

# Contents

## Track 1: Authentication, Identification, and Signature

<b>A Secure ECC-Based RFID Authentication Scheme Using Hybrid Protocols</b> .....	1
<i>Yi-Pin Liao, Chih-Ming Hsiao</i>	
<b>A Dynamic Approach to Hash-Based Privacy-Preserving RFID Protocols</b> .....	15
<i>Chih-Yuan Lee, Hsin-Lung Wu, Jen-Chun Chang</i>	
<b>An Extension of Harn-Lin's Cheater Detection and Identification</b> .....	25
<i>Lein Harn, Changlu Lin</i>	
<b>Cryptanalysis on the User Authentication Scheme with Anonymity</b> .....	33
<i>Yung-Cheng Lee</i>	
<b>Deniable Authentication Protocols with Confidentiality and Anonymous Fair Protections</b> .....	41
<i>Shin-Jia Hwang, Yun-Hao Sung, Jen-Fu Chi</i>	
<b>A Novel Authentication Scheme Based on Torus Automorphism for Smart Card</b> .....	53
<i>Chin-Chen Chang, Qian Mao, Hsiao-Ling Wu</i>	
<b>Cryptanalysis of a Provably Secure Certificateless Short Signature Scheme</b> .....	61
<i>Yu-Chi Chen, Raylin Tso, Gwoboa Hornig</i>	

## Track 2: Intrusion Detection

<b>Impact of Identifier-Locator Split Mechanism on DDoS Attacks</b> .....	69
<i>Ying Liu, Jianqiang Tang, Hongke Zhang</i>	

<b>Detecting Web-Based Botnets with Fast-Flux Domains</b> .....	79
<i>Chia-Mei Chen, Ming-Zong Huang, Ya-Hui Ou</i>	
<b>Improvements of Attack-Defense Trees for Threat Analysis</b> .....	91
<i>Ping Wang, Jia-Chi Liu</i>	
<b>Design and Implementation of a Linux Kernel Based Intrusion Prevention System in Gigabit Network Using Commodity Hardware</b> .....	101
<i>Li-Chi Feng, Chao-Wei Huang, Jian-Kai Wang</i>	
<b>Performance Evaluation on Permission-Based Detection for Android Malware</b> .....	111
<i>Chun-Ying Huang, Yi-Ting Tsai, Chung-Han Hsu</i>	
 <b>Track 3: Steganography, Data Hiding, and Watermarking</b>	
<b>Image Steganography Using Gradient Adjacent Prediction in Side-Match Vector Quantization</b> .....	121
<i>Shiau-Rung Tsui, Cheng-Ta Huang, Wei-Jen Wang</i>	
<b>A Data Hiding Scheme Based on Square Formula Fully Exploiting Modification Directions</b> .....	131
<i>Wen-Chung Kuo</i>	
<b>Digital Watermarking Based on JND Model and QR Code Features</b> .....	141
<i>Hsi-Chieh Lee, Chang-Ru Dong, Tzu-Miao Lin</i>	
<b>Multi-dimensional and Multi-level Histogram-Shifting-Imitated Reversible Data Hiding Scheme</b> .....	149
<i>Zhi-Hui Wang, Chin-Chen Chang, Ming-Li Li, Shi-Yu Cui</i>	
<b>A Threshold Secret Image Sharing with Essential Shadow Images</b> .....	159
<i>Ching-Nung Yang, Chih-Cheng Wu</i>	
 <b>Track 4: Database, System, and Communication Security</b>	
<b>Theoretical Analysis and Realistic Implementation of Secure Servers Switching System</b> .....	167
<i>Yu-Hong Chen, Kuang-Tse Chen, Lei Wang</i>	
<b>Design and Implementation of a Self-growth Security Baseline Database for Automatic Security Auditing</b> .....	177
<i>Chien-Ting Kuo, He-Ming Ruan, Shih-Jen Chen, Chin-Laung Lei</i>	
<b>Enhancing Cloud-Based Servers by GPU/CPU Virtualization Management</b> .....	185
<i>Tin-Yu Wu, Wei-Tsong Lee, Chien-Yu Duan, Tain-Wen Suen</i>	

<b>Controlled Quantum Secure Direct Communication Based on Single Photons</b> .....	195
<i>Wei-Lin Chang, Fang-Jhu Lin, Guo-Jyun Zeng, Yao-Hsin Chou</i>	

