

# **2010 International Computer Symposium**

**(ICS 2010)**

**Tainan, Taiwan  
16 – 18 December 2010**

**Pages 1-545**



**IEEE Catalog Number: CFP1029K-PRT  
ISBN: 978-1-4244-7639/8**

# TABLE OF CONTENTS

---

---

## Parallel Session 1

Thursday, Dec. 16, 2010, 10:40-12:10

### Digital Content, Digital Life, E-learning, Web Service, and HCI (I)

Place: First Lecture Room

Session Chair: Prof. Chuan-Yu Chang

#### **Facial Expression Recognition Using Contourlets and Regularized Discriminant Analysis-based Boosting Algorithm.....1**

*Chien-Cheng Lee and Cheng-Yuan Shih*

#### **Abnormal Behavior Detection with Fuzzy Clustering for Elderly Care.....6**

*Hui-Huang Hsu, Kun-Chi Lu, and Makoto Takizawa*

#### **Application of Support Vector Regression for Physiological Emotion Recognition.....12**

*Chuan-Yu Chang, Jun-Ying Zheng, Chi-Jane Wang, and Pau-Choo Chung*

#### **A Music Recommendation System with Consideration of Personal Emotion.....18**

*Chuan-Yu Chang, Chun-Yen Lo, Chi-Jane Wang, and Pau-Choo Chung*

#### **Using Salient Region Constraints on Active Appearance Model Initialization for Facial Feature Extraction .....24**

*Yuan Wong and Pau-Choo Chung*

### Information Security (I)

Place: Second Lecture Room

Session Chair: Prof. Wen-Chung Kuo

#### **A New Matrix Decode Scheme for Error Diffusion on Visual Share Images.....28**

*Bor-Woei Lee, Hong-Hao Chen, Chih-Chiang Lee, and Tsung-Hung Lin*

#### **Basic Unit Layer Rate Control for Video Security.....34**

*Tao Yan, Anyuan Deng, Woei-Jiunn Tsaur, Jia-Hong Li, and Hsin-Chieh Tsai*

## TABLE OF CONTENTS

---

---

<b>A Robust Watermarking Scheme Based on Singular Value Decomposition and Quantization Technique.....</b>	<b>38</b>
<i>Hsien-Chu Wu, Ruen-Jie Jang, and Yu-Chi Liu</i>	
<b>A Robust Oblivious Watermarking Technique.....</b>	<b>44</b>
<i>Huang-Chi Chen, Yu-Wen Chang, and Rey-Chue Hwang</i>	
<b>Adaptive Weighting Color Palette Image.....</b>	<b>48</b>
<i>Wen-Chung Kuo, Wei-De Syu, and Jiin-Chiou Cheng</i>	
<b>Mobile Computing, Wireless Communications, and Vehicular Technology (I)</b>	
Place: Third Lecture Room	
Session Chair: Prof. Shuo-Cheng Hu	
<b>Feasibility study of using FM radio for data transmission in a Vehicular Network.....</b>	<b>55</b>
<i>Kun-Chan Lan and Mei-Wen Li</i>	
<b>RISE: RIpple Sink Exploration in Wireless Sensor Network.....</b>	<b>61</b>
<i>Wei-Cheng Chu and Kuo-Feng Ssu</i>	
<b>Cross-layer Cooperative Routing for Vehicular Networks.....</b>	<b>67</b>
<i>Wei-Hui Chen, Ai-Chun Pang, Shuo-Cheng Hu, and Chung-Tsen Fan Chiang</i>	
<b>Design of Fast Restoration Multipath Routing in VANETs.....</b>	<b>73</b>
<i>Cheng-Shiun Wu, Shuo-Cheng Hu, and Chih-Shun Hsu</i>	
<b>MAODV-Based Multisource Multicast Routing with Fast Route Recovery Scheme in MANETs.....</b>	<b>79</b>
<i>Chia-Hui Huang, Chun-Ting Wu, Kai-Wei Ke, and Ho-Ting Wu</i>	
<b>The Scheduling Algorithm in Road Side Unit for Vehicular Ad Hoc Applications.....</b>	<b>85</b>
<i>Ching-Lung Chang and Jia-Ruei Luo</i>	
<b>Parallel Session 2</b>	
Thursday, Dec. 16, 2010, 13:30-15:00	

## TABLE OF CONTENTS

---

---

### Digital Content, Digital Life, E-learning, Web Service, and HCI (II)

Place: First Lecture Room

Session Chair: Prof. Ching Lung Chang

**A ZigBee Network Application in Emergency Exit Guiding.....91**

*Jinn-Kwei Guo, Churng-Jou Tsai, Chien-Jen Wang, and Chun-Lin Lu*

**QoS-based Unequal Frame Protection for Video Streaming.....95**

*Ching Lung Chang and Huan-Yao Kang*

**A Confirmatory Study of On-line Communication Satisfaction.....100**

*Chao-Hsi Chang*

**Detection and Recognition of Speed Limit Signs .....107**

*Yun Shin Lee*

### Information Security (II)

Place: Second Lecture Room

Session Chair: Prof. Narn-Yih Lee

**An Automated Vulnerability Scanner for Injection Attack Based on Injection Point.....113**

*Jan-Min Chen and Chia-Lun Wu*

**The Research of Botnet Detection and Prevention.....119**

*Narn-Yih Lee and Hung-Jen Chiang*

**Cost-Sensitive Defense Strategy Selection for Web Applications.....125**

*Jan-Min Chen, Fan-Yu Kuan, and Jin-Cherng Lin*

**Quantum Key Distribution and Denial-of-Service: Using Strengthened Classical Cryptography as a Fallback Option.....131**

