Mechatronics and Industrial Informatics II

Selected, peer reviewed papers from the 2014 2nd International Conference on Mechatronics and Industrial Informatics (ICMII 2014), May 30-31, 2014, Guangzhou, China

von Prasad Yarlagadda, Seung-Bok Choi

1. Auflage

Trans Tech Publications 2014

Verlag C.H. Beck im Internet: www.beck.de ISBN 978 3 03835 176 4

Table of Contents

Preface and Conference Organization

Chapter 1: Applied Mechanics, Mechanisms and Dynamics

C. Liu, Z.P. Zeng, B. Wu, J.Y. Yuan and X.F. He	3
Research on Modeling and Characteristics of Two-Stage Pressure Hydro-Pneumatic Spring Z.X. Li, Z.L. Ma, H. Jiang and X. Xu	7
Study on the Mechanism of Detecting Flaws in the Transmission Tower Foundation by the Finite Element Method	
X.M. Shi, Q. Gao, J.J. Liu, J.G. Zhang, D.B. Cheng and N.L. Zhang	12
Study on Torsion-Eliminating Performance of Laterally Interconnected Air Suspension Z.X. Li, L.Y. Ju, H. Jiang and X. Xu	17
SVR Based Modeling Method to Structures Finite Element Uncertainty Propagation Analysis	
Y. Zhu and S.H. Zhu	22
Hopf Bifurcation Analysis of Digital Hydraulic Cylinder J. Chen, J.F. Xing and B.J. Lv	27
Simulation on Kinetic Characteristics of Moving Mooring Marine Current Turbine System Y.Y. Tian, J. Yu, S.C. Sun and X.T. Li	32
Chapter 2: Materials Processing and Advanced Manufacturing Technology	
Situation of Natural Gas Hydrate Research Z. Li, M.H. Kun, Z.L. Ming and Z.S. Yang	39
Study on the Stainless Steel 1Cr18Ni9Ti Micro-Hole Drilling Experiment B.H. Li, Z. Liu, H. Wang and Z.S. Zhong	43
The Influence of Electric Parameters on the Surface Quality of Ceramic in Internal Grinding Using the Ultrasonic and ELID Composite Grinding Y.Y. Zheng, H. Pang, Q. You and X.F. Jia	47
Equipment Modification for Friction Stir Joining Based on PLC L. Ji	52
Research on Galvanized Layer Uniformity Detecting Technology of Transmission Angle Steel Tower Materials	
J.Y. Jiang The Improved Design of Embedded CNC Milling Machine	56
H.Y. Zhang and Y.F. Shu	60
Chapter 3: Product Design, Manufacturing and Industrial Informatics Applications	
Simulation Research on the Magnetic Field of the Positioning Permanent Magnet for MEMS inside Human Body Based on Ansoft X.Q. Liu and Y.H. Li	67
The Design and Calculation of Fur Material Cleaning Machine Y. Su, Z.F. Li and S.Q. Huang	72
The Semi-Automatic Restoration of Regular Paper Fragments Z.Q. Ding	72 79
Development of Computer-Aided Manufacturing System for a Jewelry-Making CNC	
Machine Y. Miao, K. He, H.T. Fang, Z.M. Zhou and R.X. Du	83

