2010 Second International Conference on Future Networks

(ICFN 2010)

Sanya, Hainan, China
22-24 January 2010
# Table of Contents

**Preface** ......................................................................................................................... xii
**Organizing Committee** ................................................................................................. xiv
**Reviewers** ....................................................................................................................... xv

---

**Session 1**

- New Algorithm for Computing Network Reliability Using Matrix Column-Transformation ............................................................ 3  
  *Li Dongkui*

- Improved Genetic Feedback Algorithm Based Network Security Policy Frame Work ............................................................... 8  
  *Atish Mishra, Arun Kumar Jhapate, and Prakash Kumar*

- Tomlinson-Harashima Precoding in the Physical Network Coded Two Way MIMO Relay Channels ........................................... 11  
  *Peng Gong, Jie Xu, and Lin Qiu*

- An Effective Background Subtraction under a Continuously and Rapidly Varying Illumination ....................................................... 16  
  *Bo Yang, Yunlong Guo, Yangyang Ming, and Aidong Men*

- A Robust Particle Filter for People Tracking ......................................................................................................................... 20  
  *Bo Yang, Xinting Pan, Aidong Men, and Xiaobo Chen*

- Background Subtraction under Single Varying Illumination in Different Background Luminance ...................................................... 24  
  *Ming Yang Yang, Yang Bo, Men Ai Dong, and Guo Yun Long*

- A Trees-Mesh Based Application Layer Multicast Using Collaborative Sub-streams ...................................................................... 29  
  *Jun Yue and Chanle Wu*

- uSD: An SD-Based Mobile Gateway to Wireless Sensor Network .................................................................................................. 34  
  *Chunxiao Jiang, Xin Zhang, Xin Ma, Yong Ren, Canfeng Chen, Jinfeng Zhang, and Jian Ma*
Optimal Tweakable Blockcipher Based on Dual MISTY-Type Structure ...................................................... 39
Fengtong Wen and Lizi Yin

A Review of Vulnerabilities in Identity Management Using Biometrics ......................................................... 42
Fathimath Sabena, Ali Dehghantaniha, and Andrew P. Seddon

Session 2

Power Control Based on Routing Protocol in Wireless Sensor Networks ......................................................... 53
Deyun Gao, Lulu Liang, Guanghong Xu, and Sidong Zhang

Symbol Error Rate of Multi-Relay Decode-and-Forward Cooperative Communication Systems under Nakagami-m Fading ................................................................. 58
Wei Zheng, Rujing Zhao, Xiangming Wen, and Dongming Su

Call Dropping Probability of Next Generation Wireless Cellular Networks with Mobile Relay Station .............. 63
Rujing Zhao, Xiangming Wen, Dongming Su, and Wei Zheng

A Study on Performance of Inter-Vehicle Communications in Bidirectional Traffic Streams ........................................ 68
Xiaoyan Sun, Yuanlu Bao, Wei Lu, Jun Dai, and Zhe Wang

Energy-efficient Distributed Detection in Wireless Sensor Networks .............................................................. 73
Xuefen Zhang, Changchuan Yin, Guangxin Yue, and Huarui Wu

Hierarchy Virtual Queue Based Flow Control in LTE/SAE ................................................................................. 78
Qiu Qinlong, Chen Jian, Ping Lingdi, and Pan Xue-zeng

Research of Collaborative Design Task Management Method Based on Grid ...................................................... 83
Xuebin Chen, Shufen Zhang, and Shuai Zhang

Analysis and Research of Cloud Computing System Instance ........................................................................... 88
Shufen Zhang, Shuai Zhang, Xuebin Chen, and Shangzhou Wu

Cloud Computing Research and Development Trend .......................................................................................... 93
Shuai Zhang, Shufen Zhang, Xuebin Chen, and Xiuzhen Huo

Optimization of Heterogeneous Databases Data Synchronization in WAN by Virtual Log Compression ................... 98
Zhenyu Lu, Chunling Zhang, and Zunfeng Liu

Session 3

Study on Feature Selection and Weighting Based on Synonym Merge in Text Categorization .................................. 105
Zhenyu Lu, Yongmin Liu, Shuang Zhao, and Xuebin Chen