*Peter Schartner and Stefan Rass*

## TABLE OF CONTENTS

---

---

**Multilevel Data Hiding for Embedding Reversibility upon Improving Histogram Shifting.....137**

*Shiuh-Jeng Wang, Chi-Yao Weng, and Dushyant Goyal*

### **Image Processing, Computer Graphics, and Multimedia Technologies (I)**

Place: Third Lecture Room

Session Chair: Prof. Din-Yuen Chan

**Rate Controlling Based on Effective Source-Complexity Metrics Appropriated to H.264/AVC.....142**

*Din-Yuen Chan, Zih-Siang Lin, and Pei-Shan Wu*

**Bio-inspired JPEG XR CODEC Design for Lossless HDR Biomedical Image.....148**

*Yi-Shen Shih, Wen-Chih Zhang, Hsuan Shen, Yi-Hsiang Yang, Shung-Ting Sun, Chi-Chang Wu,  
Yaw-Chern Lee, and Sung-Shine Lee*

**Image Encryption Algorithm Based on Chaotic Maps.....154**

*Mao-Yu Huang, Yueh-Min Huang, and Ming-Shi Wang*

**An Easy Dominant Color Extraction and Edge Valley Histogram for Image Retrieval.....159**

*Shyr-Shen Yu, Shiow-Yuan Huang, Ying-Hsin Pan, and Hsien-Chu Wu*

**A Patch-based Image Inpainting Based on Structure Consistence.....165**

*Hui-Yu Huang and Chun-Nan Hsiao*

### **Parallel Session 3**

Thursday, Dec. 16, 2010, 16:10-17:40

### **Digital Content, Digital Life, E-learning, Web Service, and HCI (III)**

Place: First Lecture Room

Session Chair: Prof. Wing-Kwong Wong

**A Study of Web 2.0 Based Digital Archives System Using Kano Model.....171**

*Chueh Ju Chu, Shu Lin Wang, and Yi Cheng Lai*

## TABLE OF CONTENTS

---

---

<b>Web-based Interactive Module with Multiple Representations for Learning Geometry Theorem Proving.....</b>	<b>177</b>
<i>Hsi-Hsun Yang, Sheng-Kai Yin, and Wing-Kwong Wong</i>	
<b>Anti-spam Email System in Facebook.....</b>	<b>183</b>
<i>I-Cheng Liang, Yuen-Fu Chen, Guo-Tan Liao, and Bo-Chao Cheng</i>	
<b>Visualization of the Taiwanese Buddhism Web Based on Social Network Analysis.....</b>	<b>187</b>
<i>Jia-Jane Shuai, Hsin-Chih Chen, and Chia-Hao Chang</i>	
<b>Exploring User-Centric Interpersonal Relationships in Social Networks Using Information Visualization Techniques.....</b>	<b>192</b>
<i>Yi-Lin Ho, Pao-Yung Chang, Ing-Xiang Chen, and Cheng-Zen Yang</i>	
<b>Information Security (III)</b>	
Place: Second Lecture Room	
Session Chair: Prof. Wu-Chuan Yang	
<b>ID-Based Online/Offline Signature From Pairings.....</b>	<b>198</b>
<i>Tzong-Sun Wu, Yih-Sen Chen, and Kong-Yi Lin</i>	
<b>Secure Electronic Business Applications in Mobile Agent Based Networks Using Elliptic Curve Cryptosystems .....</b>	<b>204</b>
<i>Woei-Jiunn Tsaur and Hsin-Chieh Tsai</i>	
<b>On the Performance of Dimitrov-Jullien-Miller Recoding Algorithm.....</b>	<b>210</b>
<i>Wu-Chuan Yang, Ching-Po Hung, and Jeng-Jung Wang</i>	
<b>A Robust Password-based Remote User Authentication Scheme Using Bilinear Pairings without Using Smart Cards.....</b>	<b>215</b>
<i>Yi-Pin Liao and Shuenn-Shyang Wang</i>	
<b>An Authentication Scheme Balancing Authenticity and Transmission for Wireless Sensor Networks....</b>	<b>222</b>
<i>Hung-Min Sun, Shih-Ying Chang, Alcides Bernardo Tello, and Yen-Hsuen Chen</i>	

## TABLE OF CONTENTS

---

---

### Image Processing, Computer Graphics, and Multimedia Technologies (II)

Place: Third Lecture Room

Session Chair: Prof. Jing Fung Chen

**Adaptive Template-matching Method for Recognition of Low-resolution License Number.....228**

*Yi-Chong Zeng and Jing Fung Chen*

**Real-Time Face Recognition Techniques Used for the Interaction Between Humans and Robots.....234**

*Chin-Shyurng Fahn and Yu-Ta Lin*

**A Self-adaptive Nonuniformity Correction Algorithm for Infrared Images Combined with Two-point Correction Along the Rim.....240**

*Chongliang Liu, Weiqi Jin, Yan Chen, Bin Liu, Yang Cao, and Xiu Liu*

**Road Speed Sign Recognition Using Edge-voting Principle and Linear Vector Quantization Network.....246**

*Hsin-Han Chiang, Yen-Lin Chen, Wen-Qing Wang, and Tsu-Tian Lee*

**Pedestrian Detection in Images by Integrating Heterogeneous Detectors.....252**

*Yi-Hsin Liu, Tz-Huan Huang, Augustine Tsai, Wen-Kai Liu, Jui-Yang Tsai, and Yung-Yu Chuang*