## **Track 5: Computer Vision, Object Tracking, and Pattern Recognition**

<b>Construction of a Machine Guide Dog Using a Two-Mirror Omni-camera and an Autonomous Vehicle</b> .....	205
<i>Chih-Wei Huang, Wen-Hsiang Tsai</i>	

<b>Protection of Privacy-Sensitive Contents in Surveillance Videos Using WebM Video Features</b> .....	221
<i>Hsin-Hsiang Tseng, Wen-Hsiang Tsai</i>	

<b>A Study of Real-Time Hand Gesture Recognition Using SIFT on Binary Images</b> .....	235
<i>Wei-Syun Lin, Yi-Leh Wu, Wei-Chih Hung, Cheng-Yuan Tang</i>	

<b>An Approach for Mouth Localization Using Face Feature Extraction and Projection Technique</b> .....	247
<i>Hui-Yu Huang, Yan-Ching Lin</i>	

<b>Facial Expression Recognition Using Image Processing Techniques and Neural Networks</b> .....	259
<i>Hsi-Chieh Lee, Chia-Ying Wu, Tzu-Miao Lin</i>	

<b>Search Space Reduction in Pedestrian Detection for Driver Assistance System Based on Projective Geometry</b> .....	269
<i>Karlis Dimza, Te-Feng Su, Shang-Hong Lai</i>	

<b>Fast Multi-path Motion Estimation Algorithm with Computation Scalability</b> .....	279
<i>Kuang-Han Tai, Gwo-Long Li, Mei-Juan Chen, Haw-Wen Chi</i>	

<b>Moving Objects Detection Based on Hysteresis Thresholding</b> .....	289
<i>Hsiang-Erh Lai, Chih-Yang Lin, Ming-Kai Chen, Li-Wei Kang, Chia-Hung Yeh</i>	

<b>Smart Video Camera Design – Real-Time Automatic Person Identification</b> .....	299
<i>Chen-Ting Ye, Tzung-Dian Wu, You-Ren Chen, Pei-An He, Pei-Qi Xie, Yuan-Yi Zhang, Shih-Meng Teng, Yen-Ting Chen, Pao-Ann Hsiung</i>	

<b>A High Performance Parallel Graph Cut Optimazation for Depth Estimation</b> .....	311
<i>Bo-Yen Chen, Bo-Cheng Charles Lai</i>	

**An Interactive 3D Modeling System Based on Fingertip Tracking . . . . .** 321  
*Jia-Wei Hung, I-Cheng Chang, Jiun-Wei Yu*

**Track 6: Image Processing, Medical Image Processing,  
and Video Coding**

**Comprehensive Evaluation for HE Based Contrast Enhancement  
Techniques . . . . .** 331  
*Ming-Zhi Gao, Zhi-Gang Wu, Lei Wang*

**Significance-Preserving-Guided Content-Aware Image Retargeting . . . . .** 339  
*Yu-Hsien Sung, Wen-Yu Tseng, Pao-Hung Lin, Li-Wei Kang, Chih-Yang Lin,  
Chia-Hung Yeh*

**Identifying Device Brand by Using Characteristics of Color Filter Array . . .** 349  
*Tang-You Chang, Guo-Shiang Lin, Shen-Chuan Tai*

**Robust Video Copy Detection Based on Constrained Feature Points  
Matching . . . . .** 359  
*Duan-Yu Chen, Yu-Ming Chiu*

**A Mass Detection System in Mammograms Using Grey Level  
Co-occurrence Matrix and Optical Density Features . . . . .** 369  
*Shen-Chuan Tai, Zih-Siou Chen, Wei-Ting Tsai, Chin-Peng Lin, Li-li Cheng*

**Automatic Evaluation of Choroidal Neovascularization in Fluorescein  
Angiography . . . . .** 377  
*Kai-Shun Lin, Chia-Ling Tsai, Shih-Jen Chen, Wei-Yang Lin*

**3D Spinal Cord and Nerves Segmentation from STIR-MRI . . . . .** 383  
*Chih Yen, Hong-Ren Su, Shang-Hong Lai, Kai-Che Liu, Ruen-Rone Lee*

