Contents

Part I Networking

1 Wireless Sphygmomanometer with Data Encryption 3
Hsien-Ju Ko and Kang-Ming Chang

2 Design and Implementation of Multimedia Social Services on Elgg 11
Meng-Yen Hsieh, Yin-Te Tsai, Ching-Hsien Hsu, Chao-Hung Hung, and Kuan-Ching Li

3 On Migration and Consolidation of VMs in Hybrid CPU-GPU Environments 19
Kuan-Ching Li, Keunsoo Kim, Won W. Ro, Tien-Hsiung Weng, Che-Lun Hung, Chen-Hao Ku, Albert Cohen, and Jean-Luc Gaudiot

4 A Case of Security Encryption Storage System Based on SAN Environments 27
Changyan Di, Kuan-Ching Li, Jason C. Hung, Qi Yu, Rui Zhou, Chao-Hung Hung, and Qingguo Zhou

5 Applying General Probabilistic Neural Network to Adaptive Measurement Fusion 33
Li-Wei Fong, Pi-Ching Lou, Kai-Yung Lin, and Chien-Liang Chuang

6 Reorder Adapting TCP 41
Yi-Cheng Chan, Chien-Yu Chen, and Yu-Shuo Lee

7 A Novel and Feasible System for Rule Anomaly and Behavior Mismatching Diagnosis Among Firewalls 49
Chi-Shih Chao

8 A Secure Routing Protocol to Prevent Cooperative Black Hole Attack in MANET 59
Nai-Wei Lo and Fang-Ling Liu

9 IP Address Management in Virtualized Cloud Environments 67
Chen-Hao Ku, Kuan-Ching Li, Ching-Hsien Hsu, Kuan-Chou Lai, Meng-Yen Hsieh, Tien-Hsiung Weng, and Hai Jiang

Part II Signal Processing

10 A Fuzzy C-Means Method for Determining Motor's Quality Types Based on Current Waveforms 77
Yun-Chi Yeh, Yi Chu, Che Wun Chiou, and Hong-Jhih Lin

11 License Plate Recognition Based on Rough Set 85
Xin-Yan Cao and Chen-Ming Zhang

12 Electroencephalogram Lifting Recognition Using Unsupervised Gray-Based Competitive Clustering Networks 95
Chi-Yuan Lin, Yi-Fang Chen, and Sheng-Chih Yang

13 Adapting Intensity Degradation to Enhance Fisheye Images Shot Inside Cup-Shaped Objects 105
Chuang-Jan Chang, Chang-Min Cheng, Tsung-Kai Chou, and Shu-Lin Hwang

14 A Method to Implementation of Lane Detection Under Android System Based on OpenCV 115
Xiao-Xu Wei and Lei Meng

15 Automatic Broadcast Soccer Video Analysis, Player Detection, and Tracking Based on Color Histogram 123
Der-Jyh Duh, Shu-Yu Chang, Shu-Yuan Chen, and Cheng-Chung Kan

16 Conversion of 3D Triangular-Meshed Model to Dot Representation 131
Chih-Hung Huang, Cheng Wen, and Kuang-Chiung Chang

17 Image Retrieval System Based on EMD Similarity Measure and S-Tree 139
Thanh Manh Le and Thanh The Van

18 Tri-axis Accelerometer-Based Body Motion Detection System 147
Kang-Ming Chang, Sih-Huei Chen, and Chun-Lung Huang

19 On Mapping the Sorted-Set Intersection Problem onto a Graphics Processing Unit 153
Syun-Sheng Jhan, Liang-Tsung Huang, Lien-Fu Lai, Kai-Cheng Wei, Tsung-Yu Wei, and Chao-Chin Wu

20 A Novel Double Dynamic Stress Accelerated Degradation Test to Evaluate Power Fade of Batteries for Electric Vehicles 161
Yu-Chang Lin, Kuan-Jung Chung, and Chueh-Chien Hsiao