### Parallel Session 4

Thursday, Dec. 16, 2010, 17:40-18:40

### Digital Content, Digital Life, E-learning, Web Service, and HCI (IV)

Place: First Lecture Room

Session Chair: Prof. Yuan-Hsiang Chang

**Light up! Creating an Interactive Digital Artwork - Based on Arduino and Max/MSP Design.....258**

*Yu Chen Yang, Yi Jen Tseng, Sheng-Tien Wang, and Hao-Chiang Koong Lin*

**Internet of Toys: An e-Pet Overview and Proposed Innovative Social Toy Service Platform.....264**

*Wen-Nan Wang, Vivian Kuo, Chung-Ta King, and Chiu-Ping Chang*

## TABLE OF CONTENTS

---

---

**Residual Noise Removal on Beamforming for Robust Hands-free Speech Recognition.....270**

*Wei-Tyng Hong*

**A Real-Time Computer Graphical User Interface for Advanced Boiling Water Reactor Case Comparison Using MAAP Software.....274**

*Yu-Chen Chen, Yuan-Hsiang Chang, and Te-Chuan Wang*

### **Information Security (IV)**

Place: Second Lecture Room

Session Chair: Prof. Wen-Shenq Juang

**An Efficient and Privacy Protection Multi-server Authentication Scheme for Low-cost RFID Tags.....279**

*Wen-Shenq Juang, Hui-Chin Tseng, and Yun-Yu Shue*

**Cryptanalysis of a More Secure Remote User Authentication Scheme.....284**

*Wen-Bing Horng, Cheng-Ping Lee, and Jian-Wen Peng*

**A Secure and Privacy Protection Digital Goods Trading Scheme in Cloud Computing.....288**

*Wen-Shenq Juang and Yun-Yu Shue*

**Efficient Fair Content Exchange in Cloud Computing.....294**

*Chun-I Fan, Wen-Shenq Juang, and Ming-Te Chen*

### **Image Processing, Computer Graphics, and Multimedia Technologies (III)**

Place: Third Lecture Room

Session Chair: Prof. Jing Fung Chen

**Immersive Surveillance for Total Situational Awareness.....300**

*Meng-da Hsieh, Shi-bin Chen, Yu-shan Cai, Yung-Fu Chen, and John Y. Chiang*

**Topview Transform Model for The Vehicle Parking Assistance System.....306**

*Chien-Chuan Lin and Ming-Shi Wang*

## TABLE OF CONTENTS

---

---

<b>A Point-Based Localization with Error Analysis.....</b>	<b>312</b>
<i>Kuo-Hua Lo, Jen-Hui Chuang, Yueh-Hsun Hsieh, and Hon-Yue Chou</i>	
<b>Integrated Google Maps and Smooth Street View Videos for Route Planning.....</b>	<b>319</b>
<i>Chi Peng, Bing-Yu Chen, and Chi-Hung Tsai</i>	
<b>Security Monitoring around a Video Surveillance Car with a Pair of Two-camera Omni-directional Imaging Devices.....</b>	<b>325</b>
<i>Pei-Hsuan Yuan, Kuo-Feng Yang, and Wen-Hsiang Tsai</i>	
<b>Parallel Session 5</b>	
Friday, Dec. 17, 2010 ,10:10-11:40	
<b>Digital Content, Digital Life, E-learning, Web Service, and HCI (V)</b>	
Place: First Lecture Room	
Session Chair: Prof. Ku-Yaw Chang	
<b>Employing Augmented Reality to Create Digital Artworks to Present Interactive Poem.....</b>	<b>331</b>
<i>Min-Chai Hsieh and Hao-Chiang Koong Lin</i>	
<b>The Application of Face Recognition to Classroom Locale.....</b>	<b>338</b>
<i>Yung-Lung Kuo, Chuan-Ren Wang, and Jiann-Shu Lee</i>	
<b>Perception of Motion Traces as a Spatial Concepts Activity for Children with Learning Disabilities.....</b>	<b>342</b>
<i>Chien-Yu Lin, Pi-Hsia Hung, Ho-Hsiu Lin, and Chien-Chi Lin</i>	
<b>An Information Technology-Applied Education Model with Interactive Response Systems.....</b>	<b>348</b>
<i>Wang-Kun Chen, Yih-Ruey Juang, Sheng-Hua Chang, and Sue-Huei Chang</i>	
<b>Online Math Word Problem Test System Based on Dynamic Item Generation Mechanism.....</b>	<b>354</b>
<i>Ku-Yaw Chang, Wen-Ping Chuang, Yi-Chang Li, and Yu-Chun Lin</i>	
<b>Investigation of Three-Dimensional Human Anatomy Applied in Mobile Learning.....</b>	<b>358</b>
<i>Hsiu-Mei Huang, Young-Long Chen, and Kuan-Yu Chen</i>	

## TABLE OF CONTENTS

---

---

### Information Security (V)

Place: Second Lecture Room

Session Chair: Prof. Chih-Hung Wang

**The Design of the En-route Filtering Mechanism with Immediately Lightweight Authentication for Wireless Sensor Networks.....364**

