhang**

Trusted Computing-Based Security Architecture for 4G Mobile Networks.....Y. Zheng, D. He, W. Yu, and X. Tang

Intrusion Detection Combining Multiple Decision Trees by Fuzzy Logic.....*J. Tian, Y. Fu, Y. Xu, and J. Wang*  
 A New Approach to Automatically Detect Worms .....*P. Wang, B.-X. Fang, and X.-C. Yun*  
 Optimization of Intrusion Detection through Fast Hybrid Feature Selection .....*K. M. Shazzad and J. S. Park*  
 An Efficient Keys Agreement for Multi-party's Communication .....*P. Zhang, C. Ye, X. Li, and X. Ma*  
 Worm Detection in Large Scale Network by Traffic.....*Y. Xin, B.-X. Fang, X.-C. Yun, and H.-Y. Chen*

## Session 2A2: Wireless Networks and Mobile Computing—III (Room 2)

**Chair: Jaci R Luiz Bordim**

Adaptive Carrier Sensing and Packet Sending—An Alternative to Boost  
 the Performance in Directional Communications.....*J. L. Bordim, T. Hunziker, and K. Nakano*  
 An Efficient Key Management Scheme for Secure Sensor Networks.....*R. Du, H. Tu, and S. Wen*  
 Design and Analysis of High Speed WLAN Systems with Adaptive Margin  
 Technology..... *X. Li, N. Liu, C. Pei, K. Yi, and W. Kou*  
 An Efficient Topology Maintenance Algorithm Based on Shortest Path Tree  
 for Wireless Sensor Networks .....*Z. Shen, Y. Chang, X. Zhang, and C. Cui*  
 Delay Character of a Novel Architecture for IEEE 802.16 Systems ..... *Liu, X. Li, C. Pei, and B. Yang*

## Session 2A3: Ubiquitous Computing Systems (Room 3)

**Chair: Xiaoli Su**

Developing Context-Aware Applications in Ubiquitous Computing Environments.....*J. Sun and Z. Wu*  
 Reconfigurable Computing in Ubiquitous Computers: A Roadmap .....*L. Yan and Z. Liang*  
 Design of a Security Management Middleware in Ubiquitous Computing  
 Environments.....*Z. Jiang, K. Lee, Sangok Kim, H. Bae, Sangwook Kim, and S. Kang*  
 An Adaptable Software Architecture Based on Mobile Components  
 in Pervasive Computing.....*S. Han, S. Zhang, Y. Zhang, and C. Fan*  
 On-Chip Debug for an Asynchronous Java Accelerator.....*Z. Liang, J. Plosila, L. Yan, and K. Sere*  
 Design of Virtual Personal Computing Environment for Ubiquitous  
 Computing.....*X. Su, J. Li, F. Jiang, H. Shi, J. Guo, and Z. Zhu*

## Session 2A4: Internet Computing and Web Technology—II (Room 4)

**Chair: Keqiu Li**

Web Media Service Based on Streaming Player Supporting Ubiquitous  
 Environment.....*Sangok Kim, K. Lee, Z. Jiang, H. Bae, and Sangwook Kim*  
 Design and Implementation of a Script Language Based On-Demand  
 Service Framework.....*Z. Huang and C. He*  
 Integration and Share of Spatial Data Based on Web Service .....*X. Ma, Q. Pan, and M. Li*  
 Ontology-Based 3D Body Scanning Data Sharing System .....*X. Zhu and X. Zhang*  
 Optimal Selection of Web Services for Composition Based on Interface-Matching  
 and Weighted Multistage Graph.....*Y. Gao, B. Zhang, J. Na, L. Yang, Y. Dai, and Q. Gong*  
 Research on Improved Role Hierarchy Model in Extended Organization  
 PKI Networks .....*S. Zhang and B. Wang*