21 The Development of Estimating Deviations Directly from Point Clouds 169
Cheng-Tiao Hsieh

22 Using Modified Digital Halftoning Technique to Design Invisible 2D Barcode by Infrared Detection 179
Hsi-Chun Wang, Ya-Wen Cheng, Wan-Chi Huang, Chia-Long Chang, and Shih-Yun Lu

23 Color Visual Evoked Potential Response for Myopia Subjects 187
Kang-Ming Chang, Chung-Yi Tsai, and Sih-Huei Chen

24 License Plate Recognition Under Nonuniform Illumination 193
Ren-Chao Shen and Day-Fann Shen

Part III Artificial Intelligence

25 A Cross-Coupled MIMO Fuel Cell System Design by Using Intelligent Fuzzy-Neural Controller 203
Jium-Ming Lin and Cheng-Hung Lin

26 Development of Fuzzy Comprehensive Evaluation and Approaching Degree Toolbox via Matlab 211
Yaug-Fea Jeng, Ting-Hui Hsu, Kun-Li Wen, and Rui-Xiang Chen

27 Deploying Autonomous Coordinating Agent for Assessment Model in Smart Urban Space: A Case Study of Cozy Space Design Pattern 219
Chiung-Hui Chen

28 Quantum-Membership-Function-Based Adaptive Neural Fuzzy Inference System 227
Cheng-Hsiung Chiang

29 A Set-Checking Algorithm for Mining Maximal Frequent Itemsets from Data Streams 235
Ye-In Chang, Meng-Hsuan Tsai, Chia-En Li, and Pei-Ying Lin

30 Parallel Matrix Transposition and Vector Multiplication Using OpenMP 243
Tien-Hsiung Weng, Delgerdalai Batjargal, Hoa Pham, Meng-Yen Hsieh, and Kuan-Ching Li

31 Designing Parallel Sparse Matrix Transposition Algorithm Using CSR for GPUs 251
Tien-Hsiung Weng, Hoa Pham, Hai Jiang, and Kuan-Ching Li

32 Analysis of USDA Food Classifications Using Neural Network Classifier 259
Thomas Evans and Anthony Choi

33 Optimization Path Programming Using Improved Multigroup Ant Colony Algorithms 267
Wen-Jong Chen, Li-Jhen Jheng, Yan-Ting Chen, and Der-Fa Chen

34 Conceptual Information Retrieval System Based on Automatically Constructed Semantic Word Network 277
Ko-Li Kan and Hsiang-Yuan Hsueh

35 An Intelligence-Based Approach to Optimal Power Flow Control Considering Flexible AC Transmission Systems 285
Chao-Ming Huang, Yann-Chang Huang, and Shin-Ju Chen

36 Modern Heuristic Optimization Approaches for Electrical Power System Applications 293
Yann-Chang Huang, Chao-Ming Huang, and Chien-Yuan Liu

37 A New Product Design Process: Combining the System Model and VRTC 301
Hsiao-wen Wu, Jin-Jen Wang, and Wen-Chih Wang

Part IV Control and Software Engineering

38 The Study of Permanent Magnetic Synchronous Motor Control System Through the Combination of BP Neural Network and PID Control 311
Lin Zhang, Bao-Jie Xu, Kun-Li Wen, and Yuan-Hui Li

39 Power Compensation Methodology for Electric Vehicles 321
Chien-An Chen and Ming-Chih Lin

40 Model-Based Robust Control for Nonlinear Networked Control Systems 329
Cheng-Fa Cheng and Cheng-Han Yang

41 Control Strategies Development for a Series Hydraulic Hybrid Vehicle Based on Engine Experimental Map 337
Chih-Keng Chen, Tri-Vien Vu, Chih-Wei Hung, and Chuan-Sian Wang

42 Japanese Calligraphy Using Whole Body Motion of a Humanoid Robot 345
Seiji Sugiyama, Ikuma Oshita, and Tsuneo Yoshikawa

43 Design and Experiment of the Auto-alignment Control System for TPS Storage Ring Girder 357
Meng-Hsiu Wu, Wei-Yang Lai, Tse-Chuan Tseng, Mei-Ling Chen, Huai-San Wang, His-Chou Ho, Chia-Jui Lin, Hung-Ming Luo, Shen-Yaw Perng, Pei-Lun Sung, Chang-Sheng Lin, Hsueh-Cheng Lin, and June-Rong Chen