*Chih-Hung Wang and Tzu-Chieh Wei*

**CDS: Concealed Data Sorting Scheme in Wireless Sensor Networks.....370**

*Yue-Hsun Lin, Bing-Zhe He, Hung-Min Sun, and Yen-Hsueh Chen*

**A Novel Metropolitan Area Network Service Model with Free Use and Privacy Protection.....376**

*Yu-Yi Chen, Jun-Chao Lu, Chih-Chiang Lin, Jinn-Ke Jan, and Der-Chen Huang*

**Web Botnet Detection Based on Flow Information.....381**

*Chia-Mei Chen, Ya-Hui Ou, and Yu-Chou Tsai*

**A Detection Scheme for Flooding Attack on Application Layer Based on Semantic Concept.....385**

*Chu-Hsing Lin, Chen-Yu Lee, Jung-Chun Liu, and Ching-Ru Chen*

**Design and Implementation of a Network Forensics System for Linux.....390**

*Hong-Ming Wang and Chung-Huang Yang*

### Image Processing, Computer Graphics, and Multimedia Technologies (IV)

Place: Third Lecture Room

Session Chair: Prof. Chia-Nian Shyi

**Global Mesh Optimization with Automatic Surface Structure Preservation.....396**

*Chien-Hsing Chiang, Kun-Huan Ting, Bin-Shyan Jong, and Tsong-Wuu Lin*

**A Study of 3D Feature Tracking and Localization Using A Stereo Vision System.....402**

*Li-Wei Zheng, Yuan-Hsiang Chang, and Zhen-Zhong Li*

## TABLE OF CONTENTS

---

---

<b>Robust Multiframe Super-Resolution Reconstruction Based on Regularization.....</b>	<b>408</b>
<i>Yan Chen, Weiqi Jin, Lingxue Wang, Chongliang Liu, and Weili Chen</i>	
<b>Design and Implementation of Augmented Reality System Collaborating with QR Code.....</b>	<b>414</b>
<i>Jian-tung Wang, Chia-Nian Shyi, Ting-Wei Hou, and C.P. Fong</i>	
<b>Ocean Wave Simulation in Real-time Using GPU.....</b>	<b>419</b>
<i>Chin-Chih Wang, Jia-Xiang Wu, Chao-En Yen, Pangfeng Liu, and Chuen-Liang Chen</i>	
<b>Parallel Session 6</b>	
Friday, Dec. 17, 2010, 13:00-14:30	
<b>Mobile Computing, Wireless Communications, and Vehicular Technology (II)</b>	
Place: First Lecture Room	
Session Chair: Prof. Chun-Liang Hsu	
<b>Load Analysis for MTC Devices in Idle Mode or Detached State.....</b>	<b>424</b>
<i>Shiann-Tsong Sheu, Youn-Tai Lee, and Shaojung Lu</i>	
<b>Dynamic Water Gate Assignment Scheme for Data Aggregation in Long-Thin Sensor Networks.....</b>	<b>429</b>
<i>You-Chiun Wang, Che-Hsi Chuang, Yu-Chee Tseng, and Chien-Chung Shen</i>	
<b>Active &amp; Intelligent Energy-Saving System Designed with WSN Modules and Efficiency Analysis.....</b>	<b>435</b>
<i>Chun-Liang Hsu and Sheng-Yuan Yang</i>	
<b>HMT: A Hybrid Mesh Tree Approach in Forming Bluetooth Networks.....</b>	<b>441</b>
<i>Chih-Min Yu and Yi-Wei Chiu</i>	
<b>Direction Based Routing Strategy to Reduce Broadcast Storm in MANET.....</b>	<b>445</b>
<i>Hung-Chin Jang and Chih-Chia Hung</i>	
<b>Developing a Mobile Learning System to Community-based Learning for Rural Elementary School Students.....</b>	<b>451</b>
<i>Wan Jen Chang, Zong-Mu Yeh, and Kim Joan Chen</i>	

