

Proceedings
2009 International Conference on
Wireless Networks and Information Systems
WNIS 2009
December 28-29, 2009
Shanghai, China

Edited by

QI Luo

Honghua Tan

Cosponsored by

Institute of Electrical and Electronics Engineers, USA

IEEE Shanghai Section

Intelligent Information Technology Application Research Association, Hong Kong

Wuhan Institute of Technology, China



Los Alamitos, California

Washington • Tokyo



Copyright © 2009 by The Institute of Electrical and Electronics Engineers, Inc.

All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number P3901
BMS Part Number CFP09551-PRT
ISBN 978-0-7695-3901-0
Library of Congress Number 2009911849

Additional copies may be ordered from:

IEEE Computer Society
Customer Service Center
10662 Los Vaqueros Circle
P.O. Box 3014
Los Alamitos, CA 90720-1314
Tel: +1 800 272 6657
Fax: +1 714 821 4641
<http://computer.org/cspress>
csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: +1 732 981 0060
Fax: +1 732 981 9667
[http://shop.ieee.org/store/
customer-service@ieee.org](http://shop.ieee.org/store/customer-service@ieee.org)

IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: +81 3 3408 3118
Fax: +81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: <reprints@computer.org>

Editorial production by Bob Werner
Cover art production by Joe Daigle/Studio Productions
Printed in the United States of America by The Printing House



**IEEE Computer Society
Conference Publishing Services (CPS)**

<http://www.computer.org/cps>

2009 International Conference on Wireless Networks and Information Systems

WNIS 2009

Table of Contents

Message from the WNIS 2009 Chairs	xii
WNIS 2009 Organizing Committee	xiii
WNIS 2009 Reviewers	xiv

International Conference on Wireless Networks and Information Systems

Research on FDM Based DRS Pattern for Dual-layer Beamforming in LTE System	3
<i>Yinhui Liu</i>	
Modelling a Wireless Sensor Network as a Small World Network	7
<i>Suvendi Chinnappen-Rimer and Gerhard P. Hancke</i>	
Formal Derivation of the Knapsack Problem with PAR Method	11
<i>Lingyu Sun and Ming Leng</i>	
Performance Analysis of Anti-jamming for Interleave-Division Multiple Access Systems	15
<i>Xingzhong Xiong and Jianhao Hu</i>	
Cylindrical Conformal Omnidirectional Antenna Design	19
<i>Jingping Liu and Huichang Zhao</i>	
The Comparison between Space-time Blocks Codes and Trellis Codes under Maximum Likelihood Sequence Estimator	23
<i>Jingping Liu and Huichang Zhao</i>	
Research on Routing Protocols in Ad Hoc Networks	27
<i>Dou Niu, Yan Zhang, Yanjuan Zhao, and Mei Yang</i>	
The Research of Coverage Problems in Wireless Sensor Network	31
<i>Yuling Lei, Yan Zhang, and Yanjuan Zhao</i>	
Localization Technology in Wireless Sensor Networks Based on UWB	35
<i>Chunsen Xu, Yanjuan Zhao, and Yan Zhang</i>	

