



# ICISA 2010

**International Conference on Information Science and Applications**  
"Technically Co-Sponsored by IEEE Computer Society"

Technically Co-Sponsored by



April 21 – 23, 2010, Hotel RIVERA, Seoul, Korea



Volume 2



Proceedings of the  
**International Conference on Information  
Science and Applications**

**ICISA 2010**

**Volume 2**



# TABLE OF CONTENTS

Copyright .....	ii
Message from the General Chair .....	iii
Message from the General Co-Chair .....	iv
ICISA 2010 Organization .....	v
ICISA Program Committee.....	vi-vii
Table of Contents Volume 2.....	viii-x

## Track 5. Security and Privacy

<b>Improved Related-Key Boomerang Cryptanalysis of AES-256</b> .....	296
<i>Hadi Soleimany, Alireza Sharifi and Mohammadreza Aref</i>	
<b>Study on Prevention of the Leaking of Industrial Secret Based on LDAP</b> .....	303
<i>Do Hyeong Kim</i>	
<b>Scalable, Privacy-Preserving Remote Attestation in and through Federated Identity Management Frameworks</b> .....	310
<i>Tamleek Ali, Mohammad Nauman, Muhammad Amin and Masoom Alam</i>	
<b>A Fingerprint-Based User Authentication Scheme Using Smart Cards in IPTV Environments</b> .....	318
<i>Eun-A Jun, Hyun Sook Rhee, Seok Won Jung and Dong Hoon Lee</i>	
<b>Watermarking Techniques Applied to H264/AVC Video Standard</b> .....	326
<i>Samira Bouchama, Hassina Aliane and Latifa Hamami</i>	
<b>Website Forgery Prevention</b> .....	333
<i>Dmytro Ilyev and Yong Bin Sun</i>	
<b>A Goal-Oriented Approach for Modeling and Analyzing Attack Graph</b> .....	341
<i>Xuejiao Liu, Chengfang Fang, Debao Xiao and Hui Xu</i>	
<b>Agent Attacks Using a TTL Transformation of Windows Registry</b> .....	349
<i>Won Hyung Park, Kwang Cheol Park, Keon il Heo and Kwang Ho Kook</i>	
<b>A Study on Risk Analysis and Assessment of Damages to Cyber Attack</b> .....	356
<i>Won Hyung Park</i>	
<b>Real-Time Simulated Traffic Generation and Verification Methods Based on the Traffic Pattern Analysis</b> .....	362
<i>Hyuncheol Kim, Wonhyuk Lee and Jeom Goo Kim</i>	
<b>A Study on the Enhanced Security Techniques of BGP for DRDoS Attack</b> .....	367
<i>Jaehoon Sun and Yong-Bin Sun</i>	
<b>Identifying Rootkit Infections Using Data Mining</b> .....	373
<i>Desmond Lobo, Paul Waters and Xin-Wen Wu</i>	
<b>Conceptualizing and Generalizing Access Control</b> .....	380
<i>Sabah S. Al-Fedaghi</i>	
<b>Image Encryption Design Based on Multi-Dimensional Matrix Map and Partitioning Substitution and Diffusion-Integration Substitution Network Structure</b> .....	388
<i>Liang Zhao, Di Xiao and Kouichi Sakurai</i>	
<b>Data Encryption Using ECG Signals with Chaotic Henon Map</b> .....	396
<i>Ching-Kun Chen, Chun-Liang Lin and Yen-Ming Chiu</i>	
<b>Factors Influencing the Implementation of Information Systems Security Strategies in Organizations</b> .....	401
<i>Sangseo Park, Atif Ahmad and Anthonie B. Ruighaver</i>	
<b>Semantic Remote Attestation for Security Policy</b> .....	407
<i>Qian Zhang, Yeping He and Ce Meng</i>	
<b>Cryptanalysis of Four-Rounded DES Using Ant Colouy Optimization</b> .....	415
<i>Salabat Khan, Waseem Shahzad and Farrukh Aslam Khan</i>	
<b>Detecting Method on Illegal Use Using PCA under HER Environment</b> .....	422
<i>Donghwi Lee, Byong Hun Kim and Kuinam J Kim</i>	
<b>3D CAPTCHA: A Next Generation of the CAPTCHA</b> .....	428
<i>Montree Imsamai and Suphakant Phimoltares</i>	
<b>SERA: A Secure Energy and Reliability Aware Data Gathering for Sensor Networks</b> .....	436
<i>Sang Guun Yoo, Seung-hoon Kang and Juho Kim</i>	
<b>A Reproducible Performance Evaluation Method for Forged Fingerprint Detection Algorithm</b> .....	447
<i>Yong-Nyuo Shin, Myung Geun Chun and Woochang Shin</i>	