## TABLE OF CONTENTS

---

---

### Computer Architecture, SoC, and Embedded Systems (I)

Place: Second Lecture Room

Session Chair: Prof. Ming-Chih Chen

#### **Object Oriented Network-On-Chip Modeling.....457**

*Chi-Fu Chang and Yarsun Hsu*

#### **Hardware Accelerated XML Parsers with Well Form Checkers and Abstract Classification Tables.....467**

*Sheng-De Wang, Chun-Wei Chen, Michael Pan, and Chih-Hao Hsu*

#### **An Open Electronic System Level Multi-SPARC Virtual Platform and Its Toolchain.....478**

*Pin-Hao Fang, Yu-Lin Wang, Zhong-Ho Chen, Alvin W. Y. Su, and Ce-Kuen Shieh*

#### **Design and Implementation of a NoC Supporting Priority-Based Communications for Many-Core SoCs.....483**

*Kuei-Chung Chang, Ing-Ming Liao, and Bo-Yi Shiu*

#### **File-Based Sharing For Dynamically Compiled Code On Dalvik Virtual Machine.....489**

*Yao-Chih Huang, Yu-Sheng Chen, Wu Yang, and Jean Jyh-Jiun Shann*

### Image Processing, Computer Graphics, and Multimedia Technologies (V)

Place: Third Lecture Room

Session Chair: Prof. Phen-Lan Lin

#### **An Effective Dental Work Extraction and Matching Method for Bitewing Radiographs.....495**

*Chun-Hung Kuo and Phen-Lan Lin*

#### **Improvement and Evaluation of Visual Saliency Based on Information Theory.....500**

*Anh Cat Le Ngo, Li-Minn Ang, Kah Phooi Seng, and Guoping Qiu*

## TABLE OF CONTENTS

---

---

<b>Selecting Forensic Features for Robust Source Camera Identification.....</b>	<b>506</b>
<i>Yongjian Hu, Chang-Tsun Li, and Changhui Zhou</i>	
<b>Co-articulation Generation Using Maximum Direction Change and Apparent Motion for Chinese Visual Speech Synthesis.....</b>	<b>512</b>
<i>Chung-Hsien Wu, Chung-Han Lee, and Ze-Jing Chuang</i>	
<b>Improved Voice Activity Detection for Speech Recognition System.....</b>	<b>518</b>
<i>Siew Wen Chin, Kah Phooi Seng, Li-Minn Ang, and King Hann Lim</i>	
<b>Parallel Session 7</b>	
Friday, Dec. 17, 2010, 15:40-17:10	
<b>Mobile Computing, Wireless Communications, and Vehicular Technology (III)</b>	
Place: First Lecture Room	
Session Chair: Prof. Chia-Ho Ou	
<b>The Study of Dynamic Navigation with WAVE/DSRC in VANETs.....</b>	<b>524</b>
<i>Shu-Ping Lu, Kuan-Ming Li, and Cheng-Yi Hsieh</i>	
<b>A Time Slot Assignment Scheme for Multi-Path QoS Multicast Routing in Mobile Ad Hoc Networks.....</b>	<b>529</b>
<i>Neng-Chung Wang and Chao-Yang Lee</i>	
<b>Moving Direction Based Greedy Routing Algorithm for VANET.....</b>	<b>535</b>
<i>Hung-Chin Jang and Hsiang-Te Huang</i>	
<b>Efficient Localization Scheme with Mobile Anchors in Wireless Sensor Networks.....</b>	<b>541</b>
<i>Yeong-Sheng Chen and Tang-Te Lo</i>	
<b>The Study of Interference-free Multicast Using Non-orthogonal Channels for Multi-Radio and Multi-channel Wireless Mesh Networks.....</b>	<b>547</b>
<i>Wen-Lin Yang and Wei-Tsung Huang</i>	

## TABLE OF CONTENTS

---

---

### Computer Architecture, SoC, and Embedded Systems (II)

Place: Second Lecture Room

Session Chair: Prof. Ming-Chih Chen

**Strip-based Watershed Using Multiple-bank Memory Storage.....553**

*Lee Seng Yeong, Li-Minn Ang, and Kah Phooi Seng*

**Cascaded Broadcasting for Test Data Compression.....557**

*Cheng-Ho Chang, Lung-Jen Lee, Wang-Dauh Tseng, and Rung-Bin Lin*

**2<sup>n</sup> Pattern Run-Length for Test Data Compression.....562**

*Cheng-Ho Chang, Lung-Jen Lee, Wang-Dauh Tseng, and Rung-Bin Lin*

**Energy-Efficient Tasks Scheduling Algorithm for Dual-core Real-time System.....568**

*Wann-Yun Shieh and Bo-Wei Chen*

**Design and Implementation of Digital TV Widget for Android on Multi-core Platform.....576**

*Yu-Sheng Lu, Chin-Ho Lee, Hung-Yen Weng, and Yueh-Min Huang*

**UDispatch+: A User Dispatching Tool with Automatic Binding.....581**

*Tang-Hsun Tu, Yuan-Cheng Lee, C hih-Wen Hsueh, and Yi-Sheng Liu*

### Artificial Intelligence, Knowledge Discovery, and Fuzzy Systems (I)

Place: Third Lecture Room

Session Chair: Prof. Been-Chian Chien

**Aggregate Two-way Co-Clustering for Ads and User Analysis for Online Advertisements.....587**

*Meng-Lun Wu, Chia-Hui Chang, Rui-Zhe Liu, and Teng-Kai Fan*

**A Discriminant based Document Analysis for Text Classification.....594**

*Yi-Xian Lin and Been-Chian Chien*

**Word Ordering Entropy Difference of English and Chinese Texts.....600**

*Kiwing To, C. S. Wang, and Tyne Liang*

## TABLE OF CONTENTS

---

---

<b>Disambiguation for Polyphones of Chinese Based on Two-Pass Unified Approach.....</b>	<b>603</b>
<i>Feng-Long Huang, Jun-Hong Lin, and Xin-Wei Lin</i>	
<b>A Multi-block Scheme for Searching Source Codes.....</b>	<b>608</b>
<i>Sheng-Kuei Hsu and Shi-Jen Lin</i>	
<b>A New Ubiquitous Interface Agent for Cloud Computing – Example on Bluetooth, GPS, and Zigbee Techniques.....</b>	<b>614</b>
<i>Sheng-Yuan Yang, Dong-Liang Lee, Kune-Yao Chen, and Chun-Liang Hsu</i>	
<b>Parallel Session 8</b>	
Friday, Dec. 17, 2010, 17:10-18:30	
<b>Mobile Computing, Wireless Communications, and Vehicular Technology (IV)</b>	
Place: First Lecture Room	
Session Chair: Prof. Sok-Ian Sou	
<b>Path Selection with Zone Load-Balance for IEEE 802.16j T-MMR Networks.....</b>	<b>620</b>
<i>Yi-Cheng Chan and Tai-Ta Chen</i>	
<b>Credit Allocation Schemes for Quality-class-oriented Services in Next Generation Networks.....</b>	<b>626</b>
<i>Hsiu-Fang Ho, Sok-Ian Sou, and Jeu-Yih Jeng</i>	
<b>Scheduling for Ordered Query Services in Multi-channel Data Broadcast Systems.....</b>	<b>632</b>
<i>Yu-Hsien Lin, Yi-Syuan Jiang, and Wei-Mei Chen</i>	
<b>People Help People: A Pattern-matching Localization with Inputs from User Community.....</b>	<b>638</b>
<i>Chi-Chung Lo, Shih-Chin Lin, Sheng-Po Kuo, Yu-Chee Tseng, Shin-Yun Peng, Shang-Ming Huang, Yu-Neng Hung, and Chin-Fu Hung</i>	
<b>Intra Color-shape Classification for Traffic Sign Recognition.....</b>	<b>642</b>
<i>King Hann Lim, Kah Phooi Seng, and Li Minn Ang</i>	