## Session 2A5: Simulation and Performance Evaluation—I (Room 5)

**Chair: Jin guo**

Performance Comparison between VOPP and MPI .....*Z. Huang, M. Purvis, and P. Werstein*  
 Simulating and Improving Probabilistic Packet Marking Schemes Using Ns2.....*Q. Li, H. Zhu, M. Zhang, and J. Ju*  
 Research on the Performance Analysis of the Concurrent System.....*J. Guo, M. Liu, and L. Liu*  
 Component Based Performance Prediction for Network Processor Based System.....*H. Xiao, L. Zhang, and D. Wu*  
 Simulation-Based Optimization Strategy for Liquid Fueled Multi-stage Space  
 Launch Vehicle.....*S. Akhtar and L. He*

**Tuesday, December 6, 13:30-15:30**

**Session 2B1: Security, Reliability, and Fault-Tolerance—IV (Room 1)**

**Chair: He Guo**

Wrapping Client-Server Application to Web Services for Internet Computing ...*H. Guo, C. Guo, F. Chen, H. Yang*  
 A New Algorithm to Solve Synchronous Consensus for Dependent Failures.....*J. Wang and M. Song*  
 An Efficient Asynchronous Proactive RSA Scheme .....*R. Zhang and K. Chen*  
 An Efficient Group Key Management Scheme: Link Tree Protocol.....*J. Zhang, F. Ma, D. Gu, and Y. Bai*  
 Fast Two Phrases PPM for IP Traceback .....*Q. Li, Q. Feng, L. Hu, and J. Ju*

**Session 2B2: Grid Computing Systems—II (Room 2)**

**Chair: Libing Wu**

Workflow-Based Remote-Sensing Image Processing Application  
 in ImageGrid.....*R. Zheng, H. Jin, Q. Zhang, and Y. Li*  
 JSChord: A Peer-to-Peer System to Achieve Max Throughput.....*Y. Shao, F. Hong, and M. Li*  
 An Adaptive Advance Reservation Mechanism for Grid Computing .....*L. Wu, C. Wu, J. Cui, and J. Xing*  
 Dynamic Role and Context-Based Access Control for Grid Applications .....*H. Yao, H. Hu, B. Huang, and R. Li*  
 Integrating Agent and Web Service into Grid Service Workflow System .....*Z. Zhai, Y. Yang, W. Guo, and Z. Tian*

**Session 2B3: Software Technology and Programming Languages  
 (Room 3)**

**Chair: Chengwan He**

Role Based Platform Independent Web Application Modeling.....*C. He, W. Tu, and K. He*  
 Chocolat/SMV: A Translator from CafeOBJ into SMV.....*K. Ogata, M. Nakano, M. Nakamura, and K. Futatsugi*  
 Formal Description and Complexity Analysis of Routing in Mobile  
 Ad Hoc System.....*J. Xie and L. Huang*  
 Coalgebraic Component Specification and Verification in RSL.....*M. Sun, B. K. Aichernig, and N. Zhang*  
 Software Component Model for Network Processor Based System .....*H. Xiao, L. Zhang, and D. Wu*  
 A Segment-Based Approach of Defending against Buffer Overflow Attacks.....*Y. Tan, J. Zheng, and Y. Cao*

**Session 2B4: Agent Technology—I (Room 4)**

**Chair: Wenyu Qu**

An OO-Based Design Model of Software Agent .....*J. Li, X. Mao, and Y. Shu*  
 A Novel Peer-to-Peer Intrusion Detection System Using Mobile Agents  
 in MANETs .....*K. Xiao, J. Zheng, X. Wang, and X. Xue*  
 A Survey of Mobile Agent-Based Fault-Tolerant Technology.....*W. Qu, H. Shen, and X. Defago*

Agent-Oriented Early Requirement Analysis of Distributed Simulation Environment of Fluid Flow .....*J. Li, Z. Qi, and Z. Chen*  
Research of Multi-agent System Model and Learning Method.....*Y. Zhang and Y. Han*

