

Table of Contents

Preface and Organizing Committee

Chapter 1: Mechatronics, Robotics and Control Systems

Neuro-Control Robustness Analysis of an Inverted Pendulum Using the Bee Algorithm N. Metni and J. Lahoud	3
A Fault-Tolerant and Anti-Disturbance Control Based on Sliding Mode Iterative Learning Law for Attitude of Satellite J.C. LI, T. Xi and B. Wang	10
Development of Two-Wheeled Balancing Scooter S. Panich	16
Design of Length Measurement System of Mobile Objects with Real-Time Voice Broadcast Y.Q. Wang and G. Wang	22
A New Method to Plan a Singularity-Free Path of the Stewart Platform Q.S. Liu, X. Yang and W.D. Jin	27
Stability Analysis of Internal Model Based Gain Control System for Three-Level EDFA Model	
S.H. Song, C.S. Kim and J.K. Kim	33
A Road Grade Recognition Method Based on Longitudinal Acceleration Y. Fu, W.H. Ye, Y.L. Lei, Z.J. Liu and H.B. Zeng	38
Two Degree of Freedom Model Driven PID Control for Unstable Process with Time Delays L.X. Zhang	45
FA-Based Optimal Strategy Study of Train's Energy Saving Operation under Disturbed Condition	
H. Hu	50
Optimal Design for Micromixer Using Macromodel Based on Artificial Neural Networks X.Y. Chen and H. Xu	55
Wristband-Style Pulse and Motion Detection System Based on the Internet of Things C.Y. Hou, L.G. Yu, K.P. Yao and X.E. Li	59
Sensitivity and Response of a Triple-Axis Thermal MEMS-Based Acceleration Sensor X.T. Dinh and Y. Ogami	64
Computer Virtual Simulation System of High-Voltage Live Working Robot Y.J. Wang	69
Fuzzy-Sliding Mode Controller Design for Electric Bicycles H.B. Zhou	74
The Design of Wireless Sensor Node for Industrial Bearing Monitoring K.P. Yao, X.E. Li, L.G. Yu and C.Y. Hou	81
Use of IOIO and Android Devices in Mechatronics Design Projects I. Heng, R. Yap and A.S. Zhang	87
Research for Signal Processing of Automotive Anti-Lock Braking System Y.D. Tian	95
Analytical Method of Generating Sensitivity Map for Electrical Capacitance Tomography Sensor with Internal Electrode	
X.Y. Dong and S.Q. Guo	99
Droplets Transportation on a Piezoelectric Substrate with an Obstacle X.T. Fu, Y. Zha and A.L. Zhang	104
NO_x -Sensing Characteristics of Sensor with $La_{0.75}Sr_{0.25}Cr_{0.5}Mn_{0.5}O_3$ Sensing Electrode Y.L. Wu, H.Y. Zhao and L. Wang	109
Application of Multiport Video Interface Controller to Banknote Checking Q.W. Qin, J. Zhang, Z.G. Feng, F. Li and J.H. Sui	114
Study and Design of Power Monitoring and Management System Based on Wireless Sensor Network	
W.H. Choi and M.S. Jie	118