## TABLE OF CONTENTS

---

---

### Computer Architecture, SoC, and Embedded Systems (III)

Place: Second Lecture Room

Session Chair: Prof. Ing-Chao Lin

**Cost-Effective Branch Prediction by Combining Hedging and Filtering.....648**

*Yeong-Chang Maa, Mao-Hsu Yen, Shu-Ming Kuo, and Guan-Luen Lee*

**Evaluating and Improving Variable Length History Branch Predictors.....656**

*Yeong-Chang Maa, Mao-Hsu Yen, and Yu-Tang Wang*

**A Hardware Invocation Mechanism for Reconfigurable Embedded System.....664**

*Jih-Ching Chiu, Kai-Ming Yang, and Ta-Li Yeh*

**Transaction-level Error Susceptibility for Bus-based System-on-Chip: From Single-bit to Multi-bit....670**

*Shi-Qun Zheng and Ing-Chao Lin*

**Power Reduction by Register Relabeling for Crosstalk-Toggling Free Instruction Bus Coding.....676**

*Tsung-Hsi Weng, Chun-Han Lin, Jean Jyh-Jiun Shann, and Chung-Ping Chung*

**Design of an Asynchronous Ring Bus Architecture for Multi-Core Systems.....682**

*Kai-Ming Yang, Kin-Fong Lei, and Jih-Ching Chiu*

### Artificial Intelligence, Knowledge Discovery, and Fuzzy Systems (II)

Place: Third Lecture Room

Session Chair: Prof. Jung Yi Lin

**Combining Genetic Algorithm and First Order Taylor Series Iterative Searching DOA Estimation for the CDMA System.....688**

*Jui-Chung Hung and Chih-Lin Yu*

**A GA-ANN Model for Air Quality Predicting.....693**

*Hong Zhao, Jie Zhang, Kai Wang, Zhi peng Bai, and Aixie Liu*

## TABLE OF CONTENTS

---

---

**Thursday, Dec. 16, 2010**

**Fitness Enhancement of Layered Architecture Genetic Programming .....700**

*Jung Yi Lin*

**A Evolutionary Approach for Time Series Segmentation and Pattern Discovery.....705**

*Hsieh-Hui Yu, Vincent S. Tseng, Chun-Hao Chen, and Tzung-Pei Hong*

**Pattern Recognition of Business Failure by Autoassociative Neural Networks in Considering the Missing Values.....711**

*Ming-Hua Chen*

### **Parallel Session 9**

Saturday, Dec. 18, 2010, 10:10-11:40

### **Computer Networks and Web Technologies (I)**

Place:First Lecture Room

Session Chair: Prof. Yi-Sheng Su

**Cooperative-Stream Control Transmission Protocol(C-SCTP).....716**

*Chung-Ming Huang and Ming-Sian Lin*

**Measurement of Flow Burstiness by Fractal Technique.....722**

*Hsiao-Wen Tin, Shao-Wei Leu, and Shun-Hsyung Chang*

**Performance Enhancement in Wireless Sensor Network Clustering.....728**

*I-Hui Li, I-En Liao, and Feng-Nien Wu*

**Distributed Quality of Service Routing in Multihop TDMA Ad Hoc Networks.....734**

*Yi-Sheng Su, Tsung-Cheng Wu, and Chung-Hsuan Wang*

**A Novel Rate Adaptation Algorithm in IEEE 802.11 Wireless LANs.....740**

*Zanyu Chen, Tsungnan Lin, and Pochiang Lin*

**Performance Assessment between Tree- and Star-ring-based EPONs.....747**

*I-Shyan Hwang, Jhong-Yue Lee, and Zen-Der Shyu*

# TABLE OF CONTENTS

---

---

**Thursday, Dec. 16, 2010**

## **Biomedical Informatics (I)**

Place: Second Lecture Room

Session Chair: Prof. Rong-Ming Chen

**Designing a Dedicated Database for Eukaryotic Algae Species – A Case Study on Cross-species Comparison of P450 Enzymes.....753**

*Tsan-huang Shih, Tsai-Ling Lee, Kuan-Yuan Chang, Yu-Ping Hsu, and Tun-Wen Pai*

**A Novel Method for Mining Temporally Dependent Association Rules in Three-Dimensional Microarray Datasets.....759**

*Yu-Cheng Liu, Chao-Hui Lee, Wei-Chung Chen, J. W. Shin, Hui-Huang Hsu, and Vincent S. Tseng*

**Agent-based Optimization of Biological Response Networks.....765**

*Chien-Feng Huang, Yu-Feng Lin, and Vincent S. Tseng*

**A Hybrid Algorithm of Finding Features for Clustering Sequential Data.....771**

*Ye-In Chang, Lee-wen Huang, and Hsi-Mei Chang*

**PCR-CTPP Primer Design Using Chaotic Inertia Weight Particle Swarm Optimization.....777**

*Cheng-Hong Yang, Yu-Huei Cheng, and Li-Yeh Chuang*

**Protein Surface Search in DNA-binding Protein Prediction by Delaunay Triangulation Modeling.....783**

*Po-Han Cheng, Hung-Yu Chen, and Hung-Yu Kao*

## **Peer to Peer, Grid, and Cloud Computing (I)**

Place: Third Lecture Room

Session Chair: Prof. Ching-Hung Chang

**Increasing Service Availability for Resource Constrained Nodes in Peer-to-peer Communication Systems.....789**

*Yun-Shuai Yu, Lun-Yuan Chang, and Ce-Kuen Shieh*

## TABLE OF CONTENTS

---

---

**Thursday, Dec. 16, 2010**

**Dynamic Layer Adjustments for SVC Segments in P2P Streaming Networks.....793**  
*Tsang-Ling Sheu and Yan-Hsiang Wang*

**A Gradient Descent Orthogonal Search Algorithm for Motion Estimation.....799**  
*Hsin-Jung Wu, Shu-Jhen Fan Jiang, and Chia-Hung Yeh*