Decision Tree Applied in Web-Based Intrusion Detection System ..................................................................... 110
Mingjun Wei, Yufang Liu, Xuebin Chen, and Jianmin Li

Adaptive FAST TCP ........................................................................................................................................... 114
Heying Zhang, Xunying Zhang, Baohua Fan, and Lisong Shao

NevML: A Markup Language for Network Topology Visualization .................................................................... 119
Haoxiang Wang
Reducing Coordinator Failures in Centralized Algorithm to Guarantee Mutual Exclusion Using a Backup Site .................................................................................................................. 124
Sadegh Firoozandeh and Abolfazl Toroghi Haghighat

A Redundancy Detection Algorithm for Complex Environment in Wireless Sensor Networks ................................................................................................................................. 129
Wei Qu, Jinkuan Wang, and Zhigang Liu

Using AR Model and BP Neural Network to Identify Microseism Signal ............................................................................................................................................ 134
Ji Chang-peng and Liu Li-li

Experimental Study on RFID Performance Factors of Conveyor Belt System Using DOE Methodology ........................................................................................................................................ 139
Xing Wang and Dong Wang

Feature Selection and Design of Intrusion Detection System Based on k-Means and Triangle Area Support Vector Machine ................................................................................... 144
Pingjie Tang, Rong-an Jiang, and Mingwei Zhao

A New Energy-Aware Scheme for RFID System Based on ALOHA .................................................................................................................................................. 149
Kaixing Wu and Yuankun Liu

Session 4

Improvement of Decision Making Protocol for Duty Cycle Division Multiplexing (DCDM) System ........................................................................................................................................ 155
Mohd Noor Derahman, Kaharudin Dimyati, Amin Malek Mohammadi, and Mohamad Khazani Abdullah

A Steiner-Based Secure Multicast Routing Protocol for Wireless Sensor Network ............................................................................................................................................. 159
Rong Fan, Jian Chen, Jian-Qing Fu, and Ling-Di Ping

The Application of Vibration Signal Multi-fractal in Fault Diagnosis .................................................................................................................................................. 164
Yuan Yu, Li Baoliang, Shang Jingshan, and Yao Shixuan

An Intelligent WLAN Intrusion Prevention System Based on Signature Detection and Plan Recognition ..................................................................................................................................... 168
Guanlin Chen, Hui Yao, and Zebing Wang

Design of High Stable Numerically Controlled Constant-current Source ........................................................................................................................................ 173
Tieyuan Chang, Guifeng Zhu, and Wenjun Chen

Digital DC Resistance Tester .................................................................................................................................................................................................................. 177
Tieyuan Chang, Jingting Zhang, and Wenjun Chen

A Novel Dynamic Spectrum Hole Sensing Scheme ................................................................................................................................................................. 180
Yingtao Niu, Fuqiang Yao, Jianzhong Chen, and Yu Cheng

Fuzzy Logic-Based Decision Making for Detecting Distributed Node Exhaustion Attacks in Wireless Sensor Networks .................................................................................................................. 185
Zubair Ahmed Baig and Salman Ahmad Khan

A New Electronic Voting Protocol Using a New Blind Signature Scheme ........................................................................................................................................ 190
Behnam Kharchineh and Mehdi Ettelaee
Distribution Transmission Strategy in WMAN Based on Bandwidth and Delay Estimate and Packets .................................................................195

Liu Zhanjun, Qin Fengxie, Zhou Yangmei, and Li Yun

Session 5

The Theory and Empirical Research of Value-added Positioning Based on Relational Value ........................................................................201

Jingdong Chen and Xiaoqian Gao

The Research on the Mutual Benefit Stereotypia of Product Theory and Empirical Based on the Relationship Value ........................................206

Jingdong Chen and Jiao Xue

The Theory and Empirical Research of Commodity Networks Based on Relationship Value .................................................................211

Jingdong Chen and Yilin Hu

Design and Formulation of Security Strategy in Network .....................................................................................................................216

