Contents

Data Security

VH: A Lightweight Block Cipher Based on Dual Pseudo-random Transformation ................................. 3
Xuejun Dai, Yuhua Huang, Lu Chen, Tingting Lu, and Fei Su

Security Against Hardware Trojan Attacks Through a Novel Chaos FSM and Delay Chains Array PUF Based Design Obfuscation Scheme ............ 14
Mingfu Xue, Jian Wang, Youdong Wang, and Aiqun Hu

Secure and Efficient Protocol for Outsourcing Large-Scale Systems of Linear Equations to the Cloud ...................................................... 25
Cheng Qian and Jian Wang

A Provably Secure Ciphertext-Policy Hierarchical Attribute-Based Encryption ........................................... 38
Ziying Wang and Jian Wang

Privacy-Preserving Multidimensional Range Query on Real-Time Data ...... 49
Zhong Ting, Han Xiao, Yang Yunshuo, and Zhu Aixiang

ARM-Based Privacy Preserving for Medical Data Publishing ................. 62
Zhang Fengli and Bai Yijing

Attribute-Based Encryption Without Key Escrow ................................. 74
Xing Zhang, Cancan Jin, Zilong Wen, Qingni Shen, Yuejian Fang, and Zhonghai Wu

An Efficient Access Control Optimizing Technique Based on Local Agency in Cryptographic Cloud Storage .............................................. 88
Shidong Zhu, Liu Jiang, and Zhenliu Zhou

Complete Separable Reversible Data Hiding in Encrypted Image ............. 101
Yin Zhaoxia, Wang Huabin, Zhao Haifeng, Luo Bin, and Zhang Xinpeng

Multi-threshold Image Segmentation Through an Improved Quantum-Behaved Particle Swarm Optimization Algorithm .................... 111
Wang Jiali, Liu Hongshen, and Ruan Yue

Coverless Image Steganography Without Embedding ............................ 123
Zhili Zhou, Huiyu Sun, Rohan Harit, Xianyi Chen, and Xingming Sun
Coverless Information Hiding Method Based on the Chinese Mathematical Expression ................................................................. 133
Xianyi Chen, Huiyu Sun, Yoshito Tobe, Zhili Zhou, and Xingming Sun

System Security

Network Information Security Challenges and Relevant Strategic Thinking as Highlighted by “PRISM” ............................. 147
Jing Li

A Lightweight and Dependable Trust Model for Clustered Wireless Sensor Networks .......................................................... 157
Nannan Shao, Zhiping Zhou, and Ziwen Sun

The Optimization Model of Trust for White-Washing .................... 169
Zhidan Wang, Jian Wang, and Yanfei Zhao

Malware Clustering Based on SNN Density Using System Calls .......... 181
Wang Shuwei, Wang Baosheng, Yong Tang, and Yu Bo

Analyzing Eventual Leader Election Protocols for Dynamic Systems by Probabilistic Model Checking ................................ 192
Jiayi Gu, Yu Zhou, Weigang Wu, and Taolue Chen

A Dynamic Resource Allocation Model for Guaranteeing Quality of Service in Software Defined Networking Based Cloud Computing Environment .......................................................... 206
Chenhui Xu, Bing Chen, Ping Fu, and Hongyan Qian

Research and Development of Trust Mechanism in Cloud Computing ............................. 218
Jun Xu, Feng Xu, Wennia Chang, and Haiguang Lai

Analysis of Advanced Cyber Attacks with Quantified ESM ............... 230
Blaž Ivanc and Tomaz Klobučar

A Web Security Testing Method Based on Web Application Structure ........ 244
Xueyong Yu and Guohua Jiang

An Improved Data Cleaning Algorithm Based on SNM ................... 259
Miao Li, Qiang Xie, and Qiulin Ding

Enhancing Security of IaaS Cloud with Fraternal Security Cooperation Between Cloud Platform and Virtual Platform ......... 270
Jie Yang, Zhiqiang Zhu, Lei Sun, Jingci Zhang, and Xianwei Zhu
Cloud Platform

Cluster Analysis by Variance Ratio Criterion and Quantum-Behaved PSO . . . 285
   Shuihua Wang, Xingxing Zhou, Guangshuai Zhang, Genlin Ji,
   Jiquan Yang, Zheng Zhang, Zeyuan Lu, and Yudong Zhang

Failure Modes and Effects Analysis Using Multi-factors Comprehensive
Weighted Fuzzy TOPSIS .................................................. 294
   Wenjun Zhang and Fenglin Zhang

