

Table of Contents

Preface and Conference Organization

Chapter 1: Theory of Mechanisms and Mechanical Dynamics

Study on Dynamic Characteristics of Feed Systems with Single and Double Ball Screws X.H. Ding, J.Y. Zheng, J.T. Yuan and Z.H. Wang	3
Coupled Vibration Modal Analysis of Synchronous Dual Ball Screw Feeding System Z.Y. Rui, Y.L. Tang, R.C. Feng, Y. Li and Y.R. Zuo	8
The Dynamic Analysis for Special Friction Welder Upsetting System Based on the Finite Element Method Z.Y. Rui, T. Chen, R.C. Feng, B.Z. Wang and Y. Li	12
Failure Analysis of Planetary Gear Shaft of Power Split Device Based on Multi-Body Dynamics Y. Liu, J.F. Ji, L. Kong, Y. Li and J.X. Wang	17
Study on Synchronization of the Centrifugal Flywheel Governor System J.K. Peng, J.N. Yu, L. Zhang and P. Hu	21
Research and Design of a New Kind In-Wheel Driving System X.B. Chen, Y.Y. Lu and B. Wang	30
Dynamic Parameters Equivalent Modeling of Bearings Joint Surfaces Based on the Virtual Material L.B. Wang, X.Q. Hu and W.F. Chen	35
Flow Field Numerical Simulation of Straight Line Conjugate Internal Meshing Gear Pump J.J. Guo, L.C. Liu, P.W. Chen and Q.L. Zhao	40
Perturbation Theorems for Frames and Riesz Bases X.M. Xiao	44
Finite Element Analysis of the Input Shaft in Toroidal Drive Y. Rong, L.G. Yao and J.Y. Yao	48
Theoretical Analysis of Mechanism Kinematics for Boom Crane of Marine Drilling Platform J.Q. Li, Y. Peng and W.H. Yan	53
The Dynamic Characteristic Analysis of Full Hydraulic Steering System in Large Mining Truck J. Yong	59
Research on the Kinematics Simulation of Out-Moving Jaw Crusher Based on Nastran J. Yong	63
Finite Element Modal Analysis of Ball Screws Linear Guide Feed Unit X.R. Xu, X.C. Song, H.K. Jiang and Y.F. Li	67
The Design and Modeling of Jetting Dispenser Actuated by Dual Piezostack Actuator J.C. Jeon, Q.H. Nguyen and S.B. Choi	72
Application of Ellipsograph-Mechanism in Pipe Auto-Handling Device and its Energy Consumption Computation X.P. Hu, Y.L. Kui, Y. Liu, Y.H. Sun, J.X. Wang and K. Gao	76

Chapter 2: Industrial Robotics and Automation

Hybrid Slip Detection Scheme Based Reflex Control of a Prosthetic Hand X.F. Li, X.G. Duan and H. Deng	85
Adaptive Fuzzy PID Force Control for a Prosthetic Hand G.K. Zhu, X.G. Duan and H. Deng	93
Solving Optimal Position and Pose of Robot Task Space Y.G. Zhang, J.G. Gao, W.Z. Liu and H. Shen	102
Sports Analysis and Program Design of Biped Robot Based on Arduino J. Liu and T. Wu	107

One Improved Generalized Predictive Motion Controller Based on Slipping Constrains for the Six-Wheeled Rocker Mars Rover Y.W. Huang, Q.X. Cao and C.T. Leng	111
The Research on the Motion Control of Industrial Robots Based on LabVIEW F. Tao, P.A. Mu and S.G. Dai	117
Kinematic Analysis of a One-Degree-of-Freedom Ten-Bar Mechanism for Search and Rescue Robot H.Y. Pu, J. Zhang, W.C. Jia and J. Luo	121
Structure Design and Analysis of Kinematics of a 6-DOF Upper-Limbed Rehabilitation Robot D.F. Cao, Q.Z. Yang, J.P. Song and J.H. Zhao	125
The Application of Continuous-Curvature Curve Algorithm (CCCA) in Path Planning H. Meng, W. Zhang and W.T. Jiang	130
Graph SLAM for Rescue Robots J.L. Li, J.H. Bao and Y. Yu	134
A Surrogate Model Based Gait Learning for Biped Robot D.S. Luo, Y. Wang and X.H. Wu	138
Experimental Study of the Dynamic Performance of a Cable with a Detecting Robot F.Y. Xu and Z.X. Chen	146
An Industrial Robot Based Drilling System for Aircraft Structures Y.B. Bi, Y.C. Li, Y.H. Jiang, J.X. Li, W. Wang, M. Gao and S. Li	151

Chapter 3: Design and Control in Modern Mechatronics System Engineering

Bluetooth-Based Wearable Human Respiratory Parameter Monitoring System Design F.B. Chang, J. Yin, L.X. Yan and R. Peng	161
Set Point Force Control of Shape Memory Alloy Actuator Using Fuzzy Controller F. Gao and H. Deng	166
The Application of Mechatronics Technology in Coal Mine Machinery L.L. Wang and Q. Bi	174
Implementation of Synchronous Tracking Control with Multiple Hall Switch Sensors Based on PLC S.R. Li and W.P. Zhang	178
Application of Fuzzy-PID Control in the Air Supply System with Constant Pressure for Mine Compressor X.Z. Meng, H.L. Liu, W. Song, W.C. Wang and Z.S. Hou	183
Study on Torque Characteristic of Novel External Rotor DSPM Generator W.J. Wang, H. Liu, B. Li and L.B. Mao	188
The Influence Analysis of Geometric Parameters on Piezoelectric Vibration Control C.L. Shen, Y. Han, X.W. Song and D.X. Wang	193
Design of a Fuze Power Supply to Small Caliber Time Fuze L. Hong, H. Zhang and H.J. Li	197
A Novel Tilting Mechanism for Side Discharging Lorry P.Z. Li and R.R. Wang	201

Chapter 4: Sensor Technology

Model-Based Analysis of Reflection-Mode Fiber Hydrogen Sensor M.Y. Liu and Y. Liu	207
Development of Underwater Acoustic Transducer Using 1-3-2 Piezoelectric Composite L. Li, L.K. Wang and L. Qin	211
Design of Digital K-Type Thermocouple Temperature Transmitter Y. Li and L. Zhang	217
Calibrating the Precision of a Contact Sensor for Displacement with a Piezo Nanopositioning Stage G.F. Shi, W. Xiao and G.Q. Shi	221

Design of Conditioning Circuit of Mining Vibration Acceleration Sensor X.D. Ji, Z.X. Yang, X.Y. Zhao, G.H. Xue and M. Wu	225
Resource-Constrained Wireless Sensor Network Information Decision Fusion in Ocean Environment X.G. Yuan, D.Z. Feng, J. Deng and Y.J. Bai	229
Study on Non-Contact Optical Vibration Sensor K.X. Sun, X.J. Li, M. Li, Q.Y. Yan, X.F. Cheng and H. Zheng	233
Investigated Solution Concentration Sensor with the Single Mode-Multimode-FBG H.L. Jin	237
The Applied Model and Simulation for MEMS Vibration Accelerometer Sensors C.J. Deng	241
Design and Fabrication of Magnetic Sensor Based on the Phase Characteristics of GMI S.S. Wang, X.S. Ning and T.F. He	246
Optimal Sensor Fusion in Redundant Inertial Measurement Unit X.Q. Dai, L. Zhao and Z. Shi	250

