

Proceedings

The 28th International Conference on Distributed Computing Systems Workshops

*Beijing, China
June 17 - 20, 2008*

Sponsored by

The IEEE Computer Society Technical Committee on Distributed Processing
China Computer Federation
Institute of Computing Technologies, Chinese Academy of Sciences



Los Alamitos, California
Washington • Tokyo



The 28th International Conference on Distributed Computing Systems Workshops

ICDCS Workshops 2008

Table of Contents

Welcome Message from the Conference Chairs
Welcome Message from the Workshop Co-Chairs
**Message from MNSA-2008 International Workshop
Organizers**
MNSA 2008 Organizing Committee
Message from the WiMAN 2008 Chairs
WiMAN 2008 Organizing Committee
Message from the DTMN 2008 Workshop Co-Chairs
DTMN 2008 Organizing Committee
Message from the TRAM 2008 Program Chairs
TRAM 2008 Organizing Committee
Message from the WWASN 2008 Chairs
WWASN 2008 Organizing Committee
Message from the WiSP 2008 Workshop Chairs
WiSP 2008 Workshop Organization
Message from the CDS 2008 Workshop Organizers
CDS 2008 Organizing committee
Message from the WCPS 2008 Co-Chairs
WCPS 2008 Organizing Committee
WCPS 2008 Reviewers
Message from the ADSN 2008 Co-Chairs
ADSN 2008 Organizing Committee
ADSN 2008 Reviewers

The 10th International Workshop on Multimedia Network Systems and Applications — MNSA 2008

Session 1: P2P and Overlay Networks Chair: Leonard Barolli, Fukuoka

Institute of Technology

A Protocol for Making an Agreement in a Peer-to-Peer (P2P) Society	1
<i>Ailixier Aikebaier, Tomoya Enokido, and Makoto Takizawa</i>	
On Feasibility of P2P On-Demand Streaming via Empirical VoD User Behavior Analysis	7
<i>Bin Chang, Liang Dai, Yi Cui, and Yuan Xue</i>	
A Measurement Study of Cache Rejection in P2P Live Streaming System	12
<i>Yishuai Chen, Changjia Chen, and Chunxi Li</i>	
A Multi-Source Streaming Model for Mobile Peer-to-Peer (P2P) Overlay Networks	18
<i>Alireza Goudarzi Nemati, Tomoya Enokido, and Makoto Takizawa</i>	

Session 2: Distributed Systems Chair: Yoshitaka Shibata, Iwate Prefectural

University

Role Based Access Control in Distributed Object Systems	24
<i>Tomoya Enokido and Makoto Takizawa</i>	
Security Framework in a Virtual Large-Scale Disk System	30
<i>Minoru Uehara</i>	
Pose Estimation for Evaluating Standing Long Jumps via Dynamic Bayesian Networks	36
<i>Hui-Huang Hsu, Yao-Bao Yen, Chu-Song Chen, and Chun-Ta Ho</i>	
Delivery Infrastructure for Secure Scalable Coded Multimedia	42
<i>Markus Dunte and Christoph Ruland</i>	

Session 3: Wireless Networks Chair: Makoto Takizawa, Seikei University

Adaptive Layered Multimedia Transmissions over Wireless Networks	48
<i>Arjan Durrezi, Vamsi Paruchuri, Mimoza Durrezi, and Leonard Barolli</i>	
Experimental Evaluation of Usage Pattern in Campus Mobile IP Network	54
<i>Jaehyuk Ryu and Koji Okamura</i>	
An Adaptive Bandwidth Request Scheme for QoS Support in WiMAX Polling Services	60
<i>Cheng-Yueh Liu and Yaw-Chung Chen</i>	
Routing Efficiency of AODV and DSR Protocols in Ad-Hoc Sensor Networks	66
<i>Tao Yang, Makoto Ikeda, Giuseppe De Marco, Leonard Barolli, Arjan Durrezi, and Fatos Xhafa</i>	