### Session 2B5: Simulation and Performance Evaluation—II (Room 5)

#### Chair: Zhiyi Huang

How the Enterprise Choosing Strategic Action: Modeling, Algorithm and Simulation.....*Y. Chen, X. Wang, G. Wang, and W. Zhu*  
An Asynchronous Event Relation Model for Monitoring Distributed System.....*M. Chen and B. Wan*  
A Distributed Architecture for Network Performance Measurement and Evaluation System .....*H. Sun, B. Fang, and H. Zhang*  
A Study of Parallel Prefetching Algorithms Using Trace-Driven Simulation.....*D. Hu, C. Xie, and C. Bin*  
Performance Evaluation of SLIM and DRBL Diskless PC Clusters on Fedora Core 3 .....*C.-T. Yang, P.-I Chen, and Y.-L. Chen*

### Tuesday, December 6, 16:00-18:00

### Session 2C1: Security, Reliability, and Fault-Tolerance—V (Room 1)

#### Chair: Dajin Wang

Access Control List Mediation System for Large-Scale Network ..... *K. Lee, Z. Jiang, Sangok Kim, Sangwook Kim, and Sunkyung Kim*  
An Efficient Protocol for the Problem of Secure Two-Party Vector Dominance.....*Y. Sang, H. Shen, and Z. Zhang*  
A Brief Comparative Study on Analytical Models of Computer System Dependability and Security.....*Z. Zhang, H. Shen, X. Defago, and Y. Sang*  
Fault-Tolerance Schemes for Hierarchical Mesh Networks .....*J. Zurawski and D. Wang*  
Enhancing Attack Survivability of Gnutella-Like P2P Networks by Targeted Immunization Scheme .....*X. Huang, Y. Li, R. Yang, and F. Ma*

### Session 2C2: Grid Computing Systems—III (Room 2)

#### Chair: Yamin Li

JSGrid: An Environment for Heterogeneous Cluster Computing....*K. Takeda, S. Ono, C. J. Ashley, and S. Nakayama*  
A Scheduling Method for Divisible Workload Problem in Grid Environments .....*N. T. Loc, S. Elnaffar, T. Katayama, and H. T. Bao*  
Design and Implementation of TIGER Grid: An Integrated Metropolitan-Scale Grid Environment.....*C.-T. Yang, K.-C. Li, W.-C. Chiang, and P.-C. Shih*  
A Run-Time Scheduling Policy for Dependent Tasks in Grid Computing Systems .....*H. Jin, Y. He, W. Wen, H. Liu*  
Integration Patterns of Grid Security Service .....*X. Qu, X. Yang, J. Zhong, and X. Lv*  
MAS Organization: Design, Enforcement and Instantiation .....*C. Ye, K. Xie, Y. Chen, and X. Wang*

### Session 2C3: Internet Computing and Web Technology—I (Room 3)

#### Chair: Susumu Horiguchi

Incentives for Participating in a Hybrid Peer-to-Peer System .....*G. Sun, G. Chen, and J. Wu*

Development of an Internet Home Automation System Using Java and  
Dynamic DNS Service.....*X. Zhang, J. Sun, and L. Zhou*  
Remote Monitoring of Air-Quality over Internet .....*H. Wang and R. Ma*  
Using Semantic Web Technologies to Specify Constraints of RBAC .....*D. Wu, J. Lin, Y. Dong, and M. Zhu*  
Verifying Web Services Composition: A Transformation-Based  
Approach.....*Y. Yang, Q. Tan, Y. Xiao, J. Yu, and F. Liu*  
A Case of Application-Level Multicast for Real-Time Video Delivery over Internet.....*Z. Liu and G. He*

## Session 2C4: Agent Technology—II (Room 4)

**Chair: Wenyu Qu**

A Study of Distributed Parallel Processing for Queen Ant Strategy in Ant Colony  
Optimization .....*I. Imura, T. Ito, K. Hamaguchi, and S. Nakayama*  
How to Build Bargaining Agents in the E-Commerce Modeling and Analysis ..... *Y. Chen, X. Wang, C. Ye, W. Zhu*  
Multi-agent-Oriented Modeling for Intelligence Reconnaissance System .....*X. Li, X. Liu, and N. Hao*  
Describer: Service-Oriented Multiagent Architecture for Mobile Environment .....*Z. Liu, D. Wang, and H. Sheng*  
A Layered Resource Management Model in P2P System .....*D. Wang and R. Zhao*