Chapter 5: Voice, Image and Video Processing

A Simple Deterministic 0-1 Measurement Matrix for Robotic Embedded Vision Compressed Sensing J.Z. Liu, R.Y. Ma, Y.B. Mo and M.L. Jin	257
Human Body Segmentation Based on Shape Model and Level Set Y.N. Deng and X.M. Hou	261
Algorithm of Lane Detection on an Appropriate Limited Region X. Ma, C.Y. Mu, C.T. Zhang and L.M. Zhang	267
Study on Image Corner Extraction Based on the Improved Canny Edge Detector M.M. Chen, Z.Y. Lei and M. Lei	273
A Pattern Recognition Method Based on Modified Perception Algorithm Y.H. Zhang, J. Cao, Q.C. Li and Q. Wang	277
Sub-Pixel Edge Detection of Color Image Based on Dimensionality Reduction Technique and Curve Fitting F. Xiao and L.N. Guo	281
A Novel Threshold Selection Method Based on Iterative Clustering Strategy J.G. He	288
Video Synopsis Generation Using GPGPU Z.Y. Wang	297
A New Adaptive Image Denoising Method Based on Wavelet Packet Transform and Neighbor Dependency B.W. Huang and Y. Jiao	301
An Improved Compressive Sensing Image Fusion Algorithm Based on NSCT Transform Y.H. Wu, D. Yan, M.X. Ma and N. Wu	306
3D Subtitles Superimposed Technical Overview X.Y. Zhang, S.B. Li, S.Z. Lan and J. Wang	310
Adjustment Method between Phonological Attributes and Phone Boundaries L.H. Zhang, Q. Chen and D. Qu	316
Study on Compressed Sensing Recovery Algorithms Y. Zhu, Y.X. Jia, C.Z. Rong and Y. Yang	322
An Efficient Multi-Hypothesis Temporal Error Concealment Method for H.264 X.F. Zhan	326
Research on Image Scene Semantics Recognition System L.J. Yin, Y. Zhen and Q.L. Fan	330
Learning Facial Expression Codes with Sparse Auto-Encoder D.K. Hu and G.D. Duan	334
Thenar Palmprint Image Denoising Based on Intermediary Filter Y.M. Dai and X.J. Zhu	338
Application of Image Process Technology in Diagnosing the Fetal Brain Malformations Y.X. Song, R.T. Wu, L.X. He and A.M. Chen	342

Liver Parenchyma Segmentation by FCM-Based Confidence Connected Region Growing Method	
Y.X. Sun, L.P. Huang, L.P. Liu, T.J. Guan and Q.Y. Huang	348
Detecting Tower Cranes in Images	
H.M. Yin	353
Research of the Evaluation Function Based on Improved Neighborhood Difference Operator	
C.Y. Wang and L. Ye	358
Insulator Recognition Based on Moments Invariant Features and Cascade AdaBoost Classifier	
S.Y. He, L. Wang, Y. Xia and Y.D. Tang	362
An Improved Approach of Mutual Information Based Registration for Medical Images	
S.S. Guo, Y. Xia and K.Q. Wang	368
Image Quality Assessment Method Based on Fractional Fourier Transform	
B. Wang	372
The Analysis and Application of the Third Dimension Speech Signal Spectrum	
G. Niu, W.B. Cao, Y.J. Zhang, G.S. Chen and Q.K. Yang	376
An Image Filtering Algorithm for Removing Mixed Noise	
M.X. Chu, A.N. Wang and R.F. Gong	383
The DSP Low SNR Speech Enhancement System Based on Two-Level Wiener Filtering	
G. Niu, W.B. Cao, G.S. Chen, Q.K. Yang and Y.J. Zhang	389
Detection Model of Knotty Illicit Image	
Y.G. Li and H.M. Yin	395
An Image Enhancement Method in Mixed Space	
Q.L. Li, L.S. Li and F. Xiao	400
Center-Symmetric Local Nonsubsampled Contourlet Transform Binary Pattern Histogram Sequence for Face Recognition	
R.B. Huang and X.Q. Liu	405
Efficient DCT Domain Transcoding from MPEG-2 to H.264 for Intra Mode Video	
G. Wei, G. Yang and Y.D. Zhang	412
Speaker Localization in Reverberant Noisy Environment Using Principal Eigenvector and Classifier	
X.W. Wan and J. Liang	416
A Study on Speech Recognition for Design Intent of Geometric Modeling Using HMM and its Application	
F. Chen, Z.W. Wang, S. Yang and Y. Tian	420
Research on Bolt Crack Detection Method Based on Image Processing	
J.Q. Liu, B.F. Zhang, Y.Z. Wang, G.Y. Li and J.R. Han	426
On Encryption of Data by Compressed Image with Embedded User's Information	
D.Y. Yang, Y.K. Hou and X.Z. Li	430
Study on Skeletal Animation in Virtual Reality	
N. Jiang and W. Zhao	434

Chapter 6: Signal Processing System

A Design of Underwater Acoustic Signal Acquisition Module	
H.N. Bian, Y.M. Li, L.L. Wei and Z. Liu	441
The New Optimization Approach to Improve SNR in Periodic Signal Input/Output System	
G.J. Yu and K.P. Weng	445
Research on Weak Signal Detection by Adding Noise to Cascaded Stochastic Resonance Step by Step	
S.L. Tu, Z.Y. Wu and Z.Y. Wu	450
Hyperspectral Data Analysis for Detecting Lead Pollution in Rice	
W.H. Zhu and C.Z. Xu	456
Manipulation of Microparticles Using Acoustic Standing Wave: Recent Trend	
H.Y. Yin, C.C. Zuo, H.C. Wang and Y.P. Meng	460

Research on the Power Prediction of Photovoltaic Power Station Based on LMS Adaptive Filter	
H.L. Zhu and J.X. Yao	464
Identification of Power Quality Disturbances Based on EEMD and TEO	
S.J. Wang, Q.F. Liao, D.C. Liu, Y.T. Zhou, B.K. Xu, Y.F. Wang and L. Lu	469
A Feature Extraction Method of Gear Fault Based on the SVD EMD and Morphology	
G.Y. Hou, Y. Lv, H. Huang and Y. Zhu	477
Study of the Fault Diagnosis Based on Wavelet and Neural Network for the Motor	
K.Y. Shao, L.J. Han, X.M. Wang, F.W. Zhang and K. Qian	483
Numerical Simulation of Underground Plant Rhizome Detection	
S.L. Du, S.S. Peng, F. Xu and L. Wu	489
Research of Fault Diagnosis of Coalmine Motor Bearings Based on Scale Adaptive Lifting Wavelet Transform	
J. Wu, N. Wu and F. Lv	494
Research on Algorithm in Fast Modular Exponentiation Based on FPGA	
L.Q. Zhao, S. Li, Y.X. Chen and D.J. Liu	499
Target Tracking in Sensor Networks Using Additive Divided Difference Information Filtering Method	
D.J. Lee, K.T. Chong and D.P. Hong	503
ECG Denoising Based on MP Algorithm	
A.Y. Wei	510
Research on the Approximate Establish Condition of the Scattering Center	
Z.C. Liang, W. Gao and X.B. Wang	514
Design of Multi-Parameter Environmental Monitoring Instrument Based on Labview	
C.F. Guo, A.Y. Wei and X.Z. Cheng	519
Different Code Rates of LDPC Decoding Based on CMMB Standard	
S. Liu, J. He and X.Y. Xu	527
Estimates for Multilinear Hilbert Operators on Morrey Spaces and the Best Constants	
W.H. Gao and P.X. Ye	531

Chapter 7: Artificial Intelligence and Computational Algorithms

Generation and Implementation of Grasping Rectangle Based on Hierarchical Shape Context and Kernel Density Estimation towards Robotic Grasping Unknown Objects	
G.L. Kang and S.Y. Qin	537
Demand Forecasting Model of Port Critical Spare Parts Based on PSO-LSSVM	
Z.J. Song, Z. Fu, H. Wang and G.B. Hou	545
Evaluation Study of Grounding Grids Based on Gray Clustering	
J.X. Cui and J.Y. Du	550
A MSVM Quality Pattern Recognition Model for Dynamic Process	
Y.M. Liu, H.F. Zhou and S. Zhang	555
The Research of Timing-Optimal Trajectory Planning Based on Improved Genetic Algorithms	
Z.J. Gou	562
A Master-Slave Model NGA and its Application in the Multidimensional 0-1 Knapsack Problem	
Z.B. Man and T.H. Zhao	566
An Idea of the Topological Inductive Logic under the Inadequate-Cognition-Oriented	
B.F. Liu, S. Xu, X.L. Ma and K. Xu	570
Some Applications of the Causal Statement Logic Programming in Machine Language	
X.L. Ma, B.F. Liu and S. Xu	574
An Idea of Dynamics Inductive Logic in Complex Cognition	
S. Xu, B.F. Liu and X.L. Ma	579
The Research of PID Controller Tuning Based on Parallel Particle Swarm Optimization	
X.G. Han, F. Wang and J.W. Fan	583
Task Cooperation and Behavior Coordination of Multi-Robot Environment Exploration Based on Artificial Potential Field	
C. Li and S.Y. Qin	587