Analysis of the Ceramic Pattern Modelling Based on Primitives J.F. Hu and B.S. Li	90
Research and Application of Adaptive Technology in Equipment Installation B. Luo and L. Ye	94
The Design and Manufacture of the Wireless Power Transmission System in the Cardiac Pacemaker X.Q. Liu, Y.H. Li, L. Min and H. Ping	100
Regarding Calculation of Cross Section of Elevator Conductor and Rated Capacity of Switch	100
G.M. Huang	104
Design of Mine Ventilator Fault Diagnosis System B.T. Zhao, X.F. Jia and Y. He	110
Nonlinear Econometric Model of Electronic Products and its Application H.Y. Zhou	114
Study on the Transformation of Military Logistical of Internet of Things Era Y. Lu, C. Xie and L. Shang	119
The Research on Cloud Mobile Office System Development for Enterprise Application F. Wu, Z.M. Wang, G. Yao and Z.M. Miao	123
An Execution Framework for Domain-Oriented QoS Evaluation of Manufacturing Cloud Services	
H. Jin, X.F. Yao and J. Zhang	127
Using Verification Planner to Track the Verification Process X. Huang, D. Jun, L.T. Liu and L.C. Liu	131
Comprehensive Evaluation of the Development Level of Shanxi's Real Estate Industry Based on Factor Analysis and Cluster Analysis	
X.L. Tang and Z.L. Tan Research of Refined Oil Emergency Reserve Monitoring System Construction Scheme	136
N. Chen, Q.M. Zhang and D.D. Tang	141
Chapter 4: Computer Information Processing Technology, Artificial Intelligence and Intelligent Algorithms	
An Algorithm for Representing Planar Curves in B-Splines Z.Z. Lin and S.H. Shu	149
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands	
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable	149 154 160
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series	154
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers	154 160
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm	154 160 164
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm Z.J. Zhao and Z.J. Liu Natural Gas Consumption Forecasting Based on Combinatorial Optimization Model	154 160 164 169
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm Z.J. Zhao and Z.J. Liu Natural Gas Consumption Forecasting Based on Combinatorial Optimization Model J.Q. Wang, L. Chen, L. Li and Y.X. Wang Rough Match Function Based on Topological Structure	154 160 164 169 174
Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm Z.J. Zhao and Z.J. Liu Natural Gas Consumption Forecasting Based on Combinatorial Optimization Model J.Q. Wang, L. Chen, L. Li and Y.X. Wang Rough Match Function Based on Topological Structure Y.L. Zheng The Effect of Empathic Technology on Artificial Intelligence	154 160 164 169 174 179
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm Z.J. Zhao and Z.J. Liu Natural Gas Consumption Forecasting Based on Combinatorial Optimization Model J.Q. Wang, L. Chen, L. Li and Y.X. Wang Rough Match Function Based on Topological Structure Y.L. Zheng The Effect of Empathic Technology on Artificial Intelligence J.G. Liu and Q. Li Research of Smart Home System Based on Handheld Device	154 160 164 169 174 179
Z.Z. Lin and S.H. Shu Dynamic Pricing and Inventory Temperature Decisions for Fresh Foods with Variable Demands L. Tang Forecasting High Frequency Data: An ARMA-Soft RBF Network Model for Time Series D. Marcek Fuzzy Comprehensive Assessment of Air Material Suppliers Z. Lv Mixed NMF Blind Source Separation Algorithm Z.J. Zhao and Z.J. Liu Natural Gas Consumption Forecasting Based on Combinatorial Optimization Model J.Q. Wang, L. Chen, L. Li and Y.X. Wang Rough Match Function Based on Topological Structure Y.L. Zheng The Effect of Empathic Technology on Artificial Intelligence J.G. Liu and Q. Li Research of Smart Home System Based on Handheld Device B. Li, H.Y. Dai and H.F. Cheng A Self-Adaptive Harmony Search Algorithm for Unconstrained Optimization Problems	154 160 164 169 174 179 183