44 A Proposed System for Practicing Industrial Robot Remotely 365
Fu-Hua Jen and The Can Do

45 An Intelligent Sensorless Drive Strategy for a Brushless DC Motor Based on Back-EMF Detection 373
Seng-Chi Chen, Ying-Jyh Lin, Ming-Mao Hsu, and Yung-Nan Hu

46 Establishment of the Photovoltaic Simulation System Using Mixed Programming with LabVIEW and Simulink 383
Ting-Chung Yu, Yih-Bin Lin, and Fu-Sheng Chang

47 Implementation of Fuzzy Force Control for an Electrohydraulic Servo Press System 395
Hong-Ming Chen, Chun-Sheng Shen, and Guo-Wei Yang

48 Sizing Cloud Applications with ISO/IEC 19761: A Case Study 403
Wen-Ming Han and Wei-Tso Chen

49 Development of a Fuzzy-Control-Based Battery Charging Technique for Li-Ion Battery Module for Light Electrical Vehicles 411
Yi-Hsun Chiu, Chun-Liang Liu, Yi-Feng Luo, Jung-Hsien Chen, and Yi-Hua Liu

50 Low-Cost and High-Speed Eye Tracker 421
Chi-Wu Huang, Zong-Sian Jiang, Wei-Fan Kao, and Yen-Lin Huang

51 Using Hedge Algebra to Control Varied-Parameter Object 429
Trung Kien Ngo, Duy Tien Nguyen, Tuan Quoc Duong, Huy Ngoc Vu, and Tan Duc Vu

52 Variable-Speed Wind Generator System with Maximum Output Power Control 437
Yoko Amano

53 FPGA-Based Control for a Boost PFC Converter with Improved Dynamic Performance 445
Shin-Ju Chen, Sung-Pei Yang, Chao-Ming Huang, and Ruei-Hong Wong

54 Robotic Manipulator Trajectory Tracking Using Direct Collocation 453
Cheng-cai Mei, Xiu-qiang Pan, Satya Prakash, Jyun-jye Felipe Chen, and Xiu-long Wu

55 Objective Function Design in Real-Number-Coding Genetic Algorithm for Laser-Cutting Tool-Path Minimization 461
Wei-Kai Hu and Kerwin Wang

56 A Fuzzy Control Load Balancing Method for Dual CAN Bus 467
Yu-Wei Huang and Chih-Hung Wu

57 Backup Host Plan for Banking Information System Based on Capacity on Demand Model 475
Ming-Tsung Yeh, Wan-Chun Liu, and Yi-Nung Chung

Part V Intelligent Electronic Circuits and Systems

58 A Design of LED Panel Lamp for Indoor Illumination 487
Ming-Da Tsai, Jin-Jia Chen, and Kuang-Lung Huang

59 Analysis of Voltage Variations of a Large-Scale Offshore Wind Farm Connected to Taipower Grid 495
Li Wang, Chun-Jui Yeh, Min-Han Hsieh, Cheng-Tai Wu, and Chieh-Lung Lu

60 Source-End Layouts on ESD/LU Reliabilities in an HV 0.25 um 60 V nLDMOS 503
Shen-Li Chen, Min-Hua Lee, Tzung-Shian Wu, Yi-Sheng Lai, Chun-Ju Lin, and Hsun-Hsiang Chen

61 The Functional Catoptric LED Luminaire in T8 Form Factor 513
Chuang-Jan Chang, Yi-Hsuang Tseng, Chiang-Wei Huang, Bor-Jen Wu, and Shu-Lin Hwang

62 A Sigma–Delta ADC Design for Audio Applications 527
Chin-Fa Hsieh, Chun-Sheng Chen, and Kang-Ni Lin

63 Applications of ZigBee on Building a Home Automation System 535
Shih-Ching Huang and Chin-Sung Hsiao

64 Design of a Smart Battery System for Laptop Computer 543
Yu-Shan Cheng, Jing-Hsiau Chen, Yi-Feng Luo, Chun-Wei Ko, and Yi-Hua Liu