A Novel Efficient Stopping Criterion for Turbo Codes Y.N. Ru and J.P. Li	595
A Novel Algorithm to Improve Network Lifetime of Wireless Sensor Networks R. Ma, Y.C. Liu and C. Wang	599
Personalized Recommendation Research in E-Learning Systems B. Wu and P.P. Chen	603
Fault Diagnosis for Aircraft Engine Based on SVM Multiple Classifiers Fusion F. Tian, W.J. Li, Z.G. Feng and R. Zhang	607
Passenger Flow Forecast of Urban Rail Transit Based on Support Vector Regression B. Xia, F.Y. Kong and S.Y. Xie	612
CS-UWB Channel Estimation via Optimized Sensing Matrix F.H. Fan	617
Optimization of Greedy Pursuit Algorithms Based on Probability Analysis Y. Zheng and T.J. Cai	621
Public Opinion Hotspot Discovery Algorithm Based on Fuzzy Clustering LDA H.X. Wan and Y. Peng	626
Application of Neural Network in Fault Diagnosis of Anti-Lock Braking System W.X. Zhang, D. Yang, Y. Wang and H. Guo	630
An Improved Log-MAP Algorithm For BICM-ID Embedded Turbo Codes J. Wang and J.P. Li	634
Solving the Job-Shop Scheduling Problem Based on Cellular Genetic Algorithm M.Y. Wen, Y. Zhang, F.J. Hu and Z. Liu	639
Intelligent Control and Application of Heat Exchange Station Based on Heating Quality W.B. Wang, Y. Sun, S.Y. Wang and S. Meng	645
The Optimization Design of I-Beam Based on Multi-Objective Cellular Genetic Algorithm Y. Wang, Y. Zhang, Z. Liu and F.J. Hu	651
Path Optimization of Container Multimodal Transportation Based on Improved Genetic Algorithm J. Li, Y.F. Yang and H. Liu	657
A Study on Particle Trajectory of Particle Swarm Optimization Z.Z. An, H. Zhou, Y. Yang and X.L. Shi	662
Detection of Indoor Robot's Passable Areas Based on a Single-Line Structured Light X.R. Mao, X. Yuan and C.X. Zhao	667
Research on the Active Value-Added Services System Based on Grid Collaboration C. Fang, H. Li, J. Zhou and M.Y. Zhao	676
A New Generation Diagnosis System Based on Artificial Neural Network in Diagnosing Child Attention Deficit/Hyperactivity Disorder (AD/HD) N. Wang	681
Hailstone Classifier Based on Back Propagation Neural Network X.Y. Liu, H.S. Wan, Y.Y. Zhang and S.M. Jiang	685
Study on Power Transformer Fault Risk Assessment Method Y.X. Cao, X. Shen, Q. Peng, F. Liu, X.H. Yan and H.L. Zhang	691
Research of an Improved Snail Image Recognition Method Based on Grayscale Template Matching Y.E. Zhang	700
Application of Probabilistic Neural Networks in Fault Diagnosis of Three-Phase Induction Motors S. Ding, X.H. Chang and Q.H. Wu	705
Nonlinear Noise Canceller by Neural Network with Variable Step Size S.Z. Zhang	709
Agricultural Information Service Quality Evaluation Algorithm Based on Genetic Algorithm, BP Neural Network and Multiple Regressions C. Chen and H.R. Wu	713
The Optimal Allocation of Finishing Train in Steel Rolling Based on Improved Genetic Algorithm H.X. Liu and X. Chen	720
An Empirical Analysis of Similarity Matrix for Spectral Clustering S. Zhang, X.Q. He, Y.G. Liu and Q.C. Huang	725

A Time-Varying Data Classification Approach Based on ANN with Slide-Window A.P. Chai	731
Target Threat Assessment Based on Intuitionistic Fuzzy Sets Choquet Integral J. Huang, B.C. Li and Y.J. Zhao	736
Complex Fault Diagnosis Based on Immune Principle J. Cen, X.H. Zhang, D. Xiang and X. Lu	744
WSN Localization Algorithm Based on Fast SVM F. Zhu and J.F. Wei	750
The Research of Power Battery SOC Estimation Based on Adaptive Kalman Filter Algorithm W.B. Yu, T.T. Yang, C.Y. Feng and H.J. Li	754
Experimental Vision-Based Target Positioning by PI Micro-Robot W. Song, X. Liu, Y.N. Zhang and L.Y. Shen	760
The Unique Representations of Fuzzy Entropy for a Finite Fuzzy Set M. Qing	766
An Improved Artificial Fish Cluster Behavioral Model and its Simulation H.C. Yuan, S.H. Huang and Y. Chen	770
Multi-Device Health Management Based on Elman Neural Network L. Gao, J. Li, J.L. Zou, F.Y. Sun and Z.Y. Lei	774
An Object Classification Approach Based on Randomized Visual Vocabulary and Clustering Aggregation L. Su, J.N. Liu, L.F. Ren and F. Zhang	778
Review of Modeling Methods of Gene Expression Regulation Networks Y.D. Zhao and X.X. Qiao	783
Applied Research on Gene Expression Regulate Network by Complex Network Theory X.X. Qiao and Y.D. Zhao	788

Chapter 8: Measurement Technology, Testing and Instruments

Study of Phase Function of the Biological Cell Q.Y. Cui, Y.W. Wang and M. Bu	795
Relative Pose Estimation under Monocular Vision in Rendezvous and Docking H. Pan, J.Y. Huang and S.Y. Qin	799
Research for Total Nitrogen Detection System Based on Electrochemical Method Z.Y. Song, C. Bian, Y. Li, J.H. Tong, J.Z. Sun and S.H. Xia	806
Design and Analysis of a Multiple-DOF Bipedal Gait Test System Y.C. Mao, D.J. Juan, S.A. Wen, W.C. Tsai and J.T. He	812
Real-Time Monitoring of Degradation of Zirconia Ceramic by Acoustic Emission K.G. Wu, C.Y. Choe, S.M. Lee, J.A. Yoo, C.Y. Hyun, D.P. Hong and J.W. Byeon	816
Design and Performance Testing of Proportioning Weighing Instrument Based on Position PID D. Han, C.X. Xue, Z. Weng and L.H. Li	821
Design and Implementation of Galvanized Groove Detection Electromechanical System J.Q. Liu, B.F. Zhang, Y.Z. Wang, J.R. Han and G.Y. Li	825
Research on the Law of Time Workshop Temperature an Humidity Reach Standard with Environment Y.F. Xia, B. Huang, Z.Z. Hou and L. Jia	829
The Method of Fast Frequency Response Testing Based on LabVIEW F. Tian and H.J. Si	833
Study on Calibrating Neutron Velocity Selector of Small Angle Neutron Scattering Instrument Z.X. Yu, Y.T. Liu, H. Cheng, L. Zhang and D.F. Chen	837

Chapter 8: Measurement Technology, Testing and Instruments

Impact of Frame Positioning Errors on Fuselage Panel Assembly Variation W.M. Yan, Y.B. Bi, X.T. Fan, K.P. Du and W. Wang	847
--	-----