Study and Design of Home Intelligent System Based on Embedded W.H. Choi, H.S. Beom and M.S. Jie	125
Induction Motor Reducing Voltage Energy-Saving Control Method Based on Closed-Loop	
Power Factor J.H. Zhou, B. Ma, X.W. Zhang and C. Chen	131
Development of Automatic Examination Instrument for Diesel Engine Sequential	
Turbocharging Control System C.L. Yang, J.Z. Liu, C. Cao and J.X. Wang	137
Neuron Network Model-Based Control System Model W. Li	143
Design of the Assistive Leg and the Simulation Research Z.Z. Liu, L. Zhang and Y.T. Tian	147
Modeling and Simulating Industrial Manipulator Based on ADAMS L. Wang and Y.Y. Kang	153
A Study of Non-Uniform SPST RF-MEMS Switch under the Effect of Squeeze Film Damping	1.57
O.A. Awad, A. El-Sinawi, M. Bakri-Kassem and T. Landolsi Design of Manitoring System of the Household Pehot Resed on Internet of Things	157
Design of Monitoring System of the Household Robot Based on Internet of Things Y.L. Wang, Q.S. Ma, E.M. Wang, X.L. Wu and Z.L. Chen	163
Bacteria Classification Using Electronic Nose for Diabetic Wound Monitoring A.A. Abdullah, N. Yusuf, A. Zakaria, M. Iqbal Omar, A.Y. Md Shakaff, A.H. Adom, L.M. Kamarudin, Y.E. Juan, A. Othman and M.S. Yassin	167
Design and Mechanical Property of a Biomimetic Pulsatile Jet Propeller Inspired by Cuttlefish Actuated by SMA Wires	
Z.L. Wang, F. Gao, Y.K. Wang and Y.W. Wang	173
A User-Friendly VMM Based Interactive Mixed Signal Simulation Setup for MEMS Gyroscope ASIC Verification G.D.P. Kumar, J.B. Kuang and V. Choudhary	178
Concentrated Driving Electric Passenger Vehicle Braking Control Strategy Optimization J.Z. Zhang, H. Zhou, C. Lin and P. Liu	183
Infrared Data Measurement Modeling and Non-Uniformity Correction (NUC) Algorithm for Infrared Detector S.H. Song, K.Y. Ho and S.H. Park	190
Problems and Solutions on Security of Wireless Sensor Network in Facilities on Sports	
Venues W.G. Wang and X.L. Li	195
Wireless Mine Plastic Pipeline Monitoring System Z.H. Wu, X.E. Li, K.P. Yao and L.G. Yu	199
Using LOG Method to Measure Errors of Mobile Robots' Location	205
T.T. Tsung, Y.C. Chang and T.L. Chen Experimental Investigation of Environmental Monitoring System for Large Granary Based	205
on WinCE	211
X.D. Zhang, X.J. Yu, Y.P. Wang and J. Zhang	211
Chapter 2: Computers and Communication, Applied Computational Technologies	
Design of an Intelligent Diagnostic System for Detection of Knee Injuries A.A. Abdullah and N.S.F. Azz-Zahra Md Som	219
An Improved GPS Dynamic Positioning Filtering Algorithm J. Wang, X.Y. Lin and L.L. Guo	225
The Architecture of Instant-Preview Virtual Printing Server for the Preview Affixation Signature under the Mobile Environment	222
C.W. Chang, H.P. Lee, Y.T. Tsai and Y.C. Tsao Evaluation of Natural Disaster Emergency Response Procedure Based on Petri Net	229
Y. Zhang, S.H. Huang, D.P. Dang and H. Ruan The System Architecture of Scalable Network Threat Waring Platform	236
L.J. Zhang	242

A Simple Calculation of System Matrix Base on 2-D Index H.L. Chen, J.F. He, L. Ma and J.Q. Liu	247
Image Evaluation Based on Region of Interest J.Q. Liu, L. Ma, Y. Xiang, S.L. Yi, H.L. Chen, Q. Zhang and J.F. He	253
Hybrid Differential Evolutionary Algorithm Based on Extremal Optimization C.J. Wang, X.H. Wang and J.M. Xiao	259
Image Segmentation Algorithm Research for Sport Graphics Based on Multi-Layer Background Subtraction M.J. Lu and Z.P. Li	265
Feedback Ranking Method in Topic-Based Retrieval F. Li, J.J. Huang, M. Peng and R. Cai	269
Phase Watermarking of Images with Complex-Valued Linear-Phase Subband Filter Banks L. Chen and R.H. Peng	275
Research on Communication Design of Modular Production System Y.F. Tong, Z.H. Tang and D.M. Cao	281
A Replication Algorithm Considering the Node Traffic for P2P Networks Y.Q. Zhu and R.M. Hu	285
Research on Email Security Policy Based on Network Technology H. Ji	292
Fuzzy Clustering Segmentation Algorithm Research on Sports Image X.J. Dong and X.Y. Zhang	297
Optimal Design of Adaptive Wavelet Neural Network Based on Hierarchy Genetic	201
X.S. Gan, X.Q. Tang and J.G. Gao Wavelet Neural Network Based on Chaos Genetic Algorithm H.C. Zhao	301
Design of a Remote Monitoring System Based on the TCP/IP Protocol R. Peng, Y.D. Li and G. Yang	307 313
Research and Design on Agent-Based Individualized Recommend Learning System C.F. Zhang and Z.Y. Fang	318
A Study on the Use of Multicast Protocol Traffic Overload for Active Network W.H. Choi and M.S. Jie	323
Associativity-Based Path Control Scheme in Wireless Multi-Hop Networks Using AODV J.H. Lee and E. Rhee	329
AR Based on ORB Feature and KLT Tracking J. Ren, Y. Yu, Y. Zhou, Z.Q. Wang and S.D. Du	333
An Intrusion Detection Model Based on Mining Maximal Frequent Itemsets over Data Streams	
Y.M. Mao, X.F. Xue and J.Q. Chen A Recursive Gradient Method of Least Square Support Vector Machine and its Application	341
X.Y. Luo, W.M. Lv, Z.Q. Song and S.W. Jiang	349
Temporal Transient Localization for Enhanced Pre-Echo Suppression W.H. Ma, J. Xu and Y.L. You	355
A Segmentation Method for Multiple Sclerosis White Matter Lesions on Conventional Magnetic Resonance Imaging Based on Kernel Fuzzy Clustering Y. Xiang, J.F. He, L. Ma, S.L. Yi and J.P. Xu	361
Design Chaotic Neural Network from Discrete Time Feedback Function J.S. Ren, G.C. Luo and K. Qin	366
Body Measurements Extraction from 3D Scanner Data P. Elbrecht, J. Henno and K.J. Palm	372
Knowledge Modeling and Solving Strategy for Product Innovation Design J.W. Chen, J.S. Zhang and H.J. Yang	378
Imbalanced Support Vector Machine Classification Based on Hyper-Sphere C.H. Li, R.X. Chen and Y.Z. Ouyang	384
Analyzing of the Image Characteristic Base on Potential Field Distraction Function Z.B. Shan, Y.W. Shi, H.C. Li and H.W. Shi	389
Extraction of Purkinje Fiber Network from the Image J. Li and K.Q. Wang	396