**Implementation of Action Recognition Algorithm on Multiple-Streaming Multimedia Unit.....804**  
*Jih-ching Chiu, Tzu-Chun Lin, and Yu-Liang Chou*

**Stochastic Resonance Effects of Human Visual Perception.....809**  
*Chi-Wen Hsieh, Tien-Chun Lin, Tai-Lang Jong, and Chih-Yen Chen*

### **Parallel Session 10**

Saturday, Dec. 18 ,2010 , 13:00-14:30

### **Computer Networks and Web Technologies (II)**

Place: First Lecture Room

Session Chair: Prof. Hui Kai Su

**The Design of Intelligent Mobile Tourism Service System.....813**  
*Jinn-Shing Cheng, Hung-Wei Hsiang, and Wer-Chih Wu*

**Mobility-Aware Security Management for Heterogeneous Wireless Networks.....818**  
*Wen-Hsu Hsiao, Hui-Kai Su, Kim-Joan Chen, Rui-Hong Zheng, and Jian-Syun Chen*

**An Adaptive Coverage Adjustment Mechanism for LTE Femtocells.....830**  
*Jui-Ming Chen, Li-Der Chou, and Yu-Hong Lin*

**A Framework Using Fingerprinting for Signal Overlapping-Based Method in WLAN.....: 58**  
*Wei Shi-Sue, Shiuhyng Shieh, Bing-Han Li, Michael Cheng Yi Cho, and Chin-Wei Tien*

### **Biomedical Informatics (II)**

Place:Second Lecture Room

Session Chair: Prof. Sheng-Fu Liang

# TABLE OF CONTENTS

**Thursday, Dec. 16, 2010**

<b>Estimation and Prediction of Propafenone on The Termination of Atrial Fibrillation by State-space Models.....</b>	<b>69</b>
<i>Chin-En Kuo, Shao-Sheng Lu, Chih-Sheng Lin, and Sheng-Fu Liang</i>	
<b>How Much Resting Time Is Required before Taking an ECG Experiment?.....</b>	<b>74</b>
<i>Yaw-Chern Lee, Sung-Shine Lee, Wen-Chih Zhang, Yi-Shen Shih, Yi-Hsiang Yang, Hsuan Shen, Chi-Chang Wu, Shung-Ting Sune, Bor-Jen Lee, and Sheng-Chieh Huang</i>	
<b>Implementing RAID-3 on Cloud Storage for EMR System.....</b>	<b>78</b>
<i>Pao-Ching Chen, Chih-Pin Freg, Ting-Wei Hou, and Wei-Guang Teng</i>	
<b>Applying Fuzzy Techniques to Select Suitable Scenic Spots for Medical Care.....</b>	<b>82</b>
<i>Yu-Shih Lin, Ching-Pao Chang, Chia-Hao Kuo, and Chih-Ping Chu</i>	
<b>A Study on Paragraph Ranking and Recommendation by Topic Information Retrieval from Biomedical Literature.....</b>	<b>87</b>
<i>Heng-Hui Liu, Yi-Ting Huang, and Jung-Hsien Chiang</i>	
<b>Peer to Peer, Grid, and Cloud Computing (II)</b>	
Place: Third Lecture Room	
Session Chair: Prof. Kuo-Chan Huang	
<b>Dynamic Multi-channel Multi-path Routing Protocol for Wireless Mesh Networks.....</b>	<b>93</b>
<i>Kai-ming Yang, Ming-Shiou Wu, Po-Hsun Pan, and Jih-Ching Chiu</i>	
<b>An Efficient Distributed Hierarchical-Clustering Algorithm for Large Scale Data.....</b>	<b>97</b>
<i>Cheng-Hsien Tang, An-Ching Huang, Meng-Feng Tsai, and Wei-Jen Wang</i>	
<b>A Threshold-Based Method for Selfish Nodes Detection in MANET.....</b>	<b>3</b>
<i>Lien-Wen Wu and Rui-Feng Yu</i>	
<b>A Mapreduce Programming Framework Using Message Passing.....</b>	<b>::</b>
<i>Yu-Fan Ho, Sih-Wei Chen, Chang-Yi Chen, Yung-Ching Hsu, and Pangfeng Liu</i>	
<b>An ART-Based ASN-GW Relocation Algorithm for WiMAX Networks.....</b>	<b>;7</b>
<i>Tzu-Hsing Yang, Rong-Hong Jan, and Chien Chen, and Yu-Hsiang Lin</i>	

# TABLE OF CONTENTS

---

---

## Parallel Session 11

Saturday, Dec. 18, 2010, 14:50-16:20

### Software Engineering, SOA, and Databases (I) and Computer Networks and Web Technologies (III)

Place: First Lecture Room

Session Chair: Prof. Chow-Sing Lin

**A Dynamic Heuristic Algorithm for Offset Assignment.....; 23**

*Tong-Chai Wang and J. Ramanujam*

**A GIS-based Simulator for CIIP Interdependency Analysis.....; 29**

*Ching-Ting Lin, Chin-Feng Fan, and Albert Yih*

**Construction of an Ontology-based Common Criteria Review Tool .....; 35**

*Sheng-Chieh Chang and Chin-Feng Fan*

**Provisioning an End to End QoS for VoIP over WiMAX Network.....; 3;**

*Chi-Ming Lin and Shuoh Ren Tsai*

**Use of Shrinking Quorums to Improve Efficiency of Replication Protocols.....; 46**

*Qurat-ul-Ain Inayat Tariq*

## Biomedical Informatics (III)

Place: Second Lecture Room

Session Chair: Prof. Shyh-Hau Wang

**Assessment of the Carpal Tunnel Syndrome by High Frequency Ultrasound Images of the Wrist: A Feasibility Study.....; 4;**