Optimization of Measuring Points Based on the Grey System Theory for Spindle of Machining Center C.L. Zhao and X.S. Guan	852
MOA Resistive Current On-Line Monitoring and Expert Diagnosis System M.M. Wu, J. Xu and B. Yi	856
Accurate Shadow Modeling Algorithm for Simulation of Fringe Projection System W.G. Li and S.J. Duan	861
Efficient Line-Surface Intersection Point Computing Algorithm for Simulation of Fringe Projection System W.G. Li and S.J. Duan	865
Design and Performance Evaluation of MR Tactile Device for Medical Application J.S. Oh, Y.M. Han and S.B. Choi	869
Design and Analyze of Optical System for High-Speed Three-Channel Framing Camera C.Y. Liu, T.Q. Xu and Z. Xu	873
Study on New Measurement Method for Visual Contrast Sensitivity J.Y. Zhang, B.Y. Hong, W.L. Liu and T.G. Zhou	877
Uncertainty Estimation of Probe Calibrations Using a Power Flux Density System of (18~26.5) GHz J.Y. Li and M. Xie	882
Designing a Four-by-Four Keypad Arbitrary-Key-Entry Detector W.F. Huang	887
Experimental Study on Microwave Test of Cold Weld Defects in HDPE Piping Thermal Fusion Welds J.P. Pan, X.W. Zhu and L.J. Tan	895
Multi-Level Fuzzy Mobile Collaboration Performance Measurement Model W.H. Wang, Y.M. Hao, D.Y. Shi and Y.H. Cao	900
An Automatic Magnetic Permeability NDT Measurement Device for Cylinder Ferrimagnetic Sample S.S. Wang, M.J. Zhang, H. Hou and Q. Guo	904
Research of Spectrum Detecting Technology on Cognitive Radio H.Y. Mao	911
Research on Key Technology of Cold-Rolled Aluminum Plate Surface Defect Detection System H.L. Zhang, X.G. Qi and X.T. Li	915
A Novel Vehicle Reversing Speed Control Based on Obstacle Detection H. Xu and Z.T. Zhang	919
Application of Collision Detection in Visual Simulation System for Bridge Cranes M.X. Dong, M.M. Lu, R.C. Li, J.R. Tian, R.Y. Luo and M.S. Jiang	924
Review of Techniques for Driver Fatigue Detection J.Y. Zhang, W.W. Qiu, H.J. Fu, M.T. Zhang and Q.G. Ma	928
A Collision Detection Algorithm Based on Spatial Partitioning and Bounding Volume W. Zhao and L.M. Ye	932
Research on Collision Detection Algorithm Based on OBB X.J. Ding	936
Electromagnetic Interference Testing and Suppression Methods for Automotive Window Lifter Motor Q. Hou, Y.P. Jin and Y.F. Zhou	940
Design of Intelligent Surface Water Monitoring System L.P. Cheng, D.J. Huang and J.X. Zhu	945
A Novel Fault Phase Identification Algorithm Based on EMD Transient Energy X.C. Guo and L.L. Kong	950
Qualitative Simulation Theory and its Applications L.L. Deng and X. Zhang	954
The Fault Diagnosis for Warship's Power Plant Based on Association Rules Z.Q. Jia, Y.L. Gou, X.J. Han and L. Chen	960

Chapter 9: Automatic Control Technology

Study on IGMP for PLC in Intelligent Manufacturing System G.F. Wang	967
Advanced Control of Boiler Drum Water Level Based on Cloud Model Theories L.D. Kong, C.G. Tian, T. Han, Y.X. Guan and X.J. Han	971
Design of Process-Optimization Expert Control System for Vertical Sieve-Tray Tower and Grinding System H. Liu, J. Shen, C.M. Li, Z. Shi, J.L. Qiu and L.Z. Xu	976
Design and Implementation of Blank-Filling Test Module in the Theory Examination System for Tower Cranes M.X. Dong, J.R. Tian, R.C. Li, M.M. Lu, R.Y. Luo and M.S. Jiang	982
Variable Structure Guidance Law for Supersonic Missile to Maneuver in Large Airspace H.C. Zhao, X.X. Yang and Z.Q. Song	986
Direct-Drive Differential Volume Control Electro-Hydraulic Servo Control System Z.X. Zhang and T. Jia	991
An Improved Passive Anti-Islanding Technique for Distributed-Generation Photovoltaic Systems S.R. Zhang and S.Y. Li	995
Application on Two Degree of Freedom Model Driven PID in Liner First-Order Inverted Pendulum J.J. Shi, L.X. Zhang and A.Q. Jiang	1000
Security Risk Evaluation on Long Span Bridge Structure Based on Grey Fuzzy Theory Z.H. Yin, B. Yu and J. Lin	1005
Application of Super Twisting Guidance Law Based on Extended State Observer Y. Chong and K. Zhang	1009
A Gaussian Process Based Model Predictive Controller for Nonlinear Systems with Uncertain Input-Output Delay G. Shen and Y. Cao	1015
A New Direct Algorithm for Pole Placement by State-Derivative Feedback for Multi-Input Linear Systems Z.H. Gao	1021
Research on Color Characterization Model for Multi-Level and Multi-Color Printing System S.W. Yang, L. Lu, M.G. Wu and Z.J. Zhang	1025
The Research of SINS Algorithm Based on Screw Compensation M. Jiang, Y.D. Chen and S. Jiang	1033
Double-Hysteresis Current Control Strategy of PWM Rectifier W.S. Bu, L.L. Xu, X.B. Wang and X.W. Niu	1037
Crime System Simulation and Control Based on Mapping and Inversion Mechanism L.H. Duan	1045
Application of Double Cross Limit Control on the Combustion Control System of Heating Furnaces W. Huang, S. Ding, H.G. Yan, L.M. Jiang, T.Y. Li and L. Zhang	1049
RBF-Elman Neural Network Control on Electro-Hydraulic Load Simulator X.H. Wang, S. Wu and Z.X. Jiao	1054
Optimal Control of Distributed Generation System: The State of the Art H. Liu, Q.F. Du, Y. Song and W. Guo	1061
A GPVSC Controller for Batch Dyeing Process Based on Integrated Model Y.X. Zhang and J.X. Zhang	1065
Sliding Mode Control for Magneto-Rheological Vehicle Suspension Accounting for its Nonlinearity Y.L. Zhang	1072
Fast Terminal Sliding Mode Control for the Ship Steering Problem A.O. Vweza, D.J. Lee, D.P. Hong and K.T. Chong	1078
New Theorem for Asymptotically Stability for Time-Delayed Systems Based on LMI C.H. Song	1086
The Research of Air Precooling System Based on Generalize Predictive Control Strategy W.B. Yu, C.Y. Feng, T.T. Yang and H.J. Li	1091

The Electro-Hydraulic Synchronization Position Servo System Based on Self-Adapting Fuzzy Decoupling Controller F. Liu and L.H. Lai	1099
Research on a Comprehensive Evaluation Method for Multidrop Overload Control Y.T. Zhou, F. Tang, J. Zhao, S.J. Wang, Y.J. Wang, J. Yang and H.L. Wang	1103
Design of Centralized Control System for Multimedia Classroom H.F. Wang, X.H. Li and X.M. Liang	1109
A Design Method for Time Sequential Synchronization of Semi-Physical Simulation on Guidance Weapon System R.K. Jiang, D.W. Li and L.Z. Cui	1115
Building Equipment Intelligent Control Network Using Multiplexing M.R. Li	1119
Reentry Landing Boundary Prediction D.W. Li, R.K. Jiang and B. Liu	1123
Process Analysis for Spindle Support Rolling Thread Y.B. Shi and S. Yang	1127
New Approach to Non-Fragile Control of Uncertain Fuzzy Systems with Time-Delay L. Li	1131
Research of the Dissolved Oxygen Intelligent Control System in the Aeration System of Wastewater Treatment H.Z. Dai, M.J. Huang, C. Li and Y.N. Zhang	1136
A Design of Current Loop for Motors Control System Based on SVPWM Q.L. Han and X. Wang	1141
The Research of Fixation Method in Tea Processing Based on Fuzzy Control J. Zhang, Y.T. Lan, C.B. Shao and Y. Wan	1145
Research on Single Channel Rolling Control for Fixed Canard Rudder Y.B. Cui, X. Chen and J. Xu	1150
Decoupling Control Strategy of Three-Phase Bearingless Induction Motor W.S. Bu, C.L. Zu, C.X. Lu and X.W. Niu	1154
Motion Performs Evaluation of a Numerical Machine Tool Based on Extenics Theory C. Liu and X.L. Bu	1161
Design and Experiment of Test-Bed for Straw Compression Forming and Baling L.Z. Xu, Y.M. Li, J.J. Yin and C.H. Wang	1165
Research on Dynamic Simulation of AUV Launching a Towed Navigation Buoyage G. Pan, Z.D. Yang and X.X. Du	1170
The Design of the Synchronously Simulation System for Acceleration and Air Pressure F. Ou, H. Chen and Y. Chen	1175

