

2016 Third International Conference on Computing Measurement Control and Sensor Network (CMCSN 2016)

**Matsue, Japan
20-22 May 2016**



**IEEE Catalog Number: CFP1618T-POD
ISBN: 978-1-5090-1094-3**

**Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1618T-POD
ISBN (Print-On-Demand):	978-1-5090-1094-3
ISBN (Online):	978-1-5090-1093-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2016 Third International Conference on Computing Measurement Control and Sensor Network

CMCSN 2016

Table of Contents

Preface.....	x
Conference Organization.....	xi
Program Committee.....	xii
Reviewers.....	xiii
Sponsors.....	xiv

Session 1: System Control

Energy-Efficient Activity Recognition on Smartphone	1
<i>Wei Zheng, Yuri Yoshihara, Tay Noel, Dalai Tang, and Naoyuki Kubota</i>	
Active Magnetic Bearing System Using PID-surface Sliding Mode Control	5
<i>Te-Jen Su, Wen-Pin Kuo, Van-Nam Giap, H. Quan Vu, and Quang-Dich Nguyen</i>	
Optimal Design of LED Street Lighting with Road Conditions	9
<i>Chun-Wen Chu, Wei-Cheng Chao, Chi-Chin Yang, Pei-Jung Wu, Chien-Yu Chen, Yu-Ping Kuo, and Li-Ling Lee</i>	
IoT-type Electric Fan: Remote-Controlled by Smart-Phone	12
<i>Wen-Chung Tsai, You-Jyun Shih, and Ting-Ming Tsai</i>	
Implementation of an Integrated Mobile Solar Power Monitoring System for Images and Battery Parameters	16
<i>Ching-Chuan Wei, Chi-Han Yu, Lawrence Chiang, Hei-Ming Gong, and Yung-Fa Huang</i>	
A Genetic Rough Set Approach to Fuzzy Time-Series Prediction	20
<i>Junzo Watada, Jing Zhao, and Yoshiyuki Matsumoto</i>	
A Rough Set Approach to Data Imputation and Its Application to a Dissolved Gas Analysis Dataset	24
<i>Junzo Watada, Chen Shi, Yoshiyuki Yabuuchi, Rubiyah Yusof, and Zahriah Sahri</i>	

Incremental Updates of Rough Set-Based Probabilistic Rules	28
<i>Shusaku Tsumoto and Shoji Hirano</i>	

Session 2: Medical and Home Care

Robot Partner Technology Based on Information Support System for Elderly People and Their Family	32
<i>Bakhtiar Yusuf, Jinseok Woo, János Botzheim, Naoyuki Kubota, and Boris Tudjarov</i>	
Safety Live Environment Enhancement for Older Adult by Using the Behavior Prediction Model	36
<i>Kuo-Qin Yan, Shu-Ching Wang, Shun-Sheng Wang, and Jiun-Lung Juang</i>	
A Networked Multimedia Distributed Kiosk System for Commercial and Home Appliances	40
<i>Nong Si, Ke-Bin Jia, and Chang Xu</i>	
An Interactive Upper-Limb Post-Stroke Rehabilitation System Integrating BCI-based Attention Monitoring and Virtual Reality Feedback	44
<i>Bor-Shing Lin, Hsiu-Chi Hsu, Gene Eu Jan, and Jean-Lon Chen</i>	
A Flexible and Wearable EEG Device	48
<i>Ruei-Jie Chang, Chi-Rung Wu, Ke-Yi He, and Bor-Shyh Lin</i>	

Session 3: Information Hiding and Security

Information Dilution: Granule-Based Information Hiding in Table Data - A Case of Lenses Data Set in UCI Machine Learning Repository	52
<i>Hiroshi Sakai, Chenxi Liu, and Michinori Nakata</i>	
Cryptanalysis and Improvement of a Provable Data Possession Scheme in Public Cloud Storage	56
<i>Tung-Tso Tsai, Yuh-Min Tseng, Ying-Hao Hung, and Sen-Shan Huang</i>	
Reversible Data Hiding in Pairwisely Encrypted Images	60
<i>Jen-Chun Chang, Yun-Hong Chou, Cheng-Huai Ni, and Hsin-Lung Wu</i>	
Enhancing Internet Networks Confidentiality Based on Composite Coding and Channels Coding Schemes of Signatures Reconfiguration	64
<i>S.H. Meng, A.C. Huang, T.W. Sung, C.C. Chen, and J.F. Huang</i>	

Session 4: Optimization

Comparative Study on Recent Development of Heuristic Optimization Methods	68
<i>Van-Oanh Sai, Chin-Shiuh Shieh, Yuh-Chung Lin, Mong-Fong Horng, Trong-The Nguyen, Quang-Duy Le, and Jung-Yi Jiang</i>	
To Heritage the Business Intelligence of Traditional Industry by Using Decision Support System	72
<i>Shu-Ching Wang, Kuo-Qin Yan, Hsueh-Hsun Huang, and Yan-Zhen Li</i>	

A Compact Flower Pollination Algorithm Optimization	76
<i>Thi-Kien Dao, Tien-Szu Pan, Trong-The Nguyen, Shu-Chuan Chu, and Jeng-Shyang Pan</i>	