**Speeding Up the Decisions of Quad-Tree Structures and Coding Modes  
for HEVC Coding Units . . . . .** 393  
*Shen-Chuan Tai, Chia-Ying Chang, Bo-Jhih Chen, Jui-Feng Hu*

**Optimal GOP Size of H.264/AVC Temporal Scalable Coding . . . . .** 403  
*Wei-Lune Tang, Shih-Hsuan Yang*

**Motion Estimation and DCT Coding Combined Scheme for H.264/AVC  
Codec . . . . .** 413  
*Wei-Jhe Hsu, Hsueh-Ming Hang, Yi-Fu Chen*

**Free View Point Real-Time Monitor System Based on Harris-SURF . . . . .** 423  
*Tzu-Ti Chang, Fang-Yi Yu, Wei-Tsong Lee, Feng-Yu Chang, Jason Wu*

## Track 7: Digital Content, Digital Life, and Human Computer Interaction

<b>Virtual Multiple-Perspective Display Using Pyramidal or Conical Showcase</b> .....	431
<i>Yu-Tsung Chiu, Mau-Tsuen Yang</i>	
<b>Stroke Rehabilitation via a Haptics-Enhanced Virtual Reality System</b> .....	439
<i>Shih-Ching Yeh, Si-Huei Lee, Jia-Chi Wang, Shuya Chen, Yu-Tsung Chen, Yi-Yung Yang, Huang-Ren Chen, Yen-Po Hung, Albert Rizzo, Tè-Lu Tsai</i>	
<b>Image-Based Wearable Tangible Interface</b> .....	455
<i>Jiung-Yao Huang, Yong-Zeng Yeo, Lin Huei, Chung-Hsien Tsai</i>	
<b>The Creation of V-fold Animal Pop-Up Cards from 3D Models Using a Directed Acyclic Graph</b> .....	465
<i>Der-Lor Way, Yong-Ning Hu, Zen-Chung Shih</i>	
<b>MagMobile: Enhancing Social Interactions with Rapid View-Stitching Games of Mobile Devices</b> .....	477
<i>Da-Yuan Huang, Tzu-Wen Chang, Min-Lun Tsai, Chien-Pang Lin, Neng-Hao Yu, Mike Y. Chen, Yi-Ping Hung, Chih-Hao Hsu</i>	
<b>Computer-Vision Based Hand Gesture Recognition and Its Application in Iphone</b> .....	487
<i>Hsi-Chieh Lee, Che-Yu Shih, Tzu-Miao Lin</i>	
<b>An Adaptive Video Program Recommender Based on Group User Profiles</b> .....	499
<i>Chun-Rong Su, Yu-Wei Li, Rui-Zhe Zhang, Jiann-Jone Chen</i>	
<b>Automatic Dancing Assessment Using Kinect</b> .....	511
<i>Ta-Che Huang, Yu-Chuan Cheng, Cheng-Chin Chiang</i>	
<b>A New View-Calibrated Approach for Abnormal Gait Detection</b> .....	521
<i>Kuo-Wei Lin, Shu-Ting Wang, Pau-Choo Chung, Ching-Fang Yang</i>	
<b>Modeling and Recognizing Action Contexts in Persons Using Sparse Representation</b> .....	531
<i>Kai-Ting Chuang, Jun-Wei Hsieh, Yilin Yan</i>	

## Track 8: Parallel, Peer-to-Peer, Distributed, and Cloud Computing

<b>Efficient Parallel Knuth-Morris-Pratt Algorithm for Multi-GPUs with CUDA</b> .....	543
<i>Kuan-Ju Lin, Yi-Hsuan Huang, Chun-Yuan Lin</i>	

**Energy-Efficient Scheduling Based on Reducing Resource Contention for Multi-core Processors** . . . . . 553  
*Yan-Wei Chen, Mei-Ling Chiang, Chieh-Jui Yang*

**Effective Processor Allocation for Moldable Jobs with Application Speedup Model** . . . . . 563  
*Kuo-Chan Huang, Tse-Chi Huang, Yuan-Hsin Tung, Pin-Zei Shih*

**Correctness of Self-stabilizing Algorithms under the Dolev Model When Adapted to Composite Atomicity Models** . . . . . 573  
*Chih-Yuan Chen, Cheng-Pin Wang, Tetz C. Huang, Ji-Cherng Lin*