Chapter 10: Electric Automation

A Reference Compensation Current Control of Grid-Connected Inverter for Three-Phase Distributed Generators S.R. Zhang and S.Y. Li	1183
Design of Monitoring System Based on Android Platform and GPRS X.Q. Liu, Q.F. Chong and X.S. Lu	1188
GPRS-Based Remote PLC Multi-Parameter Monitoring System X.Q. Liu, X.S. Lu and Q.F. Chong	1192
Modeling and Power Control of Energy Storage System for Wind Park Based on Vanadium Redox Flow Battery X.D. Wang, L. Zhang, H.F. Xie, Y.M. Liu and X.W. Song	1197
On Implied Defect in Elevator Control Software which Causes the Lift Car suddenly Reverse its Direction W.Y. Xie and Y.Y. Ma	1201
Takagi-Sugeno Fuzzy Control and Lyapunov-Based Stability Control of the Single-Phase Shunt Active Power Filter L.F. Li, W.M. Guo, B.Y. Xu and M. Ma	1206
Modified Direct Power Control for LCL-APF without Harmonic Current Detection Z.Y. Li, Y.X. Luo and L.F. Shen	1210

A Novel Design of Soft Switching Based on Three-Phase Current Source Inverter Z.H. Shen, L. Yang, Q.X. Liu, W.L. Zhu, C.X. Jiang and X.K. Chen	1218
Shipboard Power System Restoration Using S-Curve Inertia Weight Particle Swarm Optimization Y. Chen, Y.C. Liu, C. Wang and L.X. Shen	1226
Exploration of AGC Control Mode for North China-Central China-East China UHV Synchronous Power Grid J. Zhou, K. Wang, Y.P. Li and D. Zeng	1230
Design of Time-Domain Airborne Electromagnetic Full Bridge Boost Switching Power Supply B. Han, S.B. Yu and H. Sun	1237
The Design of DC Servo Motor Control System Y.M. Dai and C.C. Zhu	1241
Research on Distribution Transformer Condition Assessment Method Considering State Variables Dimensionality Reduction H.F. Liang and Z.X. Liu	1245
An Improved Maximum Power Point Tracking Method X.C. Zhao, Y.R. Zhao and Y.H. Zhao	1250
Analysis on Power Grid Vulnerability Considering Cascading Failure of Branch X.C. Huang, H. Qi, X.P. Zhang, L.F. Lu and Y.Y. Hu	1254
Design of LCL-Filter with Active Damping for Active Power Filter L.P. Wang, Z. Tang and W. Gao	1258
Research on Flexible Grid-Connection Control Strategy of Distributed Power in New Energy Micro-Grid G.W. Hu, L. Wang and Y.J. Wang	1263
A Design of SCR Three-Phase AC-Voltage Regulator Simplify Circuitry Based on STM32 MCU G.S. Zhou, T. Ya, S. Hua and S.K. Zhao	1271
Detection and Localization Method of Power Quality Disturbance Based on Improved TT-Transform Y.L. Song, R. Tao and A.N. Wang	1276
Adaptive Synchronization Control of Uncertain Load Power Systems D. Liu, G.P. Zhou, Z.Y. Wang and H.Y. Sun	1282
Sliding Mode Dynamic Torsional Load Control of Double-Fed Wind Turbine Drive-Train X.J. Yao, K.C. Ma, J.S. Zhu and Q.D. Guo	1288
The Research of Model-Free Adaptive Control for Large Scale Wind Turbine X.J. Yao, J.S. Zhu, K.C. Ma and Q.D. Guo	1293
Analysis of SVPWM with Minimum Switching Losses for Multi-Modular Converter X.P. Zhu	1298
Design on Embedded Driving and Control System for Direct Current Servo Motor C.X. Wang, X.M. Bai and F.D. Lv	1307
Study on Splitting Criterion Based on Improvement $ucos\phi$ J. Yang, Q.F. Liao, F. Tang, Y.F. Wang, Y.T. Zhou and L. Tu	1313
Research on Effects of STATCOM on Voltage in Wind Farm Based on PSASP W. Zheng, S.Q. Li, Y. Zhi, R.Q. Bai, C. Liang and J.R. Wan	1320
Research on MCR Type Static Var Power Compensator Device in Wind Farms W. Zheng, L.G. Shi, S.Q. Li, Y. Zhi, R.Q. Bai, C. Liang and J.R. Wan	1325
Research on Coordinated Control of Reactive Power and Voltage in Large Scale Wind Farm Groups Z.Y. Xu, B. Meng, J. He and S.H. Jiao	1330
Synthesized Power and Frequency Control Method of Wind Power Generation System Assisted through Battery Energy Storage System W. Li, Y.T. Li, Y.Y. Ge and Z.X. Xing	1336
Optimal Feedback Excitation Decentralized Coordinated Control Model of Multi-Machine Power System X.C. Huang, H. Qi, X.P. Zhang, L.F. Lu and Y.Y. Hu	1343
Dissipation Analysis of IGBT Module in FB-ZVZCS-PWM Converter X.Z. Liu, R. Jin, K.S. Yu, L.J. Xie, H.L. Bao, Y. Zhang, J. Liu and J.J. Che	1347

Chapter 11: Intelligent Traffic Control

Detection of Traffic and Road Condition Based on Adaboost S.J. Jia, Y.T. Zhai and X.W. Jia	1357
Urban Rail Traffic Organization Scheduling Adjustment Method M.H. Zhou	1361
Improved Urban Transport Optimal Path Based on Ant Colony Algorithm J. Zhang, X.Y. Fan and Z. Deng	1366
Analysis of the Public Transport Network of Shenyang as a Complex Network D. Wang and X. Li	1370
Forecast of Bus Passenger Traffic Based on Exponential Smoothing and Trend Moving Average Method S.Y. Ge, C.J. Zheng and M.M. Hou	1374
A New 3D GIS Development Technology Research Based on the Sketchup and SuperMap Platform B. Wu, S.K. Duan and L. Liu	1379
Research on Information Industry of Rail Transportation Z.Y. Liu, G.X. Yang and H.L. Jiang	1383
An Intelligent Recognition Algorithm on Traffic Safety States W.Z. Wang and B.H. Liu	1388
Influence of Integrated Multimodal Travel Information on Holiday Trip Chain Characteristics B.B. Wang, C.F. Shao, J. Li, X. Ji and C.Z. Xiao	1392
Study of Safety Warning Algorithm Based on the V2V Communication Network Y.N. Xu and F. Wu	1396

Chapter 12: Electronics Technology and Embedded Systems

Research and Development of Multi-Regional Monitoring Integration Technology Based on SIP Protocol S.J. Xu, W. He, S.M. Jiang, Z.Q. Wei, J.F. Zhang, J.Z. Zhang and L.P. Zhu	1403
Improving Program Performance via Auto-Vectorization of Loops with Conditional Statements with GCC Compiler Setting Q.S. Zhu	1410
Synchronous Information Transmission in the Embedded Equipment Management Information System Y.J. Zhou	1415
An FPGA Based Color Bar Signal Generator for PAL Standard Y. Liu, Y. Tie, M.L. Xiao and S. Na	1419
A Low Noise and Computer Controllable Oscillator for CPT Atomic Clock J. Xu, T. Lin and Z.Y. Gan	1423
Design and Implementation of Image Acquisition and Processing for TFDS Q.L. Zhang, S.L. Sun, T. Qu and D.X. Deng	1427
Simulation of Electrodes Configuration that Used in a MALDI-TOF-MS System Y.Z. Wang, Y. Yu, J.S. Xu and M. Wang	1433
Incorporating a 4x4 Keypad in a Simple Digital Clock W.F. Huang	1438
The Design of the Intelligent Health Information Collection Terminal which is Based on the Embedded Technology Y. Ding, S. Gang and Z. Wei	1448
The Research of Switch Control Module Based on Distributed Computer Interlocking System W.Z. Kuang and Y.J. Cao	1452
Research of PMSM Stator Current Collection System Design Based on C8051F500 and AD7865 G.D. Bai, J.H. Liu, W.G. Shan, B. Zhao, X.M. Zhang, Y.C. Bian, X.Z. Wang and Z.Q. Niu	1458