65 A Novel Fuzzy Neural Network Controller for Maglev System with Controlled-PM Electromagnets 551
Seng-Chi Chen, Ying-Jyh Lin, Van-Sum Nguyen, and Ming-Mao Hsu

66 CMOS Transimpedance Amplifiers for Optical Wireless Communications 563
Roger Yubtzuan Chen and Zong-Yi Yang

67 Dependable Embedded Memory for Intelligent Systems 573
Yen-Chieh Huang and Tsung-Chu Huang

68 Research and Development of Versatile Autonomous Vehicles for Education 581
Chien-Yuan Liu, Chih-Feng Huang, and Yann-Chang Huang

69 New Ultrasonic Parking Sensor System in Automobiles 593
Chih-Feng Huang and Chien-Yuan Liu

70 Using the Gate-Diffusion Input Technique for Low-Power Programmable Logic Array Design 601
Shou-Hung Chiu and Kai-Cheng Wei

71 Using LC-3 Soft Core on an FPGA Development Board for Microprocessor Labs 609
Yuan-Jhang Liao and Wing-Kwong Wong

72 Executing Linux-Based Software of Electronic Design Automation on Windows Platform of Microsoft 617
Hsin-Jung Wang and Zhi-Ming Lin

73 Design of a Transparent Pipeline Based on Synchronous Elastic Circuits 625
Ren-Der Chen and Sheng-Hung Chang

74 The Wireless Electric Guitar with Digitally Integrated Effector 633
Chun-Tang Chao, Kuo-An Li, and Nopadon Maneetien

75 Implementation and Study of Constant-Frequency LLC Resonant Converter 643
Shi-Yi Lin, Shih-Kuen Changchien, Chien-Ming Hong, and Yi-Nung Chung

Part VI Communications

76 Exercise Bracelet with Bluetooth Low Energy Module and Accelerometer for Sporting Events 657
Jung-Tang Huang, Wen-Chia Chao, and Chia-Hsiang Lee

77 Design and Implementation of an eBook Access Control Protocol 667
Hui-Wen Liao, Po-Hsien Wang, and Meng-Lieh Sheu

78 Novel T-Shaped Non-orthogonal Dual-Mode Band-Pass Filters with Two Differently Structured Resonators 675
C.Y. Kung, C.F. Yang, Y.T. Hsieh, W.C. Chang, C.G. Kuo, and C.C. Diao

79 A Novel Method to Simplify the Structure of Dual-Band Bandpass Filters: Design the Resonators on Combined Substrates 685
Cheng-Yuan Kung, Yuan-Tai Hsieh, Chien-Chen Diao, Chia-Ching Wu, and Cheng-Fu Yang

80 Constructing an Integrated Communication and Oriented Protocols into EV Preliminary Operation: A Case Study of EV Surveillance Application 693
Chan-Wei Hsu, Yu-Chi Shiue, Shun-Li Wang, Hou-Yu Huang, and Cheng-Ruei Wei

81 The Design of Capacitive Coupling Bandpass Filter Using Stepped Impedance Resonator 701
Chien-Hung Chen, Hua-Ming Chen, Chien-Chen Diao, Wei-Kuo Chia, and Cheng-Fu Yang

Part VII Materials and Mechanical Engineering

82 A Novel Power-Effective and Reliable Wireless Thermal Convection Angular Accelerometer Without Any Movable Parts and Grooved Cavity 711
Jium-Ming Lin and Cheng-Hung Lin

83 Parallel Operation of the Piezoelectric Energy Harvest Using the Taguchi Method 719
Po-Jen Cheng, Chin-Hsing Cheng, and Chuan-Wei Chen

84 Effect of Anisotropy Parameters on the Initiation of Plastic Yielding in Thin Hollow Disks Subject to Thermomechanical Loading 727
Sergei Alexandrov, Elena Lyamina, and Yeau-Ren Jeng