Session 5: Pattern Recognition

Speech Recognition in a Multi-speaker Environment by Using Hidden Markov Model and Mel-frequency Approach	80
<i>Junzo Watada and Hanayuki</i>	
A New Method for Identifying Users Interest for Personalized Recommendations	84
<i>Hendry, Yi-Jen Su, and Rung-Ching Chen</i>	
Kernel Self-Adaptive Learning-Based Satellite Telemetry Data Classification	88
<i>Junbao Li, Wenhui Yang, Datong Liu, and Jing Liu</i>	
A Novel Harmonic Field Based Method for Femoral Head Segmentation from Challenging CT Data	92
<i>Shi-Jian Liu, Zheng Zou, San-Ding Luo, and Sheng-Hui Liao</i>	
Implementation of the Human Action State Recognition Using Smartphone	96
<i>Kuan-Yu Chen and Jiun-Jian Liaw</i>	
Design of a Sun Tracking System Based on the Brightest Point in Sky Image	100
<i>Ching-Chuan Wei, Yu-Chang Song, Chuan-Bi Lin, and Lawrence Chiang</i>	
A Virtual Wall for Perception-Assist with a Lower-Limb Power-Assist Robot	104
<i>Kazuo Kiguchi and Takahiro Hora</i>	
Pick-Up Motion Based on Vision and Tactile Information in Hand/Arm Robot	110
<i>Futoshi Kobayashi, Shou Minoura, Hiroyuki Nakamoto, and Fumio Kojima</i>	
Food Texture Classification Using Magnetic Sensor and Principal Component Analysis	114
<i>Hiroyuki Nakamoto, Daisuke Nishikubo, Shuhei Okada, Futoshi Kobayashi, and Fumio Kojima</i>	
Action Recognition System with the Microsoft Kinect V2 Using a Hidden Markov Model	118
<i>Masato Fujino and Thi Thi Zin</i>	

Session 6: Social Behavior Analysis and Measurement

Using House of Dynamic Wants to Discovery the Competency of Religious Lecturer - An Example of I-Kuan Ta in the Central Region of Taiwan	122
<i>Shu-Ching Wang, Shun-Sheng Wang, Kuo-Qin Yan, and Yi-Jing Wu</i>	

Time-Series Analysis on the Impact Level upon Taiwan Stock Market with Events of Signing International Agreements	126
<i>Pei-Wei Tsai, You-Xin Lin, Jing Zhang, Jui-Fang Chang, Jhih-Sheng Chen, and Jilin Zhang</i>	
A General Video Surveillance Framework for Animal Behavior Analysis	130
<i>Thi Thi Zin, Ikuo Kobayashi, Pyke Tin, and Hiromitsu Hama</i>	

Session 7: Signal Processing

Automatic Music Genre Classification Based on Sparse Representation and Wavelet Packet Transform with Discrete Trigonometric Transform	134
<i>Shih-Hao Chen, Sung-Yuan Ko, and Shi-Huang Chen</i>	
A Decision Tree Based Method for Extracting Important Elements of In-Applications Purchase	138
<i>Long-Sheng Chen, Men-Ru Lin, and Jing-Rong Chang</i>	
Effect of Information System Co-construction Policy on Cultural Propaganda Oriented Government Website - The National Taiwan Symphony Orchestra as a Case Study	142
<i>Chin-Ling Ho, Shu-Ching Wang, Kuo-Qin Yan, and Shun-Sheng Wang</i>	
A Secure Condition-Based Location Authentication Protocol for Mobile Devices	146
<i>Chien-Ming Chen, Xiaojie Zhang, and Tsu-Yang Wu</i>	
Low Space Complexity Multiplier for Even-Type Gaussian Normal Basis over GF(2 ^m)	150
<i>Qiang Su, Jeng-Shyang Pan, and Chunsheng Yang</i>	
Construct Asterisk 16QAM Constellation Extension Scheme for PAPR Reduction in SC-FDMA Systems	154
<i>Meng-Chun Wu, Hsin-Ying Liang, and Yi-Chun Jhan</i>	
The Visual Interactive Programming Learning System Using Image Processing	158
<i>Hiroshi Kamada, Kazutaka Nishikawa, and Yasunori Okui</i>	
Estrus Detection for Dairy Cow Using a Laser Range Sensor	162
<i>Thi Thi Zin, Hideki Kai, Kosuke Sumi, Ikuo Kobayashi, and Hiromitsu Hama</i>	

Session 8: Internet and Wireless Sensor Networks

Utilizing Cat Swarm Optimization in Allocating the Sink Node in the Wireless Sensor Network Environment	166
<i>Pei-Wei Tsai, Lingping Kong, Snasel Vaclav, Jeng-Shyang Pan, Vaci Istanda, and Zhi-Yong Hu</i>	
Time Competition Flooding in High-Density Wireless Sensor Network	170
<i>Shuai Liu, Jeng-Shyang Pan, Lingpin Kong, and Chien-Ming Chen</i>	

A Dynamic Distributed Energy Management Algorithm of Home Sensor Network for Home Automation System	174
<i>Tui-Yi Yang, Chu-Sing Yang, and Tien-Wen Sung</i>	
An Algorithm for Improving Network Throughput of Wireless Distribution System	178
<i>Tien-Wen Sung, Chia-Jung Lee, Sheng-Hui Meng, Fu-Tian Lin, Yi-Chun Sun, and Chu-Sing Yang</i>	
Numerical Evaluation of Two Management Schemes for Sharing Limited Bandwidth	182
<i>Chia-Hung Wang and Mu-En Wu</i>	
A Real-Time Routing Algorithm for End-to-End Communication Networks with QoS Requirements	186
<i>Mao-Hsiung Hung, Chia-Hung Wang, and Yao He</i>	
Author Index	190