## Session 2C5: Tools and Environments for Software Development (Room 5)

**Chair: Zhiyi Huang**

Collaborative MPEG-4 Contents Authoring, Presentation and Interaction  
in a Mobile Environment.....*S. Li, SangWook Kim, and SunKyung Kim*  
A Systems Programming Language for Wireless Networked Embedded Systems ....*X. Luo, K. Zheng, Z. Wu, Y. Pan*  
A Message-Based Software Architectural Style for Distributed Application.....*G. Tan, X. Li, J. Wu, H. Zhao, C. Li*  
An ECA Rules Based Middleware Architecture for Wireless Sensor Networks.....*C. Zhang, M. Li, and Q. Pan*  
Design and Implementation of a Distributed Simulation System of 3D Sights.....*J.-L. Du and C.-S. Tian*  
Simulating Large-Scale Traffic Aggregation in an Automatic Switched  
Optical Network .....*H. Wang, X. Wang, and X. Xue*

## Wednesday, December 7, 9:00-12:30

keynote Session K-2: (Room 1)

**Chair: Koji Nakano**

*An Agile Programming Model for Grid End Users*  
**Zhiwei Xu, Chinese Academy of Sciences, China**

## Session 3A1: Parallel and Distributed Algorithms—I (Room 1)

**Chair: Shi-Jinn Horng**

Multi-session Partitioning for Parallel Timing Optimization .....*J. Kim, J. Neves, and M. Papaefthymiou*  
An O(1) Time Parallel Algorithm for the Dominance Counting and  
3D Block-Based Medial Axis Transform on AROB .....*S.-Y. Lin, S.-J. Horng, T.-W. Kao, and Y.-R. Wang*  
Optimal Routing in a Small-World Network.....*J. Zeng and W.-J. Hsu*  
A Distributed Self-Stabilizing Algorithm for Finding a Connected Dominating

Set in a Graph .....A. Jain and A. Gupta  
 Efficiency of Local Genetic Algorithm in Parallel Processing.....G. Peng, T. Nakatsuru, Imura, and S. Nakayama  
 Some New Parallel Fast Fourier Transform Algorithms .....C. Zhong, G. Han, and M. Huang

### Session 3A2: Wireless Networks and Mobile Computing—IV (Room 2)

**Chair: Koji Nakano**

GLB-DMECR: Geographic Location-Based Decentralized Minimum Energy  
 Consumption Routing in Wireless Sensor Networks.....H. Hou, X. Liu, H. Yu, and H. Hu  
 Energy Adaptive Cluster-Head Selection for Wireless Sensor Networks .....Y. Liang and H. Yu  
 Comparative Analysis of Scheduling Algorithms in Ad Hoc Mobile Networking .....H. Xu, X. Wang, and C. K. Toh  
 Research of TCP Vegas Congestion Control Algorithm in Ad Hoc Networks .....C. Gong, Z. Zhao, and G. Wang  
 Coverage and Energy Efficient Information Gathering Protocol in Wireless  
 Sensor Networks.....X. Liu, H. Hou, J. Yang, H. Yu, and H. Hu

### Session 3A3: Resource and Task Scheduling—I (Room 3)

**Chair: Wei Ren**

LRC-RED: A Self-Tuning Robust and Adaptive AQM Scheme.....N. Xiong, Y. Yang, X. Défago, and Y. He  
 Approximating Spanning Trees with Inner Nodes Cost .....R. Fleischer, Q. Ge, J. Li, S. Tian, and H. Wang  
 A Recursion Nearness Based Method for Characterizing IP Address.....W. Ren and H. Jin  
 Mapping Resources for Network Emulation with Heuristic and Genetic  
 Algorithms.....Y. Liu, Y. Li, K. Xiao, and H. Cui  
 Accurate DCA Algorithm for TCP Congestion Avoidance.....M. Xia, F. Yi, Y. Wang, and J. Zeng