85 Development of MEMS Gyroscope Module for Rotating Machine Performance Characterization 735
Guo-Hua Feng and Fu-Tun Chang

86 Design and Surface Roughness Analysis of Thin-Sheet Plastic Injection Forming 743
Dyi-Cheng Chen, Jun-Yan Pan, Juan-Wei Gao, and Wen-Jong Chen

87 A Comparison of Correlation Technique and Random Decrement Algorithm for Modal Identification from Nonstationary Ambient Vibration Data Only 755
Chang-Sheng Lin, Tse-Chuan Tseng, June-Rong Chen, and Dar-Yun Chiang

88 Effect of Annealing Temperature on the Mechanical Properties and the Spherical Indentation of NiTi Shape Memory Alloy 765
Tsung-Han Tan, Mei-wen Wu, and Chun-Ying Lee

89 The Analysis of Engine Intake Air Cooling Device by Using Thermoelectric Module 773
Wang Jia-Wei and Ming-Hsien Hsueh

90 Effects of Deposition Temperature and Hydrogen Plasma on the Properties of the Radio-Frequency Magnetron Sputtering Deposition of ZnO-Al_2O_3 Films 783
Fang-Hsing Wang, Chia-Cheng Huang, Chien-Chen Diao, Chia-Ching Wu, and Cheng-Fu Yang

91 The Influences of Post-annealing Temperature on the Properties of $Sr_{0.6}Ba_{0.4}Nb_2O_6$ Thin Films 793
Chin-Guo Kuo, Chien-Chen Diao, Chien-Hung Chen, Wen-Cheng Tzou, and Cheng-Fu Yang

92 Improving the Properties of Sol–Gel Deposition $SrBi_4Ti_4O_{15}$ Thin Films by Post-annealing Process 803
Wen-Cheng Tzou, Ping-Shou Cheng, Wen-Chung Chang, Chien-Chen Diao, and Cheng-Fu Yang

93 Water Tank Simulation of a Continuous Hot-Dip Galvanized Zinc Pot 813
Y.S. Lo, C.J. Fang, L.C. Tsao, and J.C. Leong

94 The Finite Element Analysis Study of the Laser Lift-Off (LLO) of III-Nitride Compound 821
Yan-Hsin Wang and Wei-Li Chen

95 Combining Quality Function Deployment and TRIZ to Solve the Drainer Problems 829
Chia-Pao Chang and Ying-Hsiang Lin

96 A Study on Improving Polishing Process Effectiveness for Silicon Reclaim Wafer 837
Chia-Pao Chang, Wei-Ling Wang, and Yung-Ching Kuo

97 Detection of CO Concentration by Using SnO_2 SPR Apparatus and Common-Path Heterodyne Interferometer 845
Ke-Ming Chen, Chih-Hsiung Shen, and Jing-Heng Chen

98 Magnetic Field Correction Based on Intelligent Shimming Method 853
Jui-Che Huang and Ching-Shiang Hwang

99 Innovative Designs for Quartz Crystal Microbalance 861
Chih-Chi Lai, Shu Jung Chen, and Chih-Hsiung Shen

100 Semi-active Control of Tunable Hybrid Shape Memory Material for Vibration Attenuation 869
Jinsiang Shaw and Jiun-Du Huang

101 Simultaneous Thickness Measurement and Material Composition Analysis Using X-Ray Fluorescence Technique 877
Hsiao-Wen Wu and Xuan-Loc Nguyen

102 Integration Design and Installation of Girder Systems in the Injection Section of Taiwan Photon Source 885
Keng-Hao Hsu, Wei-Yang Lai, Yung-Hui Liu, Che-Kai Chan, Chih-Sheng Yang, Chih-Sheng Chen, His-Cho Ho, Pei-Lung Sung, Shen-Yaw Perng, Tse-Chuan Tseng, Din-Goa Huang, and June-Rong Chen

103 FTIR Characterizations of the Gamma-Ray-Irradiated Silica Nanoparticles/γ-APTES Nanocomposite with UV Annealing 893
Po-Yen Hsu, Jing-Jenn Lin, Bo-Wei Lai, You-Lin Wu, Cheng-Fu Yang, and Shou-Sheu Lin