Session 4: Multimedia Systems Chair: Minoru Uehara, Toyo University

Collaborative and Multimodal Communications System Using Immersive Virtual Reality Environment over Ultrahigh-Speed Network	72
<i>Tomoyuki Ishida, Akihiro Miyakawa, and Yoshitaka Shibata</i>	
Open 3D Shared Space Construction Scheme for Symbiotic Collaborative Works	78
<i>Takayuki Kuroda, Akira Sakatoku, Gen Kitagata, Debasish Chakraborty, and Norio Shiratori</i>	
Adam — A Testbed for Distributed Virtual Environments	84
<i>Jan Sablatnig, Jiehua Chen, Ruedi Seiler, Sven Grottko, Andreas Kopke, and Adam Wolisz</i>	
MultiStream — A Cross-Platform Display Sharing System Using Multiple Video Streams	90
<i>Yong Liu, Otto J. Anshus, Phuong H. Ha, Tore Larsen, and John Markus Bjorndalen</i>	

The Second International Workshop on Wireless Mesh and Ad Hoc Networks

— WiMAN 2008

Session 1: Routing, Scheduling, and Channel Assignment Chair: Hock Beng

Lim, Nanyang Technological University

Bipartite Graph Based Dynamic Spectrum Allocation for Wireless Mesh Networks	96
<i>Jianjun Yang and Zongming Fei</i>	
Cross-Layer Scheduling for Multiple Video Streams over a Hierarchical Emergency-Deployed Network	102
<i>Virginia Corvino, Velio Tralli, and Roberto Verdone</i>	
Joint Routing and Channel Assignment in WMN Using Extended Petri Net	108
<i>Hejiao Huang, Yun Peng, and Jing Li</i>	
Real-Time Routing in Wireless Sensor Networks	114
<i>Adel Ali Ahmed, Liza Abdul Latiff, M.A. Sarijari, and Norsheila Fisal</i>	

Session 2: MAC Protocols Chair: Liqiang Zhang, Indiana University South

Bend

Fast Link Assessment in Wireless Mesh Networks by Using Non-Constant Weight Code	120
<i>Ravi Nelavelli, Rajesh Prasad, and Hongyi Wu</i>	
On Load Regulated CSMA	126
<i>Manzur Ashraf, Aruna Jayasuriya, and Sylvie Perreau</i>	

Maximizing Aggregate Throughput of Wireless Ad Hoc Networks Using Enhanced Physical Carrier Sensing	132
<i>Nyein Aye Maung Maung, Taku Noguchi, and Makoto Kawai</i>	

Session 3: Sensor Networks and Multi-Hop Communications Chair:

Yu-Kwong Kwok, Colorado State University

Flip Error Resistant Stitching in Sensor Network Localizations	138
<i>Oh-Heum Kwon and Ha-Joo Song</i>	
On Improving the Precision of Localization with Gross Error Removal	144
<i>Chongming Zhang, Xi Zhou, Chuanshan Gao, and Chunmei Wang</i>	
Comparing the Efficiency of Localization Algorithms with the Power-Error-Product (PEP)	150
<i>Frank Reichenbach, Jan Blumenthal, and Dirk Timmermann</i>	
Local Topology Assisted XOR Coding in Wireless Mesh Networks	156
<i>Rajesh Prasad, Hongyi Wu, Dmitri Perkins, and Nian-Feng Tzeng</i>	

Session 4: Modeling and Performance Evaluations Chair: Christian

Poellabauer, University of Notre Dame

Game Theoretic Packet Scheduling to Combat Non-Cooperativeness in Wireless Mesh Networks	162
<i>Zhen Kong, Yu-Kwong Kwok, and Jiangzhou Wang</i>	
A Middleware Services Simulation Platform for Wireless Sensor Networks	168
<i>Hock Beng Lim, Bang Wang, Cheng Fu, Arpan Phull, and Di Ma</i>	
An Actor-Oriented Group Mobility Model for Wireless Ad Hoc Sensor Networks	174
<i>Enkhbold Ochirsuren, Leandro Soares Indrusiak, and Manfred Glesner</i>	

The Third International Workshop on Delay/Disruption-Tolerant Mobile

Networks — DTMN 2008

Session 1: Routing, Scheduling, and Channel Assignment

Understanding the Tolerance of Dynamic Networks: A Routing-Oriented Approach	180
<i>Yifeng Shao and Jie Wu</i>	
Reliable and Efficient Alarm Message Routing in VANET	186
<i>Hao Jiang, Hao Guo, and Lijia Chen</i>	
A Cooperative ARQ for Delay-Tolerant Vehicular Networks	192
<i>Julián Morillo Pozo, Oscar Trullols, José M. Barceló, and Jorge García Vidal</i>	