<b>Privacy-Aware Role Based Access Control Model: Revisited for Multi-Policy Conflict Detection.....</b>	<b>455</b>
<i>Yoonjeong Kim and Eunjee Song</i>	
<b>A Forensic Model on Deleted-File Verification for Securing Digital Evidence.....</b>	<b>462</b>
<i>Yong-Ho Kim and Kunam J. Kim</i>	

## **Track 6. Data Mining and Artificial Intelligence**

<b>Tree Reconstruction and Bottom-Up Evaluation of Tree Pattern Queries.....</b>	<b>471</b>
<i>Yangjun Chen and Yibin Chen</i>	
<b>Cleansing Noisy City Names in Spatial Data Mining.....</b>	<b>479</b>
<i>SeungJin Lim</i>	
<b>Interactive Visual Data Mining of a Large Fire Detector Database.....</b>	<b>487</b>
<i>SeungJin Lim</i>	
<b>Determination of Water Content in Automobile Lubricant Using Near-Infrared Spectroscopy Improved by Machine Learning Analysis.....</b>	<b>495</b>
<i>Yun Zhao, Xing Xu, Lu-lu Jiang, Yu Zhang, Li-hong Tan and Yong He</i>	
<b>Clustering Music Recordings Based on Genres.....</b>	<b>503</b>
<i>Wei-Ho Tsai and Duo-Fu Bao</i>	
<b>Parallelized Local Volatility Estimation Using GP-GPU Hardware Acceleration.....</b>	<b>508</b>
<i>Craig C. Douglas, Hyoseop Lee and Dongwoo Sheen</i>	
<b>Adaptive Digital Watermarking of Images Using Genetic Algorithm.....</b>	<b>512</b>
<i>Bushra Sikander, Muhammad Ishtiaq, M. Arfan Jaffar, Muhammad Tariq and Anwar M. Mirza</i>	
<b>Extended k-dominant Skyline in High Dimensional Space.....</b>	<b>520</b>
<i>Md. Anisuzzaman Siddique and Yasuhiko Morimoto</i>	
<b>BitApriori: An Apriori-Based Frequent Itemsets Mining Using Bit Streams.....</b>	<b>528</b>
<i>Thi Thanh Nhan Le, Thi Thanh Thuy Nguyen and Tae Chong Chung</i>	
<b>A New Discrete PSO for Data Classification.....</b>	<b>534</b>
<i>Naveed Kazim Khan, A. Rauf Baig and Muhammad Amjad Iqbal</i>	
<b>On the Evaluation of a Structural Information Metric for Syllabus Suitability.....</b>	<b>540</b>
<i>Anestis A. Topsis and Jose Semidey</i>	
<b>Mean-Variance Models for International Portfolio Selection with Uncertain Exchange Rates and Security Returns.....</b>	<b>547</b>
<i>Xiaoxia Huang</i>	
<b>Intensifying the Performance of Nonlinearity Approximation by an Optimal Fuzzy System.....</b>	<b>554</b>
<i>Do-Thanh Sang, Ho-Hai Nguyen, Dong-Min Woo, Seung-Soo Han and Dong-Chul Park</i>	
<b>A Time Series Data Prediction Scheme Using Bilinear Recurrent Neural Network.....</b>	<b>560</b>
<i>Dong-Chul Park</i>	
<b>Improved Opposition-Based PSO for Feedforward Neural Network Training.....</b>	<b>567</b>
<i>Muhammad Rashid and Abdul Rauf Baig</i>	
<b>Hiding Frequent Patterns in the Updated Database.....</b>	<b>573</b>
<i>Bi-Ru Dai and Li-Hsiang Chiang</i>	
<b>Opposition Based Genetic Algorithm with Cauchy Mutation for Function Optimization.....</b>	<b>581</b>
<i>M. Amjad Iqbal, Naveed Kazim Khan, M. Arfan Jaffar, M. Ramzan and A. Rauf Baig</i>	
<b>Multiobjective Evolutionary Optimization of Training and Topology of Recurrent Neural Networks for Time-Series Prediction.....</b>	<b>588</b>
<i>Hideki Katagiri, Ichiro Nishizaki, Tomohiro Hayashida and Takanori Kadoma</i>	