Performance Comparison of Energy-Aware Task Scheduling with GA and CRO Algorithms in Cloud Environment L. Wu, Y.J. Wang and C.K. Yan	204
Rapidly Analyze the Fault Tree with Numerical Methods B. Wu, Z.H. Zhao and Y.H. Ren	209
Research of Differential Evolution Algorithm for Motor Control Z.F. Wu	216
An Improved RFID Tag Collision Algorithm T.B. Ran and X.S. Wu	222
Targets Detection Based on Multifractal Method F. Liu	226
Hybrid Intelligent Optimization Approach for RFID Network Planning D.L. Guo, Q. Xiang and Z.H. Li	230
Optimization of Multitask in Real-Time Control Based on Artificial Bee Colony Algorithm S.M. Chen, Y.T. Xu, Q.X. Hu and Z.T. Wang	234
Research for Wind Power System Reactive Power Optimization Based on Improved Artificial Fish Swarm Algorithm	
S.H. Zhang The Prediction of Grounding Grid Corrosion Rate Using Optimized RBF Network	241
C.F. Song, Y.B. Hou and J.Y. Du	245
Research on Multi-Agent Formation's Obstacle Avoidance Problem Based on Three- Dimensional Vectorial Artificial Potential Field Method J.Y. Dai, L.F. Yin, C. Peng, B.J. Yang and C.S. Wang	251
A Evaluation Model for Valid Prediction of Cabs' Number Change from Urban Cabs	231
Trajectories W.B. Ma, S. Deng and H.B. Huang	259
A Method of Building Chinese Sentiment Lexicon Based on Semantics J.N. Yang, A.M. Yang and Y.M. Zhou	263
A Model of Predicting Corrosion Rate for Substation Grounding Grid Based on the Similarity and Support Vector Regression J.Y. Du, J. Han, Y.J. Zhao and W.H. Liu	271
Efficient Graph Component Labeling on Hybrid CPU and GPU Platforms X.H. Pan	276
Evaluation Research on Agricultural Informatization Level in Tropical Areas of China Based on Entropy Method L. Ye, Y.P. Li, X.L. Qin, Y.Q. Liu, W.H. Liang and Q.D. Song	280
The Generalized Fuzzy Time Series Model for Forecasting Base on the Optimization of the	
Length of Intervals Y.H. Wang and W.R. Qiu	286
Web Page Ranking Algorithm Based on the Meta-Information X.L. Li	292
E-Bayes Estimation of Burr Distribution Parameter under Square Loss Function H.B. Liu, T. Yin and C. Wang	297
E-Bayes Estimation of Laplace Distribution Parameter under Q-Symmetric Entropy Loss Function	201
H.B. Liu, T. Yin and C. Wang E-Bayes Estimation of Rayleigh Distribution Parameter	301
H.B. Liu, T. Yin and C. Wang	305
Chapter 5: Sound, Image, Signal and Video Processing and Technologies	
2D(PC)2A Based Dimensionality Reduction of Textural Feature for Face Recognition with a Single Training Sample W.H. Sun	311
A Local Optical Flow Constraint Target Extracting Algorithm of Kalman Filter Based on Background Modeling Y.N. Wang	316