104 Improvement of Radiation-Induced Degradation in MOSFET by Using Glass Fiber/Epoxy/Silica Nanoparticles/γ-APTES Composite as Shielding Materials for High-Energy Radiation . . . 901
Po-Yen Hsu, Shou-Sheu Lin, Cheng-Fu Yang, and Jing-Jenn Lin

105 An Invention of Pneumatically Powered and Charged LED Flashlight 907
Kuo-Yi Li

106 The Invention in the Safety Protection Device of the Table Saw 915
Kuo-Yi Li

107 Applying the Principles of Lean Manufacturing to Optimize Conduit Installation Process 923
Jun-Ing Ker and Yichuan Wang

108 Portable Measurement System for Static and Dynamic Characterization of MEMS Component 931
Hsiao-Wen Wu, Liang-Chia Chen, Abraham Mario Tapilouw, Xuan-Loc Nguyen, and Jin-Liang Chen

109 Effects of $BaTi_4O_9$ Concentration on Dielectric Constants of the Polyetherimide/$BaTi_4O_9$ Composites 941
Wei-Kuo Chia, Chia-Ching Wu, Cheng-Fu Yang, Chien-Chen Diao, and Chean-Cheng Su

110 Design the Bandwidth of Zero-Phase Filter of Iterative Learning Controller by Improved Particle Swarm Optimization 949
Shu-Ting Li, Jen-Ai Chao, Yi-Hao Li, and Yi-Cheng Huang

111 Prognostic Diagnosis of Hollow Ball Screw Pretension on Preload Loss Through Sensed Vibration Signals 959
Yi-Cheng Huang, Yu-Shi Chen, Shi-Lun Sun, and Kuan-Heng Peng

112 Simulation and Experiment of Langevin-Type Piezoelectric Ultrasonic Horn for Micro Tool Motion 967
Yi-Cheng Huang, Guan-Zhang Ding, Bo-Hsuan Chen, and Yu-Jui Huang

113 A New Low-Temperature Fabrication Method of Dye-Sensitized Solar Cells 975
Yeong-Lin Lai, Shin-Hong Chen, Jiong-Heng Lu, Jia-Shan Ting, and Tsung-Yen Tsai

114 A Cell Culture System with Programmable Physical Stimulation for Human Mesenchymal Stem Cell Differentiation and Promotion 981
Tzu-Yu Chuang, Yu-Sheng Chuang, Nancy Wang, and Kerwin Wang

115 A Spray Method for Dye-Sensitized Solar Cells 987
Yeong-Lin Lai and Yi-Hsien Huang

116 An Intelligent Approach for High Material Removal Rate Machining 993
Jhy-Cherng Tsai and Shen-Jhy Wang

117 The Position and Correction System of Laser PSD 1001
Hsueh-Cheng Lin, Mei-Ling Chen, June-Rong Chen, His-Chou Ho, Keng-Hao Hsu, Din-Goa Huang, Chien-Kuang Kuan, Wei-Yang Lai, Chang-Sheng Lin, Chia-Jui Lin, Hung-Ming Luo, Shen-Yaw Perng, Pei-Lun Sung, Tse-Chuan Tseng, Huai-San Wang, and Meng-Hsiu Wu

118 Study of Cutting Parameter Effect on Spindle Vibration for Tool Breakage Monitoring in Drilling 1009
Yu-Wei Hsu and Ming-Chyuan Lu

119 An Investigation into Electrode Wear in Layer-Cut EDM Process 1017
Pei-Lun Song, Yo-Ming Chang, and Yao-Yang Tsai

120 Precision Motion Control: Intelligent Mechanisms, Morphing Mechanisms 1025
R.W. Longman, M.S. Chew, and M.Q. Phan

Index 1035

http://www.springer.com/978-1-4614-6746-5

Intelligent Technologies and Engineering Systems
(Eds.)J. Juang; Y.-C. Huang
2013, XXII, 1065 p. 650 illus., 19 illus. in color., Hardcover
ISBN: 978-1-4614-6746-5