Temporal Information Detection for Video Quality Evaluation	38
<i>Yuan Fei and Cheng En</i>	
Node State and Backup Reverse Path Based LAODV Routing Protocol	42
<i>Li Xia, Xin Su, Zhiyuan Wang, and Qilong Li</i>	
A Modified Multiple Access Protocol for Underwater Acoustic Networks	46
<i>En Cheng, Bilan Lin, Fei Yuan, and Jie Deng</i>	
An Efficient Group Signatures Based on Discrete Logarithm	50
<i>Mingping Xia and Xue Sun</i>	
The Research on the Implementation of the Distributional Memory	54
<i>Wang Chengjun</i>	
The Research on Mutual Exclusion Algorithm in Distributed System	57
<i>Wang Chengjun</i>	
The Implementation of Protection and Safe Mechanisms Base on Internal Access Authorization Policy	61
<i>Wang Chengjun</i>	
Tree Topology Based Fault Diagnosis in Wireless Sensor Networks	65
<i>Xu Xiang-hua, Zhou Biao, and Wan Jian</i>	
Design of Compact Monopole PCB Antenna for UWB Applications	70
<i>Wang Ren</i>	
Novel Design of Annular-ring Slot Antenna for WLAN WiMAX Applications	74
<i>Wang Ren</i>	
File Transferring via BlueTooth Based on the Obex Protocol	77
<i>Xue ZhangCheng and Wu Shunxiang</i>	
File Transmission via Socket from Smartphone to PC Based on Symbian OS	81
<i>Lin Chunmin, Luo Delin, and Wu Shunxiang</i>	
Design and Simulation of a FPGA-Based Demodulator for Low-bit Remote Subcarrier Signal	85
<i>Gao Cuidong and Zhao Qi</i>	
Face Tracking Based on Fusion Skin Color Model and Optical Flow Algorithm	89
<i>Xiaogang Zhao and Yanbo Hui</i>	
Numerical Parallel Processing Based on GPU with CUDA Architecture	93
<i>Chengming Zou, Chunfen Xia, and Guanghui Zhao</i>	
An Adaptive MAC Scheme to Achieve Throughput Optimization and Airtime Fairness for IEEE 802.11 Multirate Networks	97
<i>Jianbing Mao, Yuming Mao, Supeng Leng, and Xiang Bai</i>	
Research on the Coverage of Heterogeneous Nodes in Wireless Sensor Networks	102
<i>Jirong Li, Qinghua Shi, Yunzhang Sun, and Peng He</i>	
A Software Diversity Model for Embedded Safety-critical System	106
<i>Haifeng Wang and Nan Liang</i>	

The Capacity Analysis of Multiple Correlation in MIMO System	110
<i>Teng Zhijun, Zhao Chunhui, and Yang Liyuan</i>	
A New Switching Strategy for Different Transfer Mode in Multi-antenna Systems	114
<i>Teng Zhijun, Yan Juan, He Ping, and Zhang Xiaoyu</i>	
Design of Output Feedback Controller for Attitude Control System of Flexible Satellite Based on LMI	117
<i>Hao Xianwei, Zhou Yanru, He Haicong, and Chen Shaoyan</i>	
Review of Studies of Tag Anti-collision Algorithm in RFID	121
<i>Feng Shuo, Gao Fei, Xue Yan-ming, and Li Heng</i>	
A Novel Optimization Method for the Maximum Coverage Sets of WSN	125
<i>WenJie Tian and JiCheng Liu</i>	
Intrusion Detection Model Based on Support Vector Regression and Principal Components Analysis	129
<i>WenJie Tian and JiCheng Liu</i>	
Intrusion Detection Quantitative Analysis with Support Vector Regression and Particle Swarm Optimization Algorithm	133
<i>WenJie Tian and JiCheng Liu</i>	
Research of Task Scheduling of Ad hoc Cluster Computing Based on Genetic Algorithm	137
<i>Ming Xu</i>	
LI Delay Impact on ICIC in Type 1 Relay	140
<i>Dengkun Xiao, Jian Huang, Tongwei Qu, and Xiaoyong Wang</i>	
The Hot Topics of Mechanical Instrument Industry in China between 1999~2008 Based on Word Frequency Analysis	144
<i>Jian Luo, Min Shi, and Rui Wang</i>	
Empirical Analysis on the Effect of Customer Relationship Management to the Customer Loyalty	147
<i>Hongfei Sun and Min Liu</i>	
Research of Clustering Algorithm Based on Data Content for Heterogeneous Sensor Networks	150
<i>Yingchun Zhou, Guoqing Dong, Lu Chen, and Renyou Zhang</i>	
A Data Fusion Algorithm Based on Weighted Least Square for Agile Projectile's Attitude Determination	154
<i>Yong Wang, Zhide Liu, Jiabin Chen, Chunlei Song, and Jun Wang</i>	
Iterative Learning Neurocomputing	158
<i>Mingxuan Sun</i>	
Research of One Mobile Learning System	162
<i>Yi Jin</i>	