Efficient Query Algorithm of Coallocation-Parallel-Hash-Join
in the Cloud Data Center ................................................ 306
   Yao Shen, Ping Lu, Xiaolin Qin, Yuming Qian, and Sheng Wang

Dynamic Data Driven Particle Filter for Agent-Based Traffic
State Estimation .......................................................... 321
   Xiang-wen Feng, Xue-feng Yan, and Xiao-lin Hu

An Improved Dynamic Spectrum Access Scheme in Cognitive Networks . . . 332
   Qingwei Du and Yinneng Wang

The Design and Implementation of a Dynamic Verification System of Z . . . 344
   Jun Wang, Yi Zhuang, and Siru Ni

Maximizing Positive Influence in Signed Social Networks ....................... 356
   Huanhuan Wang, Qun Yang, Lei Fang, and Weihua Lei

OpenFlow-Based Load Balancing for Wireless Mesh Network .................... 368
   Hanjie Yang, Bing Chen, and Ping Fu

SPEMS: A Stealthy and Practical Execution Monitoring System
Based on VMI .............................................................. 380
   Jiangyong Shi, Yuexiang Yang, Chengye Li, and Xiaolei Wang

A Total Power Control Cooperative MAC Protocol for Wireless Sensor
Networks ................................................................. 390
   Xiongli Rui, Xuehong Cao, and Jie Yang

Parallel Processing of SAR Imaging Algorithms for Large Areas
Using Multi-GPU .......................................................... 404
   Xue Wang, Jiabin Yuan, and Xingfang Zhao

An Extreme Learning Approach to Fast Prediction in the Reduce Phase
of a Cloud Platform ................................................... 417
   Qi Liu, Weidong Cai, Jian Shen, Baowei Wang, Zhangjie Fu,
   and Nigel Linge
Data Analysis in Cloud

Wind Speed and Direction Predictions Based on Multidimensional Support Vector Regression with Data-Dependent Kernel ........................................ 427
   Dingcheng Wang, Yujia Ni, Beijing Chen, Zhili Cao, Yuhang Tian, and Youzhi Zhao

Research on Rootkit Detection Model Based on Intelligent Optimization Algorithm in the Virtualization Environment ........................................ 437
   Lei Sun, Zhiyuan Zhao, Feiran Wang, and Lei Jin

Performance Analysis of (1+1)EA on the Maximum Independent Set Problem ........................................ 448
   Xue Peng

A Robust Iris Segmentation Algorithm Using Active Contours Without Edges and Improved Circular Hough Transform ........................................ 457
   Yueqing Ren, Zhiyi Qu, and Xiaodong Liu

An Adaptive Hybrid PSO and GSA Algorithm for Association Rules Mining ........................................ 469
   Zhiping Zhou, Daowen Zhang, Ziwen Sun, and Jiefeng Wang

Sequential Pattern Mining and Matching Method with Its Application on Earthquakes ........................................ 480
   Jiang Zhu, Dechang Pi, Pan Xiong, and Xuhui Shen

Teaching Quality Assessment Model Based on Analytic Hierarchy Process and LVQ Neural Network ........................................ 491
   Shuai Hu, Yan Gu, and Hua Jiang

Fast Sparse Representation Classification Using Transfer Learning ........ 501
   Qi Zhu, Baisheng Dai, Zizhu Fan, and Zheng Zhang

Probing the Scheduling Algorithms in the Cloud Based on OpenStack. .... 510
   Yang Luo, Qingni Shen, Cong Li, Kang Chen, and Zhonghai Wu

Top-k Distance-Based Outlier Detection on Uncertain Data ................ 521
   Ying Zhang, Hongyuan Zheng, and Qiulin Ding

An Airport Noise Prediction Model Based on Selective Ensemble of LOF-FSVR ........................................ 536
   Haiyan Chen, Jiajia Deng, Bo Sun, and Jiandong Wang

Application of Semantic-Based Laplacian Eigenmaps Method in 3D Model Classification and Retrieval .................. 550
   Xinying Wang, Fangming Gu, Gang Liu, and Zhiyu Chen

Author Index ........................................ 561
Cloud Computing and Security
First International Conference, ICPCS 2015, Nanjing, China, August 13-15, 2015. Revised Selected Papers
Huang, Z.; Sun, X.; Luo, J.; Wang, J. (Eds.)
2015, XII, 562 p. 211 illus. in color., Softcover
ISBN: 978-3-319-27050-0