## **Track 7. Software Engineering**

<b>Modeling UML Sequence Diagrams Using Extended Petri Nets.....</b>	<b>596</b>
<i>Nianhua Yang, Huiqun Yu, Hua Sun and Zhilin Qian</i>	
<b>Efficient Web Service Composition and Intelligent Search Based on Relational Database.....</b>	<b>604</b>
<i>Cheng Zeng, weijie Ou, Yi Zheng and Dong Han</i>	
<b>Software Maintenance Prediction Using Weighted Scenarios: An Architecture Perspective.....</b>	<b>612</b>
<i>Sajid Anwar, Muhammad Ramzan, Abdul Rauf and Arshad Ali Shahid</i>	

<b>Architecture Based Ripple Effect Analysis: a Software Quality Maintenance Perspective</b> .....	621
<i>Sajid Anwar, Fouzia Idris, Muhammad Ramzan, Arshad Ali Shahid and Abdul Rauf</i>	
<b>A Financial Tool for Software Risk Measurement</b> .....	629
<i>Masood Uzzafer</i>	
<b>A Profile Approach to Using UML Models for Rich Form Generation</b> .....	635
<i>Tomas Cerny and Eunjee Song</i>	
<b>Evaluation Framework for Ontology Modularization Approaches</b> .....	643
<i>Sunju Oh and Heon Y. Yeom</i>	
<b>A New Metric Model for Trustworthiness of Softwares</b> .....	651
<i>Hongwei Tao and Yixiang Chen</i>	
<b>On the Validation of System Dynamics Type Simulation Models</b> .....	659
<i>Hassan Qudrat-Ullah</i>	
<b>Project Scheduling Conflict Identification and Resolution Using Genetic Algorithms</b> .....	666
<i>M. Ramzan, M. Amjad Iqbal, M. Arfan Jaffar, Abdul Rauf, Sajid Anwar and Arshad Ali Shahid</i>	

## **Track 8. Web Technology**

<b>XML Based Format for Exchange of Plagiarism Detection Results</b> .....	672
<i>Nousheen Samuel, Naima Samuel and Sergey Butakov</i>	
<b>Analyzing the Web Crawler as a Feed Forward Engine for an Efficient Solution to the Search Problem in the Minimum Amount of Time through a Distributed Framework</b> .....	678
<i>M. Atif Qureshi, Arjumand Younus and Francisco Rojas</i>	

## **Track 9. Medical/Health Informatics**

<b>Graphic Visualization of the Co-Occurrence Analysis Network of Lung Cancer In-Patient Nursing Record</b> .....	686
<i>Muneo Kushima, Kenji Araki, Muneou Suzuki, Sanae Araki and Terue Nikama</i>	
<b>A Hybrid Method to Predict Angina Pectoris through Mining Emergency Data</b> .....	694
<i>Sung Ho Ha, Zhen Yu Zhang and Eun Kyoung Kwon</i>	
<b>Development of a Wearable ECG Recorder for Measuring Daily Stress</b> .....	700
<i>Yoshiho Okada, Yi-Tsuyoshi Yoto, Taka-aki Suzuki, Toshifumi Sugiura and Satoshi Sakuragawa</i>	
<b>Food Recommendation System Using Clustering Analysis for Diabetic Patients</b> .....	705
<i>Maiyaporn Phanich, Phathrajarin Pholkul and Suphakant Phimoltares</i>	
<b>Nutrition Counseling System and Food Menu Planning</b> .....	713
<i>Yanisa Usthasopha, Suphakant Phimoltares and Nagul Cooharajanone</i>	
<b>New Classes of UBIAS and E-UBIAS Cognitive Vision Systems</b> .....	721
<i>Marek R. Ogiela, Ryszard Tadeusiewicz and Lidia Ogiela</i>	
<b>Prototype Design of Drug Usage Information Retrieval System</b> .....	727
<i>ByungRae Cha, HaGang Kim and JongWon Kim</i>	

## **Track 10. Bioinformatics and Scientific Computing**

<b>Performance of Machine Learning Techniques in Protein Fold Recognition Problem</b> .....	733
<i>Muhammad Asif Khan, Muhammad A. Khan, Zahoor Jan, Hamid Ali and Anwar M. Mirza</i>	

## **AUTHOR INDEX**