An Improved Motion Estimation Scheme for Side Information in Distributed Video Coding	166
<i>Shujun Huang and Yinwei Zhan</i>	
The Determinants for the Use of Wireless System in Traditional Chinese Hospital	171
<i>Ying Su and Raj Gururajan</i>	
An Improved On-demand QoS-Based Routing Protocol for Mobile Ad hoc Networks	175
<i>Gao Qian</i>	
Reconstruction of Automation Graph-Database Associated Component Based on SVG Web Service	179
<i>Liu Li and Qu Zhijian</i>	
Communication Experiment Dedicated Digital Spectrum Analyzer	183
<i>Chong Yao, Yueqiang Lu, and Weilin Zhang</i>	
Research on Network Simulation Abstract Technology Based on Simplicity Theory	186
<i>Jia Wang, Xiangzhan Yu, and Jun Yan</i>	
Full-Rate 2x1 Space-Time Codes with High Diversity Gain	193
<i>Qiang Feng, Hongyi Yu, and Bo Yang</i>	
Fault Diagnosis for Analogy Circuits Based on Support Vector Machines	197
<i>Yunian Gu, Zhifen Hu, and Tao Liu</i>	
A Utility-Based Network Selection Mechanism in Heterogeneous Wireless Networks	201
<i>Yuhong Li, Xiaoli Guo, Yisan Li, and Xiuli Zheng</i>	
Measuring the Performance of Link Layer Triggers for the Upward Vertical Handover in Heterogenous Wireless Network	205
<i>Qing Jiang, Xiteng Zhang, Rong Chai, and Qianbin Chen</i>	
Channel Estimation in Time and Frequency Domain in OFDM Systems	209
<i>Zeinab Taheri, Mehrdad Ardebilipour, and Mohammad Ali Mohammadi</i>	
Improved Credit Based Scheduling Scheme with QOS in IEEE 802.16 WBA Networks	213
<i>Chilukuri Kalyana Chakravarthy and P.V.G.D. Prasad Reddy</i>	
Prediction of Network Flow Based on Wavelet Analysis and ARIMA Model	217
<i>Jingfei Li, Lei Shen, and Yongan Tong</i>	
An Effective Relay Coordination Scheme Based on Opportunistic Relaying for LTE-Advanced	221
<i>Qianbin Chen, Yan Li, and Lun Tang</i>	
Application of Wavelet Analysis Technique in the Faults Diagnosis of Optical Fiber Fusion	226
<i>Zhang Zhen and Liu Ren</i>	

A Stability Result of Information Systems	230
<i>Jiemin Zhao</i>	
A Stability Note of Communication Systems	234
<i>Jiemin Zhao</i>	
On the Instability Problem of Information Systems	237
<i>Jiemin Zhao</i>	
Analysis of the Framework for Financial Decision Support System	241
<i>Minli Zhang, Yueran Gu, and Junwu Zhu</i>	
A Tracing Algorithm for Intersection of Parametric Surface and Implicit Surface	245
<i>Xu-Fang Pang and Ming-Yong Pang</i>	
Detective DSS Based on Content Cognition Technology	249
<i>Kairong Li, Juanni Wang, Weiyong Gao, and Xiaoyan Liu</i>	
Quantitative Analysis of Chinese New Stockholders Based on GM(1,1)	253
<i>Deng Wei and Shao Xiaoyi</i>	
Dynamic Reliability Testing about Temperature Characteristic of Components	257
<i>Gu Qiang, Zhang Ya, and Zheng Jinhua</i>	
A TCP-Friendly Active Layered Multicast Congestion Control Mechanism	259
<i>Yang Yun, Chen Jie, Shi Tingting, and Chen Junqin</i>	
Chinese Nominal Entity Recognition with Semantic Role Labeling	263
<i>Wenbo Pang and Xiaozhong Fan</i>	
Commodity Classification in Hierarchies	267
<i>Jie Shen, Cang Chen, and Ying Gao</i>	
Antecedents of Knowledge Transfer in E-learning	270
<i>Hanyang Luo</i>	
Discussions on Essentials and Future Potential of Mobile Commerce	274
<i>Chen Xin</i>	
Wireless Communications Trends	278
<i>Chen Xin</i>	
The Dynamic Cloth Simulation Performance Analysis Based on the Improved Spring-mass Model	282
<i>Jianchun Wang, Xinrong Hu, and Yi Zhuang</i>	
Error Resilient Transcoding for Wireless Video Transmission	286
<i>Xinchen Zhang and Mei Huang</i>	
A High-performance Pseudo-random Number Generator Based on FPGA	290
<i>Ding Jun, Li Na, Guo Yixiong, and Yang Jun</i>	
An Overview of the Factors Responsible for GPS Signal Error: Origin and Solution	294
<i>Asim Iqbal, Hassan Mahmood, Umar Farooq, M. Ahsan Kabir, and Muhammad Usman Asad</i>	