*Yi-Hsun Lin, Mei-Yu Hsieh, Chung-Chi Lin, and Shyh-Hau Wang*

**Fast Parallel Analysis of Dynamic Contrast-Enhanced Magnetic Resonance Imaging on GPGPU.....; 55**

*Ta-Kang Yen and Bo-Cheng Charles Lai*

**Segmentation of Flexor Tendons within Carpal Tunnel from Magnetic Resonance Image.....; 5;**

*Hsin-Chen Chen, Yung-Nien Sun, Yi-Ying Wang, Cheng-Hsien Lin, Chien-Kuo Wang, and I-Ming Jou*

## TABLE OF CONTENTS

---

---

**Automatic Tongue Feature Extraction.....; 64**

*Yu-Cheng Hsu, Ying-Ching Chen, Lun-Chien Lo, and John Y. Chiang*

**A Novel 500 samples/sec 4 by 4 Photoplethysmography (PPG) Array Based Cosmetic Chip Design.....; 6:**

*Hsuan Shen, Yi-Hsiang Yang, Chi-Chang Wu, Shung-Ting Sune, Yaw-Chern Lee, Sung-Shine Lee, Wen-Chih Zhang, Yi-Shen Shih, Sheng-Chieh Huang, Yu-Chieh Huang, and Lei-Chun Chou*

### **Peer to Peer, Grid, and Cloud Computing (III)**

Place: Third Lecture Room

Session Chair: Prof. Tsung Lee

**Tightly-coupled Multithreaded Computation of a Power Flow Analysis Algorithm.....; 76**

*Tsung Lee and Yao-Yi Huang*

**Using Group Fine-grained Locking Scheme in Software Transactional Memory for Multiprocessing Systems.....; 7:**

*Ting-Han Shen and Chih-Ping Chu*

**Energy Efficient Multicast Scheduling for IEEE 802.16e Wireless Metropolitan Area Networks.....; 87**

*Zi-Tsan Chou, Chia-Ching Lin, Yu-Hsiang Lin, and Rong-Hong Jan*

**Transmission Design in Soft-Decoded-and-Forward (SDF) TCM-based Cooperative Communication Systems.....; 93**

*Min-Kuan Chang, Shi-Yong Lee, Yuming Chou, and Chia-Chun Chang*

**Processor Allocation Policies for Reducing Resource Fragmentation in Multi-Cluster Grid and Cloud Environments.....; 99**

*Kuo-Chan Huang and Kuan-Po Lai*

### **Parallel Session 12**

Saturday, Dec. 18, 2010, 16:20-17:50

### **Software Engineering, SOA, and Databases (II)**

Place: First Lecture Room

Session Chair: Prof. Chung Yung

## TABLE OF CONTENTS

---

---

<b>Automatic Black-Box Method-Level Test Case Generation Based on Constraint Logic Programming.....</b>	<b>5</b>
<i>Yi-Tin Hu and Nai-Wei Lin</i>	
<b>Incorporating Data Abstraction in CRC to Simplify Method Interface.....</b>	<b>;</b>
<i>Jun-Ren Chen, Mu-Je Wu, and Jason Jen-Yen Chen</i>	
<b>A Graph-Based Algorithm of Mostly Incremental Garbage Collection for Active Object Systems.....</b>	<b>6</b>
<i>Chung Yung, Jheng Jyun Syu, and Shiang-Yu Yang</i>	
<b>A Lock-free Cache-friendly Software Queue Buffer for Decoupled Software Pipelining.....</b>	<b>3225</b>
<i>Wen Ren Chen, Wu Yang, and Wei Chung Hsu</i>	
<b>Causal Analysis Using Program Patterns.....</b>	<b>0B235</b>
<i>Ko-Li Cheng, Ching-Pao Chang, and Chih-Ping Chu</i>	
<b>Artificial Intelligence, Knowledge Discovery, and Fuzzy Systems (III)</b>	
Place: Third Lecture Room	
Session Chair: Prof. Jiann-Shu Lee	
<b>A Hybrid Model for Portfolio Selection Based on Grey Relational Analysis and RS Theories.....</b>	<b>0B242</b>
<i>Kuang Yu Huang, Chuen-Jiuan Jane, and Ting-Cheng Chang</i>	
<b>A Self-Adaptation Approach to Fuzzy-Go Search Engine.....</b>	<b>0B248</b>
<i>Yu-Cheng Lin, Lien-Fu Lai, Chao-Chin Wu, and Liang-Tsung Huang</i>	
<b>Non-linear Modeling of a Twin Rotor System Using Particle Swarm Optimization.....</b>	<b>0B254</b>
<i>Jakia Afruz and MS Alam</i>	
<b>Multilingual Patent Knowledge Analysis .....</b>	<b>0B25;</b>
<i>Aviv Segev and Jussi Kantola</i>	
<b>Applying Particle Swarm Optimization to Estimate Software Effort by Multiple Factors Software Project Clustering.....</b>	<b>0B267</b>
<i>Jin-Cherng Lin and Han-Yuan Tzeng</i>	
<b>User-Preference-Oriented Multi-Objective Optimization Algorithm.....</b>	<b>0B273</b>
<i>Zhi-Han Chen, Zhi-Qin Zhuang, Fei-Hsiang Huang, and Jiann-Shu Lee</i>	