### Session 3A4: Image Processing and Computer Graphics—I (Room 4)

**Chair: HyungJun Kim**

AVS Generic Audio Coding.....R. Hu, S. Chen, H. Ai, and N. Xiong  
 New Ray-Space Interpolation Method for Free Viewpoint Video System...L. Fan, Mei Yu, G. Jiang, R. Wang, Y. Kim  
 A Watermarking Method Using Quantization and Statistical Characteristics  
 of Wavelet Transform.....K. Byun, S. Lee, and H. Kim  
 New Multiple Description Layered Coding Method for Video  
 Communication .....M. Yu, X. Ye, G. Jiang, R. Wang, F. Xiao, and Y. Kim

### Session 3A5: Network Routing—I (Room 5)

**Chair: Xingwei Wang**

A QoS Multicast Routing Algorithm Based on Shrinking-Chaotic-Mutation  
 Evolutionary Algorithm in IP/DWDM Optical Internet .....X. Wang, P. Liu, and M. Huang  
 A Distributed Entropy-Based QoS Multicast Routing Optimization Algorithm  
 for MANET .....C. Gui and B. Sun  
 A Strategy for Routing Messages between Elements in a Hypercube with Faulty Links.....D. Gichev  
 An On-Line Integrated Routing Algorithm in IP/MPLS over WDM Networks.....Y. Su, Z. Xu, and Z. Liu  
 A New Routing Method to Tolerate both Convex and Concave Faulty Regions  
 in Mesh/Torus Networks .....H. Gu, H. Shen, Z. Liu and G. Kang

Thursday, December 8, 9:00-12:30

keynote Session K-3: (Room 1)

**Chair: Hong Shen**

*Scalable and Practical Nonblocking Switching Networks*

**Si Qing Zheng, University of Texas at Dallas, USA**

Session 4A1: Network Routing—II (Room 1)

**Chair: Huiran Wang**

A Dual-Channel Routing Scheme in Ad Hoc Networks.....*Q. Wang, J. Sun, and G. Wang*

A Hybrid Intelligent QoS Multicast Routing Algorithm in NGI .....*J. Wang, X. Wang, and M. Huang*

Research of Multicast Server Selection Based on Ant Algorithm.....*Y. Liu, J. Cao, L. Tan, and K. Xu*

Aggregation Tree Routing Algorithm for Dynamic Topology

in Large Scale Networks.....*G. Tan, N. Han, Y. Liu, H. Yao, and D. Li*

Solving the Vehicle Routing Problem with Stochastic Demands and Customers.....*C. Fu, H. Wang, L. Zhu*

Session 4A2: Parallel and Distributed Algorithms—II (Room 2)

**Chair: Geng Yang**

Encoding a Binary Search Tree in Constant Time on BSR .....*L. Xiang, K. Cheng, and K. Ushijima*

Parallel Downloading Algorithm for Large-Volume File Distribution .....*H. Chen, Z. Gong, and Z. Huang*

Localized Algorithm for Coverage in Wireless Sensor Networks.....*H. Xu, L. Huang, Y. Wan, and K. Lu*

Spatial Gossip on the Percolation Model.....*Q. Xia, R. Yang, and W. Wang*

An Agent-Based Deadlock Detection/Resolution Algorithm for the AND Model .... *X. Cheng, X. Yang, and F. Jin*

Ubcast: An Enhanced Application-Level Multicast Protocol.....*Z. Chu, Y. Yang, H. Tu, and W. Kong*

Session 4A3: Applications—I (Room 3)

**Chair: Chunlu Liu**

Towards Efficient and Scalable Searches for Mass-Market, Decentralized

File Sharing .....*X. Huang, Y. Li, F. Liu, and F. Ma*

Evolutionary Multiobjective Optimization in Engineering Management:

An Empirical Study on Bridge Deck Rehabilitation.....*C. Liu*

Evaluation of Network Interface Controller on DIMMnet-2 Prototype

Board..... *A. Kitamura,*

*Y. Hamada, Y. Miyabe, T. Izawa, T. Miyasiro, K. Watanabe, T. Otsuka, N. Tanabe, H. Nakajo, and H. Amano*

AMS Based Reconstruction Algorithm with Two-Dimensional Threshold

for IP Traceback .....*X. Yang, C. Pei, C. Zhu, and Y. Li*

Development of the Real-Time Visualization System on Network...*H. Oiwa, Y. Asano, H. Matsumoto, T. Matsuzawa*

Structural Analysis Based on Baseline in Printed Mathematical Expressions

Recognition.....*X. Tian and H. Fan*

Session 4A4: P2P Systems (Room 4)

**Chair: Sunil Kumar Pandey**

Ontology-Based Clustering and Routing in Peer-to-Peer Networks.....*J. Li and S. Vuong*

A P2P Based Personal Digital Library for Community..... *Y. Xu*  
 A Novel Incentive Mechanism for P2P Systems.....*T. Wang, X. Lu, and M. Hou*  
 Research on Collaborative Service Solution in Ubiquitous Learning Environment.....*G. Zhang and Q. Jin*  
 An Improved P2P Model Based on Chord .....*D. Yu, X. Chen, and Y. Chang*

## Session 4A5: Image Processing and Computer Graphics—II (Room 5)

**Chair: Fumihiko Ino**

Audio Watermarking Algorithm Based on Wavelet Packet and  
 Psychoacoustic Model .....*R.-D. Wang, D.-W. Xu, and Q. Li*  
 An Improved Basic-Unit Layer Rate-Control Scheme on H.264 .....*S. Su, S. Yu, and J. Zhou*  
 Performance Study of Nonrigid Registration Algorithm for Investigating  
 Lung Disease on Clusters ..... *F. Ino, Y. Tanaka, H. Kitaoka and K. Hagihara*  
 A New Adaptive Multistage Median Filter .....*H. Song, G. Wang, and X. Zhao*  
 Gabor Filterbank and Its Application in the Fingerprint Texture Analysis .....*Y. Xu and X. Zhang*  
 Iris Image Denoising Algorithm Based on Phase Preserving .....*J. Wang and R. Ding*

## Thursday, December 8, 13:30-15:30

## Session 4B1: Image Processing and Computer Graphics—III (Room 1)

**Chair: Xijun Hua**

A Novel High Gray Scale Data Driver for Passive Matrix OLED  
 Displays .....*H.-J. Shin, S.-B. Woo, S.-J. Shin, K.-D. Kwack, and T.-W. Kim*  
 AnchorClu: An Anchorperson Shot Detection Method Based on  
 Clustering.....*X.-D. Luan, Y.-X. Xie, L.-D. Wu, J. Wen, and S.-Y. Lao*  
 An Approach to Image Retrieval Based on Concept Lattices and Rough Set Theory.....*M. Li and T. Wang*  
 Number and Letter Character Recognition of Vehicle License Plate Based on Edge  
 Hausdorff Distance.....*S. Tang and W. Li*  
 Residual Texture Based Fast Block-Size Selection for Inter-frame Coding  
 in H.264/AVC.....*Z. Wang, Q. Peng, and Y. Zeng*  
 Stereo Correspondence Using Color Based on Competitive-Cooperative  
 Neural Networks.....*X. Hua, M. Yokomichi, and M. Kono*