Y.L. Zheng, Y.M. Chen, J.W. Gong and J.G. Yao	1463
A Simple Equivalent Circuit for Small RFID Tag Antennas in Low Loss Dielectric Materials	
Y. Liao, Y. Zhang, K. Cai and W. Gao	1470
Communication Module of Solar Hot Water System Based on GSM Short Message	
P. Jiang, W. Shen and R.X. Chen	1474
Handheld Terminal Design Based on Wireless Sensor Internet for Contestants	
Y.Z. Sun, X.W. Han and C.T. Li	1478
Design of the Improved CPR Simulation Control System Based on Wireless Telemetry	
H.N. Li and Y. Hua	1482
Research on Junction Termination Protection Technology for 3.3 kV Power Devices	
H.L. Bao, Y.Y. Liu, W.Y. Gao, Y.H. Wang, R. Jin, K.S. Yu, Y. Zhang, J. Liu and J.J. Che	1486
Design of Gate Opening Apparatus Based on the Absolute Value Photoelectric Encoder of AVM58 Type	
Y.C. Wang and S.X. Luo	1492
Application of Embedded Technology and CAN Bus in Seismic Data Transmission in the Field	
J.L. Song, Y. Chen and D.H. Wang	1496
Discrete Memoryless Multiple-Access Wiretap Channel with Non-Cooperative Encoders	
B. Dai and Y.T. Wang	1502
A Method to Improve the Security of Screen Lock for Android Mobile Phones	
J. Zhang	1507
RFID-Based Intelligent Management System of Poultry House	
Q.F. Sun and H.H. Pan	1511
The Research on a Reactive Allocation Setting Method in Distributed Wind Farm Based on Reducing Generator Loss	
W. Li, N. Yan, Z.X. Xing and B. Zhang	1515
Design of SDLC Communication Module Based Windows CE	
Y.J. Piao, C.Y. Liu and W. Xu	1520
Research of Rain Attenuation of Ka-Band Satellite Communication System	
L. Rong	1526
A Simplified CE Stopping Criterion for BICM-ID System	
M.M. Li and J.P. Li	1530
A Mobile Monitoring Extension of PC-PLC Architecture	
H. Dong, Y. Liu, P. Li and Q.H. Yang	1535
A Low Complexity Implementation in Hardware on Simplified Log-MAP Algorithm for T-TCM Decoding	
J. Wang and J.P. Li	1539
Analysis on Reverse Intermodulation Generated by Co-Siting Multi Standard Base Stations	
X. Li	1545
The Structure Design of Low Frequency Electromagnetic Induction Heating System Based on Analysis of Thermal Effect	
J. Liu, X. Wang, S.M. Wang and H. Fu	1549
The Research on Electricity Behavior and Energy Saving Based on Disturbance Fuzzy Comprehensive Evaluation of Residential	
Y.C. Liang, T.J. Feng and J.Y. Wang	1554
Study on MEMS Gyro Signal De-Noising Based on Improved Wavelet Threshold Method	
Y.S. Shi and Z.F. Gao	1558
Intelligent Thermometer Design Based on SCM	
J.L. Zhang	1563
Research of Autonomous Navigation Path Planning Based on the Sage_Husa Adaptive Filter for Mobile Robot	
Y. Liu, D. Zhao, J. Zhang and Y. Zhang	1567
The Research on Static Characteristics of 1700V/100A Planner NPT-IGBT	
M.C. Gao, J. Liu, G. Zhao, J. Liu, R. Jin, K.S. Yu and H.L. Bao	1572

Chapter 13: Software Development and Application

A Service Publishing and Service Location Algorithm for Internet of Things S.R. Zhu	1581
Using Pop-Up Form in Web Applications B.Y. Lou, J. Zhao and S. Weng	1588
An Algorithm of LDA Topic Reduction Based on Rough Set H.X. Wan and Y. Peng	1593
Design and Implementation for the Firewall Policy Analysis and Configuration Tools J. Shi, S. Deng, W.M. Lin, T. Zhang, Y.Y. Ma and W.W. Li	1597
The Implementation of Rights Management of Network Teaching Platform with Role-Based Access Control G.Y. Han and X.Z. Li	1603
Research on Design of IETM General Developing Platform Based on GB/T24463 J.Q. Zhang, J. Zhang and H.Y. Zhao	1609
A Data Delivery Controller for Mobile Communication Based on Multiple Threads Mechanism K. Ni	1613
Distributed Customer Service Management for Internet of Things S.R. Zhu	1618
Building an Integration Mobile Portal in Digital Campus Y. Zhang, E.D. Ma, Y. Peng and Y.X. Li	1625
The Protection Strategy of Data Security Based on JAVA Stream Filtering J.B. Lin and J.A. Zou	1631
Design and Implementation of Construction Materials Quality Detection Management System Based on Visual C++ and Database Z.G. Feng and F.Y. Dai	1635
Research on Integrated and Comprehensive Service System of Operation and Maintenance of Petrochemical Units L.S. Li, J.Y. Cai and X.M. Hu	1639
Automatic Test Case Generation for Context Based Multiplicity Checking in UML W.F. Zhou, X.M. Li, S.Q. Lv and Z. Zhang	1643
Design of Zongzi Piecework System Based on PLC Y.G. Li, X.W. Gong and S.Q. Yi	1649
Snapshot Replication Method for Content Data in Social Networking Services X.M. Li, S.H. Gu, S.Q. Lv, X. Xu and W.M. Li	1653
Research and Development of the Sweater Mass Customization System Based on Android Y.M. liu, Y.G. Li and H.E. Wang	1658
Study on Application of Domain Ontology in Semantic Information Retrieval H.H. Yang and M.Y. Sun	1662
Research on Data Integration in Dataspace S. Jiang and S.J. Yu	1666
Development Trend of Computer Network G.R. Chen	1670
Network Security Vulnerabilities and Preventive Measures W.J. Zhang	1674

Chapter 13: Software Development and Application

ARP Fraudulence and Strategy in Local Area Network J.D. Wu and G.H. Huang	1681
On the W&R and RSI Expert Systems of Securities Software P. Wang and H.P. Huang	1685
Anatomy: Uncertain Data k-Anonymity Privacy Protection Algorithm X. Ren, B. Jia and K. Wang	1689