A Novel HOG Descriptor with Spatial Multi-Scale Feature for FER Y. Tong, L.B. Jiao and X.H. Cao	322
An Animation Video Resource Conversion System Based on Supercomputers K.H. Zhong, Y.W. Chen, L.F. Liu and J. Zhang	328
An Image De-Noising Algorithm Based on K-SVD and BM3D L. Jun	333
An Image Retrieval Algorithm Based on Region Segmentation X.M. Xiong and Y.L. Liu	337
Combined Filter Method Based on Terrain Factors	342
Design and Implementation of Safety Lock Based on Face Recognition	346
Image Quality Assessment Based on Region of Interest	350
Lane Mark Identifying and Tracking Base on Edge Enhancement	355
Mathematical Morphology Based Moving Object Detection Algorithm under Complicated Background	333
	361
Removing the Stripe Noises Interference on the Ha Full-Disk Solar Image Based on	
Multiscale Transform S. He, S. Zheng and Y. Huang	365
Research on Scene Organize Algorithm Based on BVH with Dynamic Rendering Tree L. Xu and M.Z. Liu	370
Study of Video Object Detection and Shadow Suppression Algorithms Q.L. Gai and G.Q. Wang	374
Video Time-Space Body Filtering Based on Dual-Directional Markov Chain Monte Carlo	
Particle Filter J.B. Song, L. Ye and Q. Zhang	379
Voice Assistant — Application of Speech Recognition Technology in the Android System G. Liu and H.B. Zhang	384
A Content Based Image Retrieval Model Using Feature Space Dividing G. Huang	388
A Statistical Model for Real-Time Video Moving Target Detection Based on Bayesian Statistics	
	394
An Improved Moving Object Tracking Method Based on Graph Cuts M.J. Zhang and B.S. Kang	398
Compact Wake-Up Word Speech Recognition on Embedded Platforms A.H. Xing, T. Li, J.L. Pan and Y.H. Yan	402
Research on Lossless Predictive Coding Methods for Stereo Images S.G. Li	406
Research on the Transmission Characteristics of FitzHugh-Nagumo Neuron G.P. Wang, W.X. Yang and S. Yang	413
Classified Quantization Research on Dot Gain Characteristic	417
A Recognition Method of License Plate Number Based on BP Neural Network	422
Based on Fractional Brownian Motion and Fourier Descriptors of the Side Face Recognition	122
Algorithm H. Wu, G.X. Tang, T. Han and B.H. Jie	427
Pitch Detection Method Based on Morphological Filtering Y.Q. Wang, X.P. Wang and L.C. Wang	433
Rolling Bearing Fault Diagnosis with EMD-Based Fault Characteristic Frequency	
V.P. Guo, Y. Xiong and G.C. Song	437
LED-Based 3-DMD Volumetric 3D Display	442

Chapter 6: Measurement Technology, Instruments and Sensors, Detection Technologies

An Improved Gaussian Fitting Method Used in Light-Trap Center Acquiring Z.Y. Xu, H.Y. Zheng and H.Y. Yang	449
Computer Vision Application and Research on the One-Dimensional Body Mass Precision Measuring Device S.Y. Nie and C.Q. Yang	453
Hydrocarbon Micro-Seepage Anomalies Detection Algorithm Based on FPCS for Hyperspectral Remote Sensing Data Z.L. He, X.L. Deng and S.M. Ai	457
Landing Point Predicting Method in Target Re-Entry Measurement X.Y. Li, W.K. Zhu, J.B. Zhou, G.M. Chen, L. Yang and H.H. Wu	463
Study of Velocity Measurement Error Analysis and Improving Velocity Measurement Accuracy on High-Speed Train T. Hou, D.W. Fan and H.X. Niu	468
Study on Architecture of Measurement of Multi-Points Strain of Hinge Sleeve of Cubic Press under Super-High Pressure X. Sun, J.X. Shi, Z.X. Zhong and H. Zhao	472
Continuous Blood Pressure Measurement Method Based on the Pulse Image Sensor and BP Neural Network	1,2
A.H. Zhang, X.Z. Zhou, L.M. Yang, R. Shen and Z. Wei	476
Measuring Device for the Moment of Human Aspects H.C. Zeng and C.Q. Yang	480
Change Detection in SAR Images Based on Semi-Supervised Learning S. Tian, J.S. Song, S.B. Tian and W. Gong	484
Road Roughness Measurement and Analysis for Vehicle Bench Test J.W. Yu, N. Liu and B. Wang	490
An Improved of Extended Kalman Filtering Method on Tracking Accuracy of Bistatic Sonar System Y. Sun and J.W. Zhao	494
Application of Mobile Data Acquisition Technology in Highway Lightning Protection Y.H. Zhang, X. Jiao, Y.Y. Zhong, J.C. Zhou and J. Yuan	498
The Detection of Concealed Targets Based on NQR of Nitrogen-14 X.Y. Huang, G.G. Xu and F.L. Hao	505
Anti-Bias Association Algorithm for AIS and Radar Tracks Based on Centroid Reference Topological Characteristics	
L. Qi, H.P. Wang, Y. Liu and C. Wang Trusted Data Aggregation with Law Energy in Wireless Senson Networks	511
Trusted Data Aggregation with Low Energy in Wireless Sensor Networks T.D. Engouang, Y. Liu and Z.J. Zhang	519
The Research on Sensor Fault Diagnosis Based on the SVM Prediction Model Y.J. Zhu, X.M. Yu and B.H. Yang	528
Review of MEMS Techniques and Applications in Aerodynamics Research L.T. Fan	532
Design and Applications of Embedded System in Video Surveillance Z.C. Yan and P.X. Fen	536
Analysis and Design of a Capacitive Sensor for Measuring Thickness J.H. Lei	540
Chapter 7: Automation Technology, Control System Modeling and Simulation Technology	