Ning Zhang and Hong Bao

Research on Wireless Network and Its Technology ............................................................................................................................221

Ning Zhang and Hong Bao

Research on Protection Technology in IP over WDM Optical Network .................................................................226

Ning Zhang and Hong Bao

Research on Reliability Model of Practical Software .............................................................................................................................230

Xiao-Bo Bai, Jun Ou, and Chuan-Xian Jiang

A Novel Congestion Control Strategy in Delay Tolerant Networks ........................................................................................................233

Li Yun, Cheng Xinjian, Liu Qilie, and You Xiaohu

Statistical Rules for Thai Spam Detection .................................................................................................................................238

Chalermpol Na Songkhla and Krerk Piromsopa

A Fast Handover Scheme in IEEE802.16 Relay Networks .................................................................243

Li Yun, Wang Ying, Weiliang Zhao, and Xiaohu You

Session 6

Class-Based Scheduling for IEEE 802.16 Wireless Networks with Location-dependent Errors ................................................................................251

Jae-Han Jeon, Chung-Woon Park, and Jong-Tae Lim

A 10Gb/s Burst-Mode Laser Diode Driver for IEEE 802.3av 10G-EPON Applications ..................................................................................256

Ye Lin, En Zhu, and Gaowei Gu

A Gated VCO for 10Gb/s PON Systems in 0.18μm CMOS .............................................................................................................................261

Gaowei Gu, En Zhu, and Ye Lin

The Pivotal Role of Tera-scale Performance in Future Networks: Sequoia vs Multi-core Teraflop Chip ...........................................................................265

Samreen Amir, Muhammad Asif, and Maria Mustafa
Management Strategies of Network Users Oriented to the Whole World .................................................. 269
  Xue Geng, Fan Xiumei, and Liao Lejian
Method of TCP Performance Enhancement in Asymmetric Wireless Networks ........................................ 273
  Wang Bao-tai and Zhang Rui
Congestion Control in TCP/IP Networks with Classical Control Algorithms for Multi Router .................... 276
  Elahe Moradi
Optimal Power Control for Cognitive Relay Networks over Fading Channels ........................................... 281
  Wenjing Yue, Baoyu Zheng, and Qingmin Meng
Micro Secure Socket Layer for Micro Server ......................................................................................... 286
  Nguyen Thanh Hoa, Kensuke Naoe, and Yoshiyasu Takefuji
A Silence Duration Based Uplink Scheduling Algorithm for Multiple VoIP Users in M-WiMAX .................... 291
  Farouk Y.M. Alkadhi, Zheng Liu, Min Yang, Qiuhong Wang, and Jufeng Dai

Session 7
A Wireless Sensor Network Based Green Marketplace for Electrical Appliances ....................................... 299
  Danny Hughes, Ka Lok Man, Kevin Lee, and Jo Ueyama
User Satisfaction Based Resource Allocation for OFDMA Relay Networks in the Resource-constrained System ........................................................................................................ 304
  Benxu Wang, Xiangming Wen, Dongming Su, and Wei Zheng
A Hybrid CDN-P2P System for Video-on-Demand .................................................................................. 309
  Shi Kang and Hao Yin
The Crack Injury Detection Based CMR and Natural Frequency with BP Neutral Network ......................... 314
  Mingjun Liu, Li Li, Xiuyang Zhao, and Hua Liu
A Peer-to-Peer RFID Resolution Framework for Supply Chain Network .................................................. 318
  Safal Shrestha, Dong Seong Kim, Seulki Lee, and Jong Sou Park
Behavioural Correlation for Detecting P2P Bots ....................................................................................... 323
  Yousof Al-Hammadi and Uwe Aickelin
Emulating Scatter/Gather I/O and Congestion Control Using Minor Bromuret ........................................ 328
  Ji Shuailing, Zhu Jing, and Liu Zhenling
A Methodology for the Deployment of Consistent Hashing ...................................................................... 332
  Wang Jun
Biological Intrusion Prevention and Self-Healing Model for Network Security ......................................... 337
  Muna Elsadig and Azween Abduallah
A QoS Routing for Maximum Bandwidth in Ad Hoc Networks .................................................................. 343
  Keming Du and Yahui Yang
Network Security and Safety Precautions ................................................................................................. 346
  Yishan Gong, Guanghong Yue, and Quansheng Xu
The Addition of Data Aggregation to SPEED Routing Algorithm While Keeping the Functionality of Available Techniques ................................................................. 349
  Rassoul Roustaei, Fateme Yousefi Fakhr, and Ali Movaghar