## Session 4B2: Applications—II (Room 2)

**Chair: Frode Eika Sandnes**

Design and Implementation of a WBEM Disk Array Provider .....*Y. Tan, H. Deng, G. Lin, and X. Zhang*  
 Symmetry and Autobisimulation.....*J. Jiang and J. Wu*  
 Authentication with Controlled Anonymity in P2P Systems.....*A. Wierzbicki, A. Zwierko, and Z. Kotulski*  
 A Kind of Negotiation Policy for Resource Allocation in Distributed  
 Manufacturing Environment.....*C. Lv, Y. Zhu, and C. Yin*  
 A Model for NP-Based Application Design .....*Z. Shan, R. Zhao, and K. Xie*  
 A New Algorithm for Partner Selection in Virtual Enterprise.....*Z. Zeng, Y. Li, S. Li, and W. Zhu*  
 A Distributed and Cooperative Target Localization Algorithm in Wireless  
 Sensor Networks.....*X. Pi and H. Yu*

A New Network Management Framework Design and Application Realization.....*J. Li and G. Xu*

### Session 4B3: Database Applications and Data Mining (Room 3)

**Chair: Zonghua Zhang**

Event Driven RFID Reader for Warehouse Management .....*D. Yang and P. Zou*  
ARV-Based Array Grouping and Data Distribution in OpenMP/JIAJIA.....*L. Zeng, X. Yang, and C. Huang*  
Attribute Value Reduction in Variable Precision Rough Set.....*F. Nian and M. Li*  
A Window-Based Algorithm for Skyline Queries.....*J. Yu, X. Liu, and G. Liu*  
Quantitative Association Rules Mining Methods with Privacy-Preserving.....*Z.-Y. Chen and G.-H. Liu*  
A Novel Text Classification Algorithm Based on Naïve Bayes and KL-Divergence .....*B. Wang and S. Zhang*  
Web Document Classification Based on Extended Rough Set.....*G. Yi, H. Hu, and Z. Lu*

### Session 4B4: Intelligent Computing and Neural Networks (Room 4)

**Chair: Haibin Kan**

Genetic Algorithms for Solving Linear Bilevel Programming.....*G.-M. Wang, X.-J. Wang, Z.-P. Wan, Y.-L. Chen*  
A Genetic Algorithm Optimized New Structured Neural Network for Multistage  
Decision-Making Problem.....*L. Yang, Y. Dai, B. Zhang, and Y. Gao*  
Intelligent Compaction Control Based on Fuzzy Neural Network .....*Y. Ju, G. Lin, Y. Fan, and Z. Liu*  
A Novel Genetic Algorithm for HP Model Protein Folding..... *J. Song, J. Cheng, T. Zheng, and J. Mao*  
An Improved Genetic Algorithm for Multi-objective Optimization.....*F. Lin and G. He*  
A Coevolutionary Model Based on Dynamic Combination of Genetic Algorithm  
and Ant Colony Algorithm .....*M. Chen and Q. Lu*

### Session 4B5: Parallel and Distributed Algorithms—III (Room 5)

**Chair: Shietung Peng**

Digital Modulation Identification Based on Software Radio Platform.....*J. Chen, Y. Kuo, J. Li, F. Fu, and C. Li*  
Parallel Algorithm for Computing Reversal Distance ..... *Y.-F. Shen and G.-L. Chen*  
Solving Very Large Traveling Salesman Problems by SOM Parallelization  
on Cluster Architectures .....*H. Schabauer, E. Schikuta, and T. Weishäupl*  
Network Optimized by K-L Transform for Digital Modulation Identification ..... *Y. Kuo, J. Chen, and X. Tan*  
Prediction of Chaotic Time Series Using LS-SVM with Automatic Parameter  
Selection .....*X. Wang, H. Zhang, C. Zhang, X. Cai, Jin Wang, and Jinshan Wang*

## Thursday, December 8, 16:00-18:00

### Session 4C1: Parallel and Distributed Algorithms—IV (Room 1)

**Chair: Shietung Peng**

Scalable Parallel Quadrilateral Mesh Generation Coupled with Mesh Partitioning ...*J. Chen, Y. Zheng, and X. Ning*  
An Efficient Multiple-Precision Division Algorithm .....*L. Huang, Y. Luo, H. Zhong, and H. Shen*  
A High-Throughput Fibre Channel Data Communication Service.....*Y. Tan, J. Jin, Y. Cao, and L. Zhu*  
Solution to Multi-objective Fuzzy Optimization Dynamic Programming  
with Uncertain Information .....*Y. Jin, H. Shen, K. Li, and Z. Chi*  
A New Solution to Non-structural System Group Decision-Making Problems .....*Y. Jin, H. Shen, K. Li, and Z. Chi*