DGMM Based Network Traffic Prediction for Smart Substation J. Wang and Z.K. Wang	401
The Adaptive Stochastic Resonance Signal Detection System Based on the Multi-Point Random Search Algorithm S.L. Tu, Z.Y. Wu and Z.Y. Wu	409
Chapter 3: Researches and Design in Mechanical Engineering	
The Experimental Results Analysis of Shortwave Channel Reciprocity H.P. Lu, A.M. Zhu, D.J. Hu and L. Zhang	419
Simulation Analysis on Ride Comfort of Heavy Vehicle S. Wang, D.W. Liu and W. Liu	425
Automation Scanning Platform for Windturbine Blade Measurment H.L. Fu, Y.J. Huang, C.Y. Wu and Y.C. Wang	430
EMC Measurement in a Reverberation Chamber E. Rhee and J.H. Lee	436
Realization of a ZVS Inverting Spot Welding Power Supply P.S. Zhao, X.D. Wang, M.S. Yang and K. Kang	440
LMS Estimator in Diffusion Tensor Estimation S.L. Yi, Z.G. Liu, J.F. He, L. Ma and Y. Xiang	446
A New Algorithm for Non-Multiplier Approximation of Frequency Transformation for Two-Dimensional FRM Filters	451
L. Chen and R.H. Peng Data Analysis of Transient Fire Angle Test System Based on Wavelet Theory H. Li, D. Xu, J. Zhang and M.C. Zhong	457
Detecting the Formation of a Loop in Endoscopic Tubing Using Fiber Optic Techniques A. Harb, M. Vanegas, D. Huljev, E. Wong, A.S. Zhang, F. Zia and I. Heng	462
Computational Fluid Dynamics Analysis on Rupture of Gas Bubble L. Zhu, B. Song and Z.L. Wang	468
TCM Main Drives Revamping of Pangang L.H. Wang, K. Huang and R.F. Zhou	474
Design of Automatic Device to Measure the Crush Resistance of Biomass Pellet Fuel S. Xu, W.C. Liao, B. Yan and Y.G. Tao	479
The Design of Dual-Axis Load Cell for Measuring Force Load in Kayak Paddling L.C. Lee, Y.Y. Chen, J. Chiang, L.C. Chang and K.C. Hsieh	483
The High Precision Blade Electrochemical Machining Simulation and Cathode Optimization Based on Isogeometric Method Y. Xiang, R. Mo, N. Wan and H. Qiao	489
Influence of Large Water Droplets Passing through Microwave Cavity on Steam Wetness Measurement	
J.B. Qian, H.F. Li and Z.H. Han	495
Influence of Dielectric Deposition on the Steam Wetness Measurement J.B. Qian, H.F. Li, Z.H. Han, W.M. Wu and D. Yuan	503
Study on the Contact Properties for Involute Cylindrical Gear Based on Thermal Analysis Y.Y. Shi, M.Q. Zhang, X.F. Kong and J.H. Li	510
Dynamic Response of Bridge Girder and Shear Keys Subjected to Pounding during Earthquakes	
L. He, L. Zhang, J.Y. Chen, C.D. Pan and Y.X. Liu	515
Chapter 4: Energy and Power Engineering	
Static Security Risk Assessment Based on Outage of Line Y.J. Zhao, D.C. Liu, J. Wu, F.F. Dong, X.D. Pan and C.L. Song	523
Research on Data Center of Wind Power Based on Cloud Computing G.L. Li, S.M. Sun and Y. Cheng	529
Design and Realization of Solar Energy Maximum Power Point Automatic Tracking System G. Wang	533