547

Application of the Flexible Brake on Wind Driven Generator $\rm H.F.\ Zhou\ and\ Q.\ Li$

Fast Finite-Time Consensus Tracking of First-Order Multi-Agent Systems with a Virtual Leader	
Q.Y. Xiao, Z.H. Wu and L. Peng	552
Global Robust Output Regulation of a Class of Nonlinear Systems with Nonlinear Exosystems and its Application S.M. Liu, Y. Jiang and J.Y. Dai	560
Research on Attenuating Variable-Rate Reaching Sliding Mode Control Strategy for Three-Phase Current Source Inverter J. Bai, S.Q. Lu, X. Dong and J. Liu	565
Research on Spacecraft Attitude Control Simulation Technology Based on Multidisciplinary Integration Y.B. Zhang, C.F. Wei, X.Q. Li and X.L. Shi	572
The Facilities Vegetables Warning and Control System Based on Mobile Phone SMS L. Yan, D.J. Hao and H. Zhang	576
The Research of Furnace Temperature Control Technology Based on Model Free Adaptive Control System J. Chen and X. Han	580
The Sliding Mode Variable Structure Control Method for Brushless DC Motors X.J. Yin and J.G. Xu	584
Time Domain Simulation for a 6 DOF Tanker Model in Presence of Waves Q.M. Sun and J.G. Chen	590
The Approach for Analyzing Motion Mode of High-Order Control Systems S.G. Zhang, K. Wang and X.P. Dang	594
The Design of Valve Block of Megawatt Wind Turbine Hydraulic Yaw System and AMESim Simulation Model J. Gao, L.W. Yan, C.J. Ai and H. Xie	598
Modeling for the Flow Coupled Secondary Hydraulic Lifting System of the Excavator Bucket	602
F.Y. Zang, Y. Wang and X.Z. Kong 3D Geometric Modeling of Francis Turbine Blades Based on Wooden Patterns and UG	002
Software L. Lu and L.D. Zhang	606
Power Spectra Density Replication Control Strategy for 2-Axis Hydraulic Shaker Based on HV Estimator Y. Chen, Q.L. Luan, Z.W. Chen and H.N. He	610
Numerical Simulation of Seismic Wave Propagation in Different Media Z.R. Feng	616
Design of Salt In-Bags Incasing Control Management System Based on Dual Closed-Loop Fuzzy Controller	
Y.B. Hui, Y.G. Wang, L. Wang and Q.F. Niu New Control Topology for Railway Static Power Conditioner	620
Y. Pan and J. Bao	625
Triangle Formation Control of Multi-AUVs with Communication Constraints G.N. Li, H.Y. Dong and H.L. Xu	631
The Integrated Automation Solutions Research of Zhengzhou North Station Z. Chang, H.P. Zhu and X.C. Zhang	636
Motion Simulation and Finite Element Analysis of the Manipulator Based on SolidWorks P. Lu, D.L. Cheng, G. Shi, Z.H. Zhou and N.K. Li	640
Chapter 8: Power Engineering and Control, Power Electronics	
Dynamic Economic Dispatch Based on Improved Particle Swarm Optimization Y.G. Li and L. Han	649
Electric Power Communication Network Optimization Algorithm Based on the Equivalent Network	
N.Z. Xing, J.Q. Guo and R. Yu	653