A Dynamic Composition Algorithm of Semantic Web Service Based on QoS ................................................................. 354
  Yan Lu, Zhaozi Gao, and Kai Chen

Session 8

Analysis and Improvement of a Secure Proxy Signature Scheme ................................................................. 359
  Xiaoming Hu, Huajie Xu, and Xiaohua Xiong

Cryptanalysis and Improvement of a Proxy-protected Signature Scheme ................................................................. 363
  Xiaoming Hu, Zhe Zhang, and Tong Wang

  Danilo Valeros Bernardo and Doan B. Hoang

Improving QoE Using a Novel Multipath Routing Based on Source and Intermediate Node Forwarding ................................................................. 372
  Hewei Yu and Nicholas Maxemchuk

A Survey on Topology Control in Wireless Sensor Networks ................................................................. 376
  Zheng Gengzhong and Liu Qiumei

Design and Implementation of Simplified MGCP Stack Based on DSP ................................................................. 381
  Guo Cuijuan, Miao Changyun, Wu Zhigang, and Li Jie

Passive Sounding Technology and its Application in Cognitive Radio Research ................................................................. 385
  Zhao Liping, Li Yong Gui, and Zhao Min

Designs of PBB Interoperating with H-VPLS Based on MPLS Networks ................................................................. 388
  Weijia Zhu

The Realization of the Support System of the Substation in .NET Framework ................................................................. 391
  Jin Hua

Quantum Codes of Minimum Distance Three Constructed from Binary Codes of Odd Length ................................................................. 395
  Ruihu Li and Gang Chen

X-MODDES (eXtended Multi Operator Delimiter Based Data Encryption Standard) ................................................................. 399
  Prosanta Gope, Akhil Kaushik, Kushal Arora, and Neeraj Kumar

A Load-balancing Scheme Based on Bloom Filters ................................................................. 404
  Chengcheng Gou, Rongcai Zhao, and Jing Diao

Session 9

Clustering Key Management of Forward Security ................................................................. 411
  Zhiwei Jiang and Changjiang Wei
Geometric Approaches-Based Key Assignment for Secure Group Communication System ................................................................. 415

Lina Ge

The Exploration of the Strategies and Skills of Effective Use of Voice Recognition Software in the Classroom for Deaf Students .................................................................................. 420

Ma Jun and Xu Jia Cheng

A Bootloader Module is Designed and Implemented Based on a New Computer Architecture ..................................................................... 424

Jie Zhang and Fengjing Shao

The Analysis of Knowledge Transfer Network Characteristic Based on Small-world Network Model ........................................................................... 428

Yang Bo and Xu Sheng-hua

Traffic Reduction in Hybrid Service Discovery Protocol in Mobile Ad-Hoc Grid .............................................................................................. 433

Askari Parichehreh, Bahman Javadi, and Abolfazl Toroghi Haghighat

A Social Networking Services System Based on the “Six Degrees of Separation” Theory and Damping Factors .................................................... 438

Xiaohua Ke

New Symmetric Cipher Enhanced by Rotor in Real & Gaussian Domains (SCER) .................................................................................................................. 442

Hassan Mohamed Elkamchouchi, Fatma Ahmed, Ahmed Khairy Abo Elsoud, and Dalia Hassan Elkamchouchi

An Intelligent Learning Approach for Information Hiding in 3D Multimedia .............................................................................................. 447

Rakhi Motwani, Mukesh Motwani, and Frederick Harris Jr.

A New Shared Access Method for IMS-Based Services .............................................................................................................................. 452

Xuelin Li, Fan Zhang, and Pramode K. Verma

Author Index ......................................................................................... 457