Zero-Sequence Circulating Current Reduction for Three-Phase Three-Level Modular Photovoltaic Grid-Connected System	
F.S. Wang, X.F. Wang, Z.P. Shao and X. Zhang	539
The Reviews of Power System Voltage Stability X.S. Zhou, H. Liang and Y.J. Ma	545
An Overview of Smart Grid X.S. Zhou, Z.H. Hou and Y.J. Ma	550
Control Strategy of Photovoltaic Grid-Connected Inverter X.S. Zhou, M. Chen and Y.J. Ma	554
The Review of Dynamic Voltage Restorer in Power System X.S. Zhou, H. Wu and Y.J. Ma	558
An Overview on STATCOM X.S. Zhou, C. Ji and Y.J. Ma	561
Study on the Optimal Location of SMES in Power System X.S. Zhou, X.Q. Shi and Y.J. Ma	565
Active Circulating Current Reduction for Three-Phase Three-Level Modular Photovoltaic Grid-Connected System	
F.S. Wang, X.F. Wang, X. Zhang, Z.P. Shao and P. Liu	568
Composite Islanding Detection Method of Grid-Connected Photovoltaic Generation System G. Zhao and X.L. Huang	574
Risk Assessment of a Line Outage Based on Fuzzy Membership X.D. Pan, J. Wu, D.C. Liu, Y.J. Zhao, F.F. Dong and C.L. Song	579
Effects of Electric Machine Parameters on Dynamics of an Isolated Wind-Diesel System C.H. Lin	586
PSASP Power Grid Voltage Static Stability Analysis Method -Determine the System Key Node and the Region G.W. Ren, R. Ren and N. An	591
Electromagnetic Power Extraction of Transmission Lines E.L. Carvalho Junior, G. Lambert-Torres, E.L. Bonaldi, L.E.L. de Oliveira, J.G. Borges da Silva and L.E. Borges da Silva	595
Analysis of Static Frequency Characteristics Based on Curve Fitting C.L. Song, D.C. Liu, J. Wu, F.F. Dong, L. Tu and Z.S. Zhu	602
Simulation Research on Improving Low Voltage Ride through of a Wind Farm by SVC Y. Shi, C.X. Zhang, G.L. Li, Y. Cheng and S.M. Sun	608
Research on Controlling Method of High-Power Electromagnetic Transmitter Power Supply	
F. Ŷu	614
Chapter 5: Construction	
Discussion on the Bearing Capacity Determination Methods of Shallow Foundation in Shanghai Region	(22
D.F. Chen Advanced Numerical Analysis of Jack-Up Spudcan Penetration in Layered Sandy Soil	623
J. Zhang, W.X. Tang, W.L. Qin and C. Gao The Modal Analysis of a Multilayer Concave-Convex Irregular Reinforced Concrete Frame	628
Structures before and after Seismic Isolation F. Zhang	632
The Effect of Isolation Layer Yield Stress on the Seismic Response of Base Isolated Frame Street Control of the Seismic Response of Base Isolated Frame Street Control of the Seismic Response of Base Isolated Frame Street	
F. Zhang Study on Machanical Proporties of High Volume Fly Ash Concrete	635
Study on Mechanical Properties of High Volume Fly Ash Concrete L.M. Zhang	638