Session 2 : Routing II

A Receiver-Based Opportunistic Forwarding Protocol for Mobile Sensor Networks	198
<i>Lian Li, Limin Sun, Jian Ma, and Canfeng Chen</i>	
Reality-Check for DTN Routing Algorithms	204
<i>Arshad Islam and Marcel Waldvogel</i>	
Bounded-Delay, Probability-Based Routing in Intermittently Connected Mobile Ad Hoc Networks	210
<i>Xianning Li and Xianwei Zhou</i>	

Session 3: Routing III

Data Collection with Multiple Mobile Actors in Underwater Sensor Networks	216
<i>Jincheng Wang, Deshi Li, Mi Zhou, and Dipak Ghosal</i>	
Remaining Delivery Time Estimation Based Routing for Intermittently Connected Mobile Networks	222
<i>Feng Liu, Ming Li, Run Zhang, He Zhang, and Zhen Xu</i>	
Online Estimation of Effective Delivery Capability in Delay-Tolerant Mobile Sensor Networks	228
<i>Zhipeng Yang, Ha Dang, and Hongyi Wu</i>	

The Second International Workshop on Trust and Reputation Management in Massively Distributed Computing Systems — TRAM 2008

Session 1: TRAM 2008 Keynote Chair: Yafei Dai

A Grassroots Approach in P2P Reputation Studies	234
<i>Xiaoming Li</i>	

Session 2: Invited Papers Chair: Yafei Dai

H-Trust: A Robust and Lightweight Group Reputation System for Peer-to-Peer Desktop Grid	235
<i>Huanyu Zhao and Xiaolin Li</i>	
Modeling Attack Behaviors in Rating Systems	241
<i>Qinyuan Feng, Yafei Yang, Yan Lindsay Sun, and Yafei Dai</i>	

Session 3: Trust Models and Reputation Systems Chair: Yan Sun

On the Modeling of Honest Players in Reputation Systems	249
<i>Qing Zhang and Ting Yu</i>	
Computing Reputation Metric in Multi-Agent E-Commerce Reputation System	255
<i>Anna Gutowska and Kevan Buckley</i>	

The Fifth International Workshop on Wireless Ad Hoc and Sensor Networking

— WWASN 2008

Session 1: Routing and Broadcasting

Manetkit: A Framework for MANET Routing Protocols	261
<i>Rajiv Ramdhany and Geoff Coulson</i>	
The (k,l) Core-dian Tree for Ad Hoc Networks	267
<i>Amit Dvir and Michael Segal</i>	
An Effective Algorithm for Computing Energy-Efficient Broadcasting Trees in All-Wireless Networks	273
<i>Doina Bein and S.Q. Zheng</i>	
Fast-Converging Distance Vector Routing for Wireless Mesh Networks	279
<i>Yangcheng Huang and Saleem Bhatti</i>	

Session 2: Sensor Networks

Priority-Based Coverage-Aware Congestion Control for Multihop Wireless Sensor Networks	285
<i>Xiaoling Qiu, Dipak Ghosal, Biswanath Mukherjee, Jennifer Yick, and Deshi Li</i>	
Mobility Control for Complete Coverage in Wireless Sensor Networks	291
<i>Zhen Jiang, Jie Wu, Robert Kline, and Jennifer Krantz</i>	
Maintaining Connected Coverage for Wireless Sensor Networks	297
<i>Jehn-Ruey Jiang and Tzu-Ming Sung</i>	
An Enhanced Sensor Scheduling Protocol for Wireless Sensor Networks	303
<i>Cheng Fu, Bang Wang, and Hock Beng Lim</i>	

Session 3: Security and Applications

A Distributed Intrusion Detection Scheme for Wireless Sensor Networks	309
<i>Guorui Li, Jingsha He, and Yingfang Fu</i>	
Intrusion Objects with Shapes under Randomized Scheduling Algorithm in Sensor Networks	315
<i>Yang Xiao, Hui Chen, Yanping Zhang, Xiaojiang Du, Bo Sun, and Kui Wu</i>	
Design and Implementation of a WSN-Based Intelligent Light Control System	321
<i>Meng-Shiuan Pan, Lun-Wu Yeh, Yen-Ann Chen, Yu-Hsuan Lin, and Yu-Chee Tseng</i>	
SCALAR: Scalable Data Lookup and Replication Framework for Mobile Ad-hoc Networks	327
<i>Emre Atsan and Ozgur Ozkasap</i>	