A New Virus Source Inference Model Based on Network Performance Estimation H.T. Zhu, W. Ding and J.H. Ni	1693
Cryptanalysis of a Remote User Authentication Scheme B.J. Wang and H.G. Zhang	1699
Neighbor-Referencing Cooperative Cache Policy in Content-Centric Network G.Y. Zhang, B. Tang, X.H. Wang and Y.X. Wu	1702
MARank: Algorithm of Microblogging Propagation's Node Influence Evaluation Based on User Authentication L. Wang	1709
A Simple Hole Filling Algorithm for Binary Cell Images H. Zhao and Z.X. Chen	1715
Network Security-Related Technology Research and Implementation J. Ruan, P. Zhang and H.B. Ding	1720
Closed Cube Algorithm Research for Distributed Storage J.S. Ding, J.G. You and S.L. Zhou	1724
The Improved AVS Intra Prediction Algorithm F.J. Li and Q. Chang	1730
Application of Two Dimensional Bar Code in One-Way Transmission System J. Du and N. Zheng	1736
File Transparent Encryption System Design Based on Security Directory Y. Wu and X.C. Chen	1742
The Design of Activity Record in C Language Compile Process Z.C. Song	1747
Research on Data Security Technology in Internet of Things Y.L. Zhao	1752
Design of Cloud Computing Resources Based on Web Access Model J. Wu, F.Z. Zhao and Y.D. Dong	1756
An Improved Model of the Internet Public Opinion Spreading on Mass Emergencies L. Ma, Z.T. Jia, H.Y. Sun and C. Yu	1760
An Enterprise Data Integration ERP System Conversion System Design and Implementation X.X. Huang and W. Zhu	1765
Development of the Virtual Designing and Manufacturing System Based on Microcomputer Platform Q.K. Chen and Q. He	1770
Design of Flexible Workflow Engine Based on .NET Y. Yu, Y.N. Liu and M. Li	1776
Parasitic Consideration of Package Design within Press Pack IGBT P. Zhang, R.G. Han, W.G. Liu, Y.Y. Su, R. Jin, K.S. Yu, J. Liu, H.L. Bao, Y. Zhang and J.J. Che	1782
The Study on a New Method of the Electronic Large-Scale Symmetric Structure Simulation L. Li, X.B. Wang, G.D. Tong and Z.C. Liang	1786
Self-Matching Space Tracking Ship Data Structure Design H.F. Li, W.K. Zhu, G.H. Xue, H.Y. Chen and L.P. Di	1790
The Analysis and Simulation of Stream Control Transmission Protocol H.M. Weng, M.H. Huang, H. Wang, C.Q. Xu and K. Liu	1795
Relational Database Watermarking Algorithm Based on Comparison Table M.T. Wang	1800

Chapter 14: Computer Application in Industry and Engineering

The Communication Protocol Design and Realization in the Testing System of Communication Devices W.B. Cao, G. Niu, G.S. Chen, G.X. Li and Q.K. Yang	1807
Construction of Drought Indices Based on Passive Microwave Remote Sensing AMSR-E Data over Huaihe River Basin J.W. Xu, P. Wang, J.F. Zhao and S. Liu	1813

Soil Moisture Prediction for Huaihe River Basin Using Hydrological Model XXT and TOPMODEL	1817
J.W. Xu, J.F. Zhao, P. Wang and S. Liu	
Quality Analysis Method of Tracking Information in Aerospace Flight Mission	1821
H.F. Duan, F. Sun and C.X. Xue	
Transformer Fault Diagnosis Study Based on Bayesian Case Library	1826
Q. Peng, X.H. Yan, F. Liu, Y.X. Cao and H.L. Zhang	
Research of Low Voltage Grid Harmonic Analysis Based on DSP	1832
X.C. Guan and X.J. Chen	
Research on Pipeline Gas Application System	1836
A.Z. Guo and G.L. Liu	
Weighted LDA Based Dimensionality Reduction for Ultrasonic Flaw Signal Classification	1841
P. Yang and Y.Y. Tian	
Application of Information Technology in Vocational Engineering Training	1845
Q. Zhang and T. He	
Component-Based FPGA Circuit Design and Verification for Robotic Systems Using JavaRock and ORB Engine - A Case Study	1849
T. Ohkawa, D. Uetake, T. Yokota and K. Ootsu	
The Agricultural Irrigation District Information System Based on Multi-Agent and GSM	1853
T.H. Zhao, P.F. Zhang and H.M. Hou	
Design, Modeling and Simulation of a Novel Omni-Directional Steering System	1857
X.P. Li and Z.T. Zhang	
The Absorbing States Based on Location Strategic Interaction on Endogenous Infinite Plane Lattice and the Stochastic Stability	1862
Z.H. Ji, H.W. Gao and C.R. Chen	
The Survey on Applications of Information Hiding Technology in E-Commerce Security	1866
Y.M. Chai, S.W. Zhu and W.Y. Han	
A Design Method for Management Information System Based SOA	1871
Q.F. Ma and G.L. Liu	
A Method of Data Integration Based on Cloud	1876
G.L. Liu and C.H. Yang	
Design of Distributed and Collaborative Agricultural Expert Decision System Based on Smart Phone	1880
H.B. Yuan, L. Li and H.H. Wang	
The Research on C2C E-Commerce Website Using Data Mining Tools to Improve the Network Marketing Effect	1885
L. Feng, Z.Q. Wen and J.M. Lin	
Parameters Optimization for Injection Molding Based on Digital Signal Processing	1890
W.L. Xie, S.Y. Zhou and Y. Hu	
A Numerical Method for Modeling Equivalent Conductivity of Closed-Cell Aluminum Foams Material Based on CST Software	1894
L. Dou, B. Chen and H.L. Chen	
Numerical Simulation of Residual Stresses Induced from Shot Peening with Finite Element Method	1898
L.J. Cao, S.J. Li and Z.C. Shangguan	
Augmented Reality for E-Commerce	1902
W. Shen	
Application of Vega Path Tool in Visual Simulation System for Bridge Cranes	1906
M.X. Dong, M.M. Lu, R.C. Li, J.R. Tian, R.Y. Luo and M.S. Jiang	
The Application of 3DS MAX in the Designing of the Steel Truss Welding Equipments	1910
D.P. Zhang	
Verification, Validation and Accreditation of Ship Electric Propulsion Simulation System	1915
B. Li, L.H. Li and F.M. Liu	
Research on Scene Simulation of Buoy Launched Device System	1921
G. Pan and J. Wei	
The Research on Real-Time Collision Detection of Large-Scale Complex Dynamic Scene	1926
W. Zhao and Y. Zhang	

Chapter 15: Fluid Engineering and Hydrodynamics

Study on the Generalized Darcy's Law for Bingham and Herschel-Bulkley Fluids J.W. Cui, Z.S. Liu and Y.C. Zhang	1933
CFD Based Study of Hydraulic Performance of an Air-Conditioning Drainage Pump X. Nie and D.G. Yang	1937
Evaluation of Coupled Rheological Equations L. Hou, P. Sun, J.J. Zhao, L. Qiu and H.L. Li	1943
Adaptive Generalized Predictive Control on Electro Hydraulic Servo Feeding System of Band Saw J. Ni and Z.N. Xia	1947
RSDA-PID Control on Synchro-Motion System with Four Cylinders J. Ni and J.C. Wu	1953
Numerical Analysis on the Internal Flow Field and Adsorption Performance of a Non-Contact Vortex Gripper Z.J. Zheng, D.T. Liang, B. Lu and J.H. Huang	1959
Study and Application on Hydrajct Multistage Fracturing Technology R.J. Xue, J.C. Guo, W.T. Fan and P.D. Zhang	1965
Study on Compensation Strategy to Eliminate Extraneous Force in Electro-Hydraulic Load Simulator S. Zhao, J.Y. Zhang, C.C. Li and M. Sun	1969
Steam Flow in Nozzle and the Nozzle Calculation Y.R. Wang and P.R. Wang	1975
Simulation Analysis of Viscous Effects on Dynamic Performance of Hypersonic Vehicle L.Q. Dou, Y.Y. Shen and B. Sun	1979
Numerical Well-Testing Model of Fractured-Well in Low Permeability Reservoir Based on Mutative Permeability Effect Y.C. Zhang, J.N. Zhou and J.W. Cui	1984
Numerical Simulation of Gas-Liquid-Solid Circulating Fluidized Bed (CFB) H.L. Li and Y.D. Li	1988