Fault Location Scheme for Transmission Lines Using Kaiser Self-Convolution Windowed FFT Phase Comparison	
G.C. Fan, Y.L. Zhu, H.W. Yan and Y.F. Gao	659
Optimal Assignment of Emergency Power Considering V2G X.Y. An, J.C. Liu, Y.X. Wu, J.Y. Li, L.Z. Zhang, C. He, H.H. Chen and X.L. Zheng	664
Optimal Reserve Distribution Model for Power System with Large Scale Wind Power Integration	660
C. He, J.C. Liu, J.Y. Li, Y.X. Wu, X. Li, X.Y. An, H.H. Chen and X.L. Zheng Realization of FCB Function in 350MW Subcritical Units with 35% Capacity Bypass L. Wang, G. Li, C.Y. Zhang, L. Zhang and D.Z. Bi	669 674
Research on Microgrid System in the DC-Building Y.N. Yuan and M. Meng	678
Suggestions on Implementing Energy-Saving Diagnosis Technologies and Services of Power Grid Enterprises Y.H. Li, L.F. Cheng, L. Xi, G.H. Xu and T. Yu	682
Unbalanced Power Allocation Method to the Research of the Influence of the Power System Trend	002
H. Wang, N. Wang and D.H. Xue	687
User-Defined Governor Model Based on PSCAD and Analysis of Low Frequency Oscillation Mechanism	602
S.W. Xiao and C. Wang Methods to Establish the Fault Tree of Substation Automation System Based on HAZOP B.B. Han, Y. Wang and F.Y. Guo	692 696
Research for Short-Term Load Forecasting Based on Linearization Meteorological Factors S.H. Zhang	700
A Transducer Matching Method with Signal Frequency and Inductor Adjustment Combined for Submerged Structure Ultrasonic Cleaning Y.Z. Yin, C.P. Zhu, B. Wang, Q. Wu, C. Yao, B.Y. Chen, Q.G. Ren, Q.B. Han, Y.B. Tang, Z.B. He, G.C. Chen and Z.X. Li	704
Design of Active Filter Based on the Active Power Balance L. Ji	709
Identification of Lightning Strike and Short-Circuit Fault Based on Wavelet Energy Spectrum and Transient Waveform Characteristics Y.F. Gao, Y.L. Zhu, H.Y. Yan and H.W. Yan	713
Application Research on the Intellectual Inspection System of Transmission Line Based on the "Mobile Information Platform"	-1 0
Z.W. Yang, W. Yi and Y. Jin Design and Simulation Analysis of the Mirror Current Source Circuit Posed on Multisim 10	719
Design and Simulation Analysis of the Mirror Current Source Circuit Based on Multisim10 H. Wang, W. Yang, B.H. Li, X.C. Liu and Q.P. He	723
Chapter 9: Vehicle Control Systems and Intelligent Traffic	
Performance Analysis of Simulation of Pedestrian Traffic inside the Hub B. Li and M. Li	729
Design of Intelligent Public Transportation Vehicle Terminal Based on S5PV210 H.P. Sun, Z.G. Gao and L.N. Chen	735
Research Based on Fuzzy Control of Electric Power Steering System Y.L. Cao and Z.B. Yang	739
Research on Traffic Behaviors and Psychological Characteristics of Pedestrians within the Comprehensive Hub B. Li and M. Li	743
Apply the Damaged Road Data for Driving Simulator A.L.M.J. Yiming and R.Z.W. Maimaiti	747
Modeling and Design of Fuzzy-Neural Network Controller of Electric Power Steering System G.Q. Geng	751
U.Q. Uulg	/31