Session 4: Modeling and Measurements

Measuring the Node Energy Consumption in USB Based WSN Testbeds	333
<i>Andreas Kopke and Adam Wolisz</i>	
Performance of Incomplete Channel Sensing for Frequency Hopping	
Cognitive Personal Area Networks	339
<i>Vojislav B. Mistic and Jelena Mistic</i>	
Impact of Selfish Rate Adaptation on the Performance in IEEE 802.11-Based	
Wireless Multi-Hop Networks	345
<i>Pei Li, Yinlong Xu, and Chunpeng Zhang</i>	

The First International Workshop on Wireless Security and Privacy —

WiSP'08

Session 1: WiSP 2008 Opening Remarks and Keynote Chair: Sajal Das, Zhen

Jiang and Xiao Chen

Cyber Security: An Obtainable Goal?	351
<i>David H.C. Du</i>	

Session 2: Detections and Reputation Management Chair: Xukai Zou

Compromised Sensor Nodes Detection: A Quantitative Approach	352
<i>Tao Li, Min Song, and Mansoor Alam</i>	
Anonymous Misbehavior Detection in Mobile Ad Hoc Networks	358
<i>Bo Zhu, Kui Ren, and Lingyu Wang</i>	
A Novel CDS-Based Reputation Monitoring System for Wireless Sensor	
Networks	364
<i>Avinash Srinivasan, Feng Li, and Jie Wu</i>	
ARM: An Account-Based Hierarchical Reputation Management System	
for Wireless Ad Hoc Networks	370
<i>Haiying Shen and Ze Li</i>	

Session 3: Key Agreement and Management Chair: Haiying Shen

LEAP++: A Robust Key Establishment Scheme for Wireless Sensor Networks	376
<i>Chae Hoon Lim</i>	
Pairing Devices with Good Quality Output Interfaces	382
<i>Nitesh Saxena and Jonathan Voris</i>	
Optimized User Revocation for Group Signature Based Privacy-Aware PKI	388
<i>Wei Ren, Kui Ren, and Wenjing Lou</i>	

Session 4: Methodology and Protocol Chair: Wenjing Lou

Quality-of-Protection (QoP): A Quantitative Methodology to Grade Security Services	394
<i>Yan Sun and Anup Kumar</i>	
n-LDA: n-Layers Data Aggregation in Sensor Networks	400
<i>Ioana Rodhe and Christian Rohner</i>	
Notes on the CRTDH Group Key Agreement Protocol	406
<i>Spyros Magliveras, Wandu Wei, and Xukai Zou</i>	
Preserving Source-Location Privacy in Energy-Constrained Wireless Sensor Networks	412
<i>Jianbo Yao and Guangjun Wen</i>	

The Second International Workshop on Cooperative Distributed Systems —

CDS 2008

CDS Session 1

Higher Confidence in Event Correlation Using Uncertainty Restrictions	417
<i>Gerald G. Koch, Boris Koldehofe, and Kurt Rothermel</i>	
Flexible Concurrency Control for Real-Time Collaborative Editors	423
<i>Abdessamad Imine</i>	
A Dynamic Hashing Approach to Supporting Load Balance in P2P Systems	429
<i>Ye-In Chang, Hue-Ling Chen, Sih-Ning Li, and Hung-Ze Liu</i>	

CDS Session 2

ROCC: A Communication Overlay Abstraction for Wireless Users	435
<i>Seth Holloway and Christine Julien</i>	
Towards a Group-Based RBAC Model and Decentralized User-Role Administration	441
<i>Qi Li, Mingwei Xu, and Xinwen Zhang</i>	
Scalable AOI-Cast for Peer-to-Peer Networked Virtual Environments	447
<i>Jehn-Ruey Jiang, Yu-Li Huang, and Shun-Yun Hu</i>	

CDS Session 3

A Formalism for Reconfigurability Analysis in Distributed Non-Blocking Components	453
<i>Mahdi Niamanesh and Rasool Jalili</i>	
Caching Invalidation Strategies for Supporting 'Weak' Location Dependent Queries	459
<i>Yilin Wang, Edward Chan, Wenzhong Li, and Sanglu Lu</i>	
Heuristic Relay Node Selection Algorithm for One-Hop Overlay Routing	465
<i>Yin Chen, Li Tang, and Jun Li</i>	

Probabilistic Routing with Multi-Copies in Delay Tolerant Networks	471
<i>Ze Li and Haiying Shen</i>	