Cognitive Radio: A Breakthrough, Revolution in Wireless Communication	300
<i>Asim Iqbal, Hassan Mahmood, Umar Farooq, M. Ahsan Kabir, and Muhammad Usman Asad</i>	
Designing a Partial Response Equalizer for a Non-linear Magnetic Recording Channel	304
<i>Tsai-Sheng Kao</i>	
Robust Control for Flexible Satellite with Modal Frequency Uncertainty	308
<i>He Haicong and Ye Lina</i>	
A Solution to Error and Loss in Wireless Network Transfer	312
<i>Qili Zhou, Xu Cao, Shouyuan Chen, and Gang Lin</i>	
A Downlink Dynamic Resource Allocation Scheme for Multi-cell OFDMA System	316
<i>Yueyun Chen and Shuaiqi Guo</i>	
An Improved Call Admission Control Scheme Based on Reinforcement Learning for Multimedia Wireless Networks	322
<i>Yueyun Chen and Cuixia Jia</i>	
A Handoff Strategy Based on Cooperative Diversity for Cellular Reelaying Network	326
<i>Yueyun Chen and Yanyan Liu</i>	
Processing and Analysis on the Slice Image of Human Body	330
<i>Yanling Yao, Yongqiang Chen, and Xianfeng Li</i>	
Adaptive Fusion Algorithm of Multisensor Image in Nonsampled Contourlet Domain	334
<i>Xiaohui Yang</i>	
On Multilinear-Based Approaches of Blind Receiver for Polarization Sensitive Uniform Square Array	338
<i>Xin Gao, Xiaofei Zhang, Zhongwei Sun, Weiyang Chen, and Ying Shi</i>	
On the MUSIC-derived Approaches of Angle Estimation for Bistatic MIMO Radar	343
<i>Xin Gao, Xiaofei Zhang, Gaopeng Feng, Ziqing Wang, and Dazhuan Xu</i>	
Research on Methods of Semantic Disambiguation about Natural Language Processing	347
<i>Lou Guohuan, Zhang Hao, and Wang Honghui</i>	
Evolution from Product Profit Pattern to Value Profit Pattern of Enterprise	350
<i>Wang Tingliang and Wang Na</i>	
Study on the Brand Value Promotion of Hotel Service Industry	354
<i>Fan Linsheng and Xue Pan</i>	
Trade Credit Contracts under Asymmetric Information	358
<i>Zhonghua Ma</i>	
Research of Wireless Network Planning Based on WIMAX	362
<i>Ping Fan</i>	

Research of Mobile Forensic Software System Based on Windows Mobile	366
<i>Chen Shaoyan, Hao Xianwei, and Luo Ming</i>	
Improvement Suggestions to the AODV Routing Protocol	370
<i>Lu Ding and Li Wan</i>	
Programmable Graph Architectures (PGAs) for Matrix Multiplications and Transposes	373
<i>K. Wendy Tang and A. Yavuz Oruc</i>	
Dense and Symmetric Graph Formulation and Generation for Wireless Information Networks	379
<i>Jaewook Yu, Dongsoo Kim, and K. Wendy Tang</i>	
Research on Evaluation Model of Customer Trust for B2C E-commerce Enterprises	385
<i>Yonggang Zhao and Limin Xu</i>	
Universal Mobility with Global Identity (UMGI) Architecture	389
<i>Walaa Farouk El-Sadek and Mikhail Naguib Mikhail</i>	
A New Robust, Energy-efficient and Scalable Wireless Sensor Networks Architecture Applied to a Wireless Fire Detection System	395
<i>J.V. Capella, A. Bonastre, J.J. Serrano, and R. Ors</i>	
Quantum-behaved Particle Swarm Optimization with Crossover Operator	399
<i>Dianbo Su, Wenbo Xu, and Jun Sun</i>	
Research on the Influence of Human Capital to the Development of Hebei Province High-tech Industry	403
<i>Jun Guan and Pengfei Zhao</i>	
Hybrid Indoor Location Estimation System Using Image Processing and WiFi Strength	406
<i>Kiyohiko Hattori, Ryousuke Kimura, Nobuo Nakajima, Tetuya Fujii, Youiti Kado, Bing Zhang, Takahiro Hazugawa, and Keiki Takadama</i>	
Author Index	412

Message from the WNIS 2009 Chairs

The purpose of WNIS 2009, The 2009 International Conference on Wireless Networks and Information Systems, is to bring together researchers, engineers and practitioners interested on information systems and applications in the context of wireless networks and mobile technologies.