Chapter 6: Materials and Chemical Engineering

Generation of Tunable Necklace-Pattern Solitons in Two-Dimensional Dissipative System B. Liu, S.J. Li and L.T. Ma	645
Effect of Densification Conditions on Physical Quality of Densified Sorghum Straw Briquette Fuel	
J.W. Wang, Y.S. Sun, Z.R. Jin, Z.Y. Feng and F.G. Dong	651
Nanocrystalline Diamond Films Deposited by Two-Step Approach from CH ₄ /H ₂ Microwave Plasma: The Influence of Reactor Pressure S.T. Khlayboonme and W. Thowladda	657
Synthesis and Basic Properties of Fluorinated Core-Shell Acrylic Latexes Containing Perfluoroalkyl Acrylate in the Shell Q. Liu, W.M. Tang, Y.C. Chen and M. Huang	665
An Intelligent Prediction System for Tensile Damage of Woven Fabric Based on Geometrical Modeling J.J. Lin	670
The Theoretic Study of 1,3,5-3(4-N-Maleimido) Phenyl-1,3,5-Triazine Molecule Structure, Spectrum and Thermodynamic Properties Z.R. He, Z.R. Chen and Y.H. Xu	677
Determination of Content of N-Butyl Pyridine Tetrafluoroborate in Ethanol by UV-	0,,
Spectrum Y.Y. Song, P. Tian and J.D. Duan	683
The Mechanical Property of Recycled Fiber Reinforced Polymer Composites by	
Superheated Steam J. Shi, J. Kato, L.M. Bao and K. Kemmochi	687
Temperature Changes of Fabrics for the Drop Test with Different Volumes of Water C.H. Zhu and M. Takatera	691
Anti-Oxidation Stability and its Mechanism of Soybean Biodiesel J. Wu, B.S. Chen, J.H. Fang and J. Wang	695
Effect of the Heat Input in the Transformation of Retained Austenite in Advanced Steels of Transformation Induced Plasticity (TRIP) Welded with Gas Metal Arc Welding V. Lopez, A. Reyes and P. Zambrano	700
Soliton-Like Light Propagation through Coupled Resonators Constructed with Periodic	
Metal-Dielectric Layers Y.G. Zhu, Y.T. Fang, W.L. Hu and W.Z. Yan	706
Chapter 7: Geology and Environment	
Distribution and Contamination of Chromium in the Surface Sediments of Salt River Estuary, Taiwan	
C.D. Dong, C.F. Chen, Y.K. Chang and C.W. Chen	717
Material Source Analysis of the Potash Deposit in Mengyejing, Yunnan J. Jiao, M.P. Zheng, Z. Zhang, N.N. Tan and Z.J. Zheng	721
High Resolution Sequence Stratigraphic Frameworks Research in the XII Group of the Member III of Qing Shankou Formation in the Qian'an Oilfield C.L. Li, L. Qin, X. Li and X.L. Zhang	728
High Resolution Sequence Stratigraphic Study of Single Sand Body in the Complex Reservoir in High Water-Cut Period: Take the Member I of Qing Shankou Formation of Hei 96 Block of Songliao Basin for Example L. Qin, C.L. Li, Y. Li and J.Z. Li	732
The Similar Structure of Solution in the Spherical Shaped Matrix of Dual-Porosity Reservoir Seepage Model	
W.P. Li, F.R. Wang, S.C. Li and D.D. Gui	737
Real-Time Monitoring of Anthocyanidin-Zeolite Complex Exposed to Skin Cells A. Priprem, S. Porasuphatana, S. Srirak, W. Pantu, T. Damrongrungrueng and W. Leeanansaksiri	742

Chapter 8: Related Topics

Inspection and Determination of a Vehicle Arson Case According to Diesel Fuel and Gasoline	
L.L. Yu and S.J. Liu	751
Hybrid Prediction Method of Flight Accident Based on ARIMA and SVM J.S. Duanmu, X.S. Gan and J.G. Gao	756
Development of Waxless Wafer Mounting System for Silicon Wafer Polishing Process K.J. Kim	762
The Performance Evaluate System of Automotive Supply Chain L.Z. Du, C.R. Wang and D.X. Tao	766
Urban Common Delivery Model Analysis and System Design W.X. Xu and H.C. Yang	772
Risk Early Warning Model of Unexpected Group Events Based on AHP H.H. Liu and Z.Q. Zhang	778
Resource Optimization Based on Adaptive Genetic Algorithm L. Wang and Y.Y. Kang	784
A Framework of Animation System Embedded E-S Process Y.J. Chen and H.W. Jiang	789
Reliability Evaluation of Processed Oil Supply Chain under Emergency J.H. Zhang and F. Ren	793