Fluid-Structure Interaction within 3-Layered Aortic Arch Model under Pulsatile  
Blood Flow.....*F. Gao, M. Watanabe, and T. Matsuzawa*

## Session 4C2: Computer Mathematics (Room 2)

### Chair: Jun Ma

The Calculational Method for Spectrogram and Variance-Length Curve  
of Yarn Based on Multiresolution Analysis.....*J. Ma and N. A. Korobov*  
Constructing SVK\_Lattices from Cyclic Bases.....*W. Yu, D. He, and Y. Zheng*  
Hamiltonian-Like Properties of  $k$ -Ary  $n$ -Cubes.....*D. Wang, T. An, M. Pan, K. Wang, and S. Qu*  
Embedding Paths of Different Lengths into Crossed Cubes.....*J. Fan, X. Lin, and X. Jia*  
The Eigen-Problem in the Completely Max-Algebra.....*J. Ma, Y. Gao, and Z. Y. Dai*

## Session 4C3: Knowledge Based Systems (Room 3)

### Chair: Hannes Schabauer

Research on Application of Development Method of Knowledge Base  
in the Integrated System for ICAD.....*P. Xie, Y. Kang, and Q. Zhang*  
A DL-Based Approach for Product Knowledge Reasoning .....*X. Fu, S. Li, and N. Channa*  
Towards a Knowledge-Based System of Distributed Configuration.....*X. Fu and S. Li*  
The Research on Decision Approach of Data Dependence in Dynamic  
Workflow System.....*S. Zhang and B. Wang*  
Decision Tree's Pruning Algorithm Based on Deficient Data Sets .....*Y. Zhang, Z. Chi, and D. Wang*  
Knowledge Discovery and Ontology-Based Services on the Grid (A Survey Report).....*S. K. Pandey, B. R. Mishra*

## Session 4C4: Image Processing and Computer Graphics—IV (Room 4)

### Chair: Haibin Kan

Perceptually Optimized Error-Resilient H.264 Video Streaming System  
over the Best-Effort Internet.....*N. Liao, Z.-Y. Quan, and A.-D. Men*  
An Automatic and Robust Algorithm for Segmentation of Three-Dimensional  
Medical Images .....*H. Zhang, H. Shen, and H. Duan*  
An Image Hiding Method Based on Correlation Analysis and Image Fusion.....*B. Liu, Z. Li, and Y. Li*  
An Invariant Feature Representation for Shape Retrieval .....*S. H. Han and S. Y. Yang*  
A New Approach of the Vehicle License Plate Location .....*H. Xu, F. Yu, J. Jiao, and H. Song*  
Toward Blind Logo Watermarking in JPEG-Compressed Images .....*Q. Gong and H. Shen*

## Session 4C5: Resource and Task Scheduling—II (Room 5)

### Chair: Yang Wang

Load Balance Heuristics for Synchronous Iterative Applications on  
Heterogeneous Cluster Systems .....*W. Zhang, M. Hu, and H. Zhang*  
Security-Driven Scheduling Algorithms Based on EigenTrust in Grid.....*K. Li, Y. He, X. Liu, and Y. Wang*  
Gracefully Degrading Battery-Aware Static Multiprocessor Schedules  
Based on Symmetric Task Fusion .....*F. E. Sandnes, O. Sinnen, and Y.-P. Huang*  
Using Dataflow Information to Improve Inter-workflow Instance Concurrency .....*Y. Wang and P. Lu*  
A Post-Scheduling Optimization Algorithm of Distributed Real-Time Tasks .....*M. Fang, Y. Yuan, and H. Liang*