Simulation Study for Mixing Characteristics of NH3 and Automobile Exhaust in the SSCR	
System D.W. Qu, K. Zhang, L.Y. Fan and H.B. Gao	755
Coordinated Charging of EVs Based on Demand-Side Management Y.K. Li, H. Ouyang, J.K. Zhao, X.K. Rong and Y. Dong	760
A New State Machine Optimization Method in the Protocol Conversion System Q. Li	766
Chapter 10: Communications Technology and Materials	
Design and Implementation of USB Coordinator Based on Z-Stack Z.C. Jiang, S.D. Lee, J.Y. Chen, Z.J. Qin and R.F. Yu	773
Design of Intelligent Underground Sound Bird Repellent System Based on Wireless Communication Network X.J. Yin, J. Lin and Z.Z. Shao	782
Loss Characteristics Analysis and Optimization of an Off-Axis Rotary Optical Fiber Communication System	700
X.H. Wang, Q. Zhao, L. Li, J. Ding, Q.X. Zheng and L. Liu Simulation on PAPR Suppression Algorithm for Multicarrier System R. Zhang and Z.B. Zeng	788 794
Theory Analysis and Simulation of Optical 90° Hybrid without Intersection W.H. Liu and G.J. Wu	799
Two Analog Transmission Schemes for Distributed Detection X.Y. Liu, P.S. Zhu and W. Liu	803
Mode Conversion Models Based on Spatial Spectral Matching for Mode Division Multiplexing in Optical Fibers M.Y. Lan, S. Nie, L. Gao, S.Y. Cai, C.X. Ma, X.L. Qi and Z.C. Du	807
Reference Signals Design and Evaluation on Radio-Interface Based Synchronization of LTE Base Station System R.H. Zeng, D.S. Miao, N.Z. Zheng and H.W. Yang	811
Electromagnetic Coupling Reduction in Microstrip Antenna Arrays Using Single-Negative Electric Waveguided Metamaterials L.Z. Hu, G.M. Wang and G.C. Wu	816
Equivalent Electromagnetic Properties of Composite Media X.F. Pang	822
Research on Coupler of Single Mode Fiber with Photonic Crystal Fiber Q.S. Wei, Z. Chen, Y.H. Luo, Y. Ma, X.L. He and Z. Che	826
Chapter 11: Computer Network and Information Security	
An Evolving GPSR Protocol in Urban Roundabout Scenario H.Y. Yu, H.M. Yang, X.Q. Di and L.D. Qu	833
CNC Network of Research and Development B.J. Zhang	838
Complex Network Evolution Model Based on Node Attraction R. Sun	843
Fundamental Considerations on New Technology Evolution in Latest Network Development Y.J. Luo	847
Intrusion Detection Systems G.G. Liu	852
QoS Routing Protocol Based on Resource Optimization for Aerospace Networks W.Q. Wu, B.N. Luo, P.P. Chen and Q.Y. Zhang	856
Research on Composite Web Services Selection Based on Dijkstra Algorithm Y.Q. Li, Y.W. Li and L. Che	861
Rumor Propagation Model for Complex Network with Non-Uniform Propagation Rates R. Sun and W.B. Luo	868