Information systems and information technology are pervasive in the whole communications field, which is quite vast, encompassing a large number of research topics and applications: from practical issues to the more abstract theoretical aspects of communication; from low level protocols to high-level networking and applications; from wireless networking technologies to mobile information systems; many other topics are included in the scope of WNIS 2009.

WNIS 2009 will be held in Shanghai, China, in December 2009. We cordially invite you to attend the 2009 International Conference on Wireless Networks and Information Systems. We are soliciting papers that present recent results, as well as more speculative presentations that discuss research challenges, define new applications, and propose methodologies for evaluating and the road map for achieving the vision of wireless networks and mobile technologies.

WNIS 2009 is cosponsored by the Institute of Electrical and Electronics Engineers, the IEEE Shanghai Section, the Intelligent Information Technology Application Research Association, Hong Kong and Wuhan Institute of Technology, China.

The purpose of WNIS 2009 is to bring together researchers and practitioners from academia, industry, and government to exchange their research ideas and results and to discuss the state of the art in the areas of the symposium. In addition, the participants of the conference will have a chance to hear from renowned keynote speakers.

We thank Silvia Ceballos, supervisor of IEEE Conference Publishing Services (CPS), who enthusiastically supported our conference. Thanks also go to Bob Werner for his wonderful editorial services on this proceedings.

We would like to thank the program chairs, organization staff, and the members of the program committees for their hard work. Special thanks go to the IEEE Shanghai Section and the IEEE Computer Society.

We hope that WNIS 2009 will be successful and enjoyable to all participants. We look forward to seeing all of you next year at WNIS 2010.

Qi Luo, Wuhan Institute of Technology, China

WNIS 2009 Reviewers

Yongjun Chen, Guangdong University of Business Studies, China
Luo Qi, Wuhan Institute of Technology, China
Zhihua Zhang, Wuhan Institute of Physical Education, China
Yong Ma, Wuhan Institute of Physical Education, China
Zhenghong Wu, East China Normal University, China
Chen Jing, Wuhan University of Technology, China
Xiang Kui, Wuhan University of Technology, China
Li Zhijun, Wuhan University of Technology, China
Zhang Suwen, Wuhan University of Technology, China
Shufang Li, Beijing University, China
Tianshu Zhou, George Mason University, USA
Bing Wu, Loughborough University, UK
Huawen Wang, Wuhan University, China
Zhihai Wang, Beijing Jiaotong University, China
Ronghuai Huang, Beijing Normal University, China
Xiaogong Yin, Wuhan University, China
Jiaqing Wu, Guangdong University of Business Studies, China
Xiaochun Cheng, Middlesex University, UK
Jia Luo, Wuhan University of Science and Technology Zhongnan Branch, China
Toshio Okamoto, University of Electro-Communications, Japan
Kurt Squire, University of Wisconsin-Madison, USA
Xianzhi Tian, Wuhan University of Science and Technology Zhongnan Branch, China
Alfredo Tirado-Ramos, University of Amsterdam, The Netherlands
Bing Wu, Loughborough University, UK
Yanwen Wu, Central China Normal University, China
Harrison Hao Yang, State University of New York at Oswego, USA
Dehuai Zeng, Shenzhen University, China
Weitao Zheng, Wuhan University of Technology, China
Qihai Zhou, Southwestern University of Finance and Economics, China
Tianshu Zhou, George Mason University, USA
Shao Xi, Nanjing University of Posts and Telecommunication, China
Xueming Zhang, Beijing Normal University, China
Peide Liu, Shandong Economic University, China
Qian Yin, Beijing Normal University, China
Zhigang Chen, Central South University, China
Hoi-Jun Yoo, Korea Advanced Institute of Science and Technology, Korea
Chin-Chen Chang, Feng Chia University, Taiwan
Jun Wang, The Chinese University of Hong Kong, Hong Kong