**Efficiently Extracting Change Data from Column Oriented NoSQL Databases** . . . . . 587  
*Yong Hu, Weiping Qu*

**Approaches for Data Synchronization on Mobile Peer-to-Peer Networks** . . . 599  
*Chuan-Chi Lai, Chuan-Ming Liu*

**On the Design of a Load Balancing Mechanism for ALE Middleware** . . . . . 609  
*Yi-Ting He, Yu-Chang Chen, Chua-Huang Huang*

**Platform-as-a-Service Architecture for Parallel Video Analysis in Clouds** . . . 619  
*Tse-Shih Chen, Tsiao-Wen Huang, Liang-Chun Yin, Yi-Ling Chen, Yi-Fu Ciou*

**Track 9: Software Engineering and Programming Language**

**A Translation Framework for Automatic Translation of Annotated LLVM IR into OpenCL Kernel Function** . . . . . 627  
*Chen-Ting Chang, Yu-Sheng Chen, I-Wei Wu, Jyh-Jiun Shann*

**Low Power Compiler Optimization for Pipelining Scaling** . . . . . 637  
*Jen-Chieh Chang, Cheng-Yu Lee, Chia-Jung Chen, Rong-Guey Chang*

**An Editing System Converting a UML State Diagram to a PLC Program** . . . . . 647  
*Yung-Liang Chang, Chin-Feng Fan, Swu Yih*

**Accurate Instruction-Level Alias Analysis for ARM Executable Code** . . . . . 657  
*Tat-Wai Chong, Peng-Sheng Chen*

**A Two-Leveled Web Service Path Re-planning Technique** . . . . . 669  
*Shih-Chien Chou, Chih-Yang Chiang*

**An Effective Flood Forecasting System Based on Web Services** . . . . . 681  
*Ya-Hui Chang, Pei-Shan Wu, Yu-Te Liu, Shang-Pin Ma*

**A Simulation Environment for Studying the Interaction Process between a Human and an Embedded Control System** . . . . . 691  
*Chin-Feng Fan, Cheng-Tao Chiang, Albert Yih*

<b>A Flexible and Re-configurable Service Platform for Multi-user Mobile Games</b> .....	701
<i>Yu-Sheng Cheng, Chun-Feng Liao, Don-Lin Yang</i>	
<b>Track 10: Computer Architecture, Embedded Systems, SoC, and VLSI/EDA</b>	
<b>High-Performance 128-Bit Comparator Based on Conditional Carry-Select Scheme</b> .....	711
<i>Shun-Wen Cheng, Jhen-Yuan Li, Wei-Chi Chen</i>	
<b>A Multiplier-Free Noise Trapped Touch Algorithm for Low Cost 4×4 Matrix Panel Design</b> .....	721
<i>Yu-Hsaing Yu, Qi-Wen Wang, Tsung-Ying Sun</i>	
<b>Design of a Dynamic Parallel Execution Architecture for Multi-core Systems</b> .....	731
<i>Shiang Huang, Jer-Min Jou, Cheng-Hung Hsieh, Ding-Yuan Lin</i>	
<b>A Distributed Run-Time Dynamic Data Manager for Multi-core System Parallel Execution</b> .....	741
<i>Wen-Hsien Chang, Jer-Min Jou, Cheng-Hung Hsieh, Ding-Yuan Lin</i>	
<b>A Novel Defragmentable Memory Allocating Schema for MMU-Less Embedded System</b> .....	751
<i>Yu-Hsaing Yu, Jing-Zhong Wang, Tsung-Ying Sun</i>	
<b>Hardware Acceleration Design for Embedded Operating System Scheduling</b> .....	759
<i>Jian-He Liao, Jer-Min Jou, Cheng-Hung Hsieh, Ding-Yuan Lin</i>	
<b>Asynchronous Ring Network Mechanism with a Fair Arbitration Strategy for Network on Chip</b> .....	769
<i>Jih-Ching Chiu, Kai-Ming Yang, Chen-Ang Wong</i>	
<b>Energy-Aware Compiler Optimization for VLIW-DSP Cores</b> .....	779
<i>Yung-Cheng Ma, Tse-An Liu, Wen-Shih Chao</i>	
<b>On the Variants of Tagged Geometric History Length Branch Predictors</b> ...	789
<i>Yeong-Chang Ma, Mao-Hsu Yen</i>	
<b>Author Index</b> .....	809