A New Method for High Speed CAN Protocol Conversion Circuit Q. Li, Y.F. Liu, D.C. Luo and J.J. Yang	873
A NHPP-Based Reliability Model of Wireless Sensor Networks B. Zhao, J.F. Yang, M. Zhao, Q. Li and Y. Liu	877
Implementation of USB in Embedded Systems Based on ARM Microprocessor X.L. Li	883
The Network Security System Research Based on Intrusion Detection J. Qian, Y.P. Wang and H.X. Li	888
The Design and Implementation of Fast-Path Architecture for IPv6 Control Router G. Wang	892
Chapter 12: Database Systems and Software Development	
A Pushlet System Optimization Method Based on Servlet Y.L. Liu and X.M. Xiong	899
A Refinement of Hierarchical Databases Q. Li, J.G. Liu and B. Wang	903
Design and Implementation of University Parking Query System X.W. Zhang and B. Yu	909
SQL Server Access Methods Based on LabVIEW Z.W. Zhu, J.X. Chen and Z.C. Sun	914
A Discussion on the Electromagnetic Compatibility of Data Center X.E. Zhao	918
Design of a Mobile Client Application Based on Android Platform C.X. Qi	923
Multi-Domain Modeling and Co-Simulation Based on Modelica and Simulink G.S. Tian and L.C. Zhang	927
The Design and Implementation of a Cross Platform Multimedia NetWork Classroom M.L. Shao	931
A Positioning System of Book Based on QR Code in Library S.D. Lee, W.Q. Liu, W. Zeng, X. Gao and C.S. Zhang	936
Design and Implementation of a New CNG Dispenser Control Platform X. Zhang, X.D. You, Q. Luo and X.J. Zou	944
Chapter 13: E-Commerce, E-Government, Internet Technologies, WEB Design	
Applying Improved Clustering Algorithm into EC Environment Data Mining Y.P. Ma, B. Ma and T.H. Jiang	951
Applying Modeling Technique Optimize Business for E-Government Based on Big Data W.J. Luo, F. Yuan and X.D. Tian	960
Modeling Software Architecture Evolution for Electronic Commerce System Based on Graph Representation H.W. Jiang and G.J. Kuang	966
Study on E-Government Virtual Information Service Center Model Based on Cloud Computing D. Li and X.L. Liu	
The Research of Digital Challenge to Tourism Destination Brand	971
W.Y. Zhang IOT Application Research between Digital Publishing and Traditional Publishing Z.W. Chan	976
Z.W. Chen uKeMa: An Ultra-Lightweight Key Management and Authentication Scheme for Wearable Ad Hoc Networks Based on Body Language	981
Y.H. Xie Analysis on Development and Application of Online Customized Tour X.I. Wang and X.K. Li	986

Advances in Online Authority Research B. Wu and C.Y. Zhang	994
Interaction Representation and Application of Flash Animation in Webpage Design S.S. Yang	998
Application and Thinking of "Jiangcheng Culture" Elements in Web Design Z. Xin	1003
Chapter 14: Engineering Education and Engineering Management	
Micro Lesson in Microera under the Background of Video Resources L. Zhang and X.H. Wang	1009
Research and Implementation of Curriculum-Oriented Knowledge Learning Platform J.W. Xue, S.H. Xu and Y.Y. Yu	1013
Second Time Development of Coal Quality Management System B. Qian and H.Y. Zhang	1018
The Research on Construction of Open Hierarchical Practical Teaching System Z.Y. Wang, L.G. Li and Y.G. Wang	1022
Application of Multimedia Technology in Experiment Teaching of Environmental Engineering Microbiology	
S. Liu and L.N. Sun	1026
Optimal Model of Tutor Selection in Graduation Thesis Guidance for Undergraduate C.J. Rao and Q.Q. Liu	1030
Research of Neuroergonomics Experimental Teaching System in Industrial Engineering J. Wu and W.M. Han	1034
Research of the Model to Foster Engineering Students' Ability and the Assistant Analyzing System	
Y.Z. Fang, Z.F. Liu, D.F. Zhao and Z.F. You	1040
Study on Innovative Researching Project Management for the Computering Software- Based Enterprises	
Q. Li	1044
Analysis of the Way to Enhance the Professional Core Competence of Engineering Students of New University	
X.Q. Zhao	1048
Construct the Virtual Gram Stain Experiment Platform Based on 3DMax and VRP S. Liu and L.N. Sun	1052
Supplier Selection Model of College Materials Procurement C.J. Rao and L. Yu	1056
Research on the End-to-End Modularity Process for Manufacturing Enterprise H.J. Wang, T.T. Zhao and H.F. Sun	1060
SWOT Analysis of Chinese Rural Information Society Policies P. Zhou	1065