The First International Workshop on Cyber-Physical Systems — WCPS 2008

WCPS Session 1: Invited Papers

WCPS 2008 Invited Talk

RETROFIT: Reliable Exchanges through Resilient Overlays for Internet Teleoperation	477
<i>Karthik Singaram Lakshamanan and Raj Rajkumar</i>	

WCPS Session 2

Real-Time Data Services for Cyber Physical Systems	483
<i>Kyoung-Don Kang and Sang H. Son</i>	
A Certificateless Signature Scheme for Mobile Wireless Cyber-Physical Systems	489
<i>Zhong Xu, Xue Liu, Guoqing Zhang, Wenbo He, Guanzhong Dai, and Weihuan Shu</i>	
Secure Control: Towards Survivable Cyber-Physical Systems	495
<i>Alvaro A. Cardenas, Saurabh Amin, and Shankar Sastry</i>	
A Relaxation Approach to Dynamic Sensor Selection in Large-Scale Wireless Networks	501
<i>James E. Weimer, Bruno Sinopoli, and Bruce H. Krogh</i>	

WCPS Session 3

Towards Cyber-Physical Holodeck Systems Via Physically Rendered Environments (PRE's)	507
<i>Veljko Krunic and Richard Han</i>	
Module-Based Modeling of Cyber-Physical Power Systems	513
<i>Le Xie and Marija D. Ilic</i>	

WCPS Session 4

Security Property Violation in CPS through Timing	519
<i>Han Tang and Bruce M. McMillin</i>	
Design and Development Methodology for Resilient Cyber-Physical Systems	525
<i>Honguk Woo, Jianliang Yi, James C. Browne, Aloysius K. Mok, Ella Atkins, and Fei Xie</i>	
Cyber-Physical Medical and Medication Systems	529
<i>Albert M.K. Cheng</i>	

The Seventh International Workshop on Assurance in Distributed Systems and Networks — ADSN 2008

ADSN 2008 Keynote Chair: Kinji Mori

Coverage Based Testing for Concurrent Software	533
<i>Juichi Takahashi, Hideharu Kojima, and Zengo Furukawa</i>	

Session 1: Dependable Computing Chair: Kenji Ishida

Automated Addition of Fault-Tolerance to SCR Toolset: A Case Study	539
<i>Fuad Abujarad and Sandeep S. Kulkarni</i>	
Improving Routing Reliability on Wireless Sensors Network with Emergency Paths	545
<i>Bastien Mainaud, Mariem Zekri, and Hossam Afifi</i>	

Session 2: Autonomous Decentralized Architecture Chair: Tomoyuki Ohta

On Robotics Applications in Service-Oriented Architecture	551
<i>Yinong Chen and Xiaoying Bai</i>	
Autonomous Decentralized VoD Architecture to Achieve Service Assurance	557
<i>Xiaodong Lu and Kinji Mori</i>	
Autonomous Decentralized Community Construction Technology for High Quality Information Service	563
<i>Khalid Mahmood, Yuuya Kanamaru, Xiaodong Lu, and Kinji Mori</i>	

Session 3: Networking Chair: Yinong Chen

An Autonomous Clustering-Based Hierarchical Routing Using Decentralized Route Information Management Scheme for Mobile Ad Hoc Networks	569
<i>Ryotaro Oda, Tomoyuki Ohta, and Yoshiaki Kakuda</i>	
Route-Split Routing with Resiliency to Simultaneous Failure for Mobile Ad Hoc Networks	575
<i>Tsuyoshi Mizumoto, Tomoyuki Ohta, and Yoshiaki Kakuda</i>	
A Novel Railway Signal Control System Based on the Internet Technology and an Assurance Technology	581
<i>Takashi Kunifuji, Tadao Miura, Gen Kogure, Hiroyuki Sugahara, and Masayuki Matsumoto</i>	

Session 4: Scheduling Chair: Xiaodong Lu

A New Scheduling Algorithm for Distributed Streaming Media System Based on Multicast	587
<i>Yunpeng Chai, Zhihui Du, and Sanli Li</i>	

A File Fetching Method to Reduce the Redundant Traffic on BitTorrent-Like P2P Networks	593
<i>Junichi Funasaka, Akihiko Ishidu, and Kenji Ishida</i>	
Virtual Workspace Based Job Execution Methods and Dynamic Makespan Optimized Scheduling Algorithms	599
<i>Zhili Cheng, Zhihui Du, Yinong Chen, and Xiaoying Wang</i>	

Author Index