Chapter 16: Materials

Freezing Technology for Borehole Stability of Gas Drilling Z.G. Wang and Z. Wei	1995
Experimental Study of Optical Glass on Ultrasonic Assisted Grinding Process X.Y. Liu, L.F. Hou and R.P. Zou	1999
Microstructure and Oxygen Functional Groups on Modified Liquefied Wooden Activated Carbon Fibers with Hydrogen Peroxide W. Gao and G. Zhao	2003
Thermal Bending of Laminated Composite Plates by a Meshless Method S. Xiang and Y.T. Chen	2008
Research of Hollow Cathodic Auxiliary Plasma Nitriding of 38CrMoAl Steel D.P. Sun, C.X. Lin and P. Xu	2012
Experimental Study on the Compressive Strength and Frost Resistance of Rubber Concrete Q. Yu and W.C. Ye	2016
Interfacial Reaction Thermodynamics between Sn-Cu-Ag Solder and Ni Substrate H.Y. Xu, H. Wu, B.S. Xu and Y. Wu	2020
A Study on the Cutting Characteristics and Detection of the Abnormal Tool State in Turning of Ti-6Al-4V ELI H.G. Shin, S.H. Yoo, S.W. Park and D.P. Hong	2025
Corrosion Behaviors of U75V, U76CrRE Heavy Rail Steel in Simulated Industrial Atmosphere X.L. Wang, B. Song, Y.B. Li, S.L. An, J. Peng and G.P. Fu	2031
Automatic Wood Classifying System to Produce Renewable Fuels from Construction Waste S.H. Oh	2038

Effect of Material Properties on Cross-Section Deformation during Bending an Aluminum Extruded Section	
H. Hamano and H. Watari	2043
Research on Effect of Scanning Velocity on Laser Cladding AISI 304 Stainless Steel/Al₂O₃ Composite Coating	
P. Xu, C.X. Lin, X.P. Yi and C.Y. Zhou	2054
Study on Polishing Tool Contact Deformation for Large Robotic Aspheric Surface Compliant Polishing	
W. Chen, J.M. Zhan and M.Q. Zhang	2058
Ballistic Performance of Hybrid Structure Armor against Projectile	
Q. Wang, L. Yulei, J.J. Tang, X. Wang, X.Y. Jin and Z.Y. Liu	2064
Study on Cutting Tool Edge Location in the Process of High-Speed Rotation	
C.L. Zhao	2068
Effect of Alloy Composition on the Microstructure and Mechanical Properties of Al-Fe-V-Si Heat-Resistant Aluminum Alloy	
J.J. Tang, L.J. Fei, Z.H. Gong, X.R. Zhu and H.X. Shi	2072
Representation and Fabrication Method for Multiple Gradients FGM Part Based on Additive Manufacturing	
Z.Y. Zhang, D.F. Chen, J.Q. Hu, X.P. Wang and P. Chen	2076
Preparation Technology of Al-Fe-V-Si Heat-Resistant Aluminum Alloy with Single Roller Spinning Method	
J.J. Tang, Z.H. Gong, L.J. Fei, X.R. Zhu and H.X. Shi	2081
Influence of Humidity on Building Material's Radon Exhalation Rate	
D. Ji, Z.Y. Xu and Y.T. Zhang	2085
Simulation on the Temperature Field of Bobbin Tool Friction Stir Welding of AA 2014 Aluminium Alloy	
X.M. Liu, J.S. Yao, Y. Cai, H. Meng and Z.D. Zou	2091
Prediction for O-Ring Type Sealing Ring's Storage Life Based on Accelerated Ageing Data	
C. Peng, X.H. Gu and K. Xiao	2096
Assessment of the Cutting Tooling Effect on Turning Chatter	
J. Hwang, E.H. Jeong, E.S. Chung and S.Y. Liang	2101
Simulation Analysis of Battery Thermal Management System Using Phase Change Material (PCM)	
M.D. Li and P. Liang	2107
Application of Gray Level Co-Occurrence Matrix Method in Characterization of Cylindrical Grinding Surface Roughness	
Z.X. Chen and F.Y. Xu	2113
Development of Pneumatic Press Stroke Control through the Application of a Horizontal Cylinder	
S.H. Oh	2117
A Simulation Method of Pressure-Stress Affects Power Press Pack FRD Chip Forward Voltage	
G. Zhao, Y. Zhang, Y.Y. Liu, J.J. Che, W.Y. Gao, R. Jin and K.S. Yu	2121
Electrical Properties of PSZT Doped with Mn and Ce Elements	
X. Wang, H. Tian, F. Huang, M. Luo and D.Y. Zheng	2125
Shape Memory Alloy Driven Two-Way Deformation Structure Design	
D. Yu, Z.B. Chen, B.M. Zhang, Y.H. Jiao and L.X. Jin	2129
The Technical Viability of the Reuse of Recycled Concrete Aggregate (RCA) for the Production of Interlocking Concrete Paving	
M.C. Serpa, A.C.J. Evangelista, M.G. Miguez, R.D.T. Filho and D. Barroso	2134

Chapter 17: Research and Design in Mechanical Engineering

The Thermal Design of Surface Type Heat Exchanger	
Y.R. Wang and P.R. Wang	2143
Reconstructing of Mechanical System of Certain Centrifuge	
Q. Liu, Z.G. Deng and X. Xiong	2147

The Finite Element Analysis of Gasoline Engine Turbocharger Key Parts X.L. Liu, M.X. Liu and J.K. Gong	2151
Study on Thickness Control and Quantitative of Converter Lining H.X. Zhao, Z.F. Yuan, Y. Wu, Y.F. Pan, S.Q. Li, T. Qi and L.N. Wang	2156
Development on Shape-Adaptive Compliant Tool System Y.C. Zeng, J.M. Zhan and Y. Zhao	2164
The CFD Analysis of Gasoline Engine Turbocharger Compressor Based on NUMECA X.L. Liu, M.X. Liu and J.K. Gong	2169
Control of Position and Pose on Virtual Axis Polishing Process C.L. Zhao	2174
A New Flexible Track Automatic Drilling System Y.B. Bi, Y.H. Jiang, Y.C. Li, W. Wang, M. Gao and S. Li	2178
Piston Air Compressor Based on Symmetrical Double-Crank Link Mechanism X.M. Sheng, X.W. Hu and Y. Yang	2184
Research of Selective Laser Melting Rapid Prototyping System Q. Qin and G.X. Chen	2188
The Research on 200 Liters Large Material Barrels with Double L-Rings Drop Analysis D.Q. Zhang, J.H. Li and Y. Li	2192
Application of Ejector Technology to the Efficient Exploitation in the Low-Pressure Gas Well X.Y. Long, Z.J. Li and Y. Tian	2196
The Optimization Analysis of the Conditions for Optimal Parameter Combination of Husker Capacity by Response Surface Method Y. Wu, W.W. Wu and J.L. Ruan	2203
Goal-Driven Optimization Design of Lathe Bed Based on the Response Surface Method M. Cong, H.C. Wang, S.S. Li and D.S. Wang	2208
TE₀ Mode Resonant Properties of the Rubidium Clock Microwave Cavity Loaded with Ceramic Material X.X. Li, J.L. Lei and G.D. Ren	2213
Study on Underground Pipe Network of Radio Frequency Identification System J.H. Wang, X.B. Wang and J.M. Liu	2218
A Novel Fast Recovery Diode with Lower Emitter Efficiency Y.Y. Liu, H.L. Bao, W.Y. Gao, J. Liu, Y.H. Wang, R. Jin, K.S. Yu, Y. Zhang and J.J. Che	2222
A Survey of Underwater Wet Weld Seam Tracking Based on Ultrasonic Sensor B. Chen and J.C. Feng	2227
Refrigerant Air Conditioning Systems Operating in Coal Mine Feasibility Analysis Utilized M.R. Li	2231
Study and Simulation on Truck Front Suspension Using ADAMS W.N. Bao	2235
Finite Element Modeling and Analysis for a Certain Urban Bus Frame Y.H. Li, W.D. Luo and R. Zhou	2239
Study on Design of Color Guide System on Campus W. Xiao	2246
Heating Mode of Type I Ammonia-Water Absorption Heat Pump with Parabolic through Collector Z. Wang, B.F. Zhao and Z. Li	2250
A New Bionic Topology Optimization Method Based Model of Bone Adaptation K. Rahman, N. Helil, R. Imin and M. Geni	2254
Study on New Laboratory Scale Transverse Plate Electrostatic Precipitator Collecting Fly Ash C.W. Yi, T. Yin, H.Q. Huang, Y.S. Du and R.J. Yi	2260

Chapter 18: Structural Engineering and Architecture Analysis

Research and Development of Household Fire Refuge Cabin H.C. Yan, L.J. Li and J.G. Huang	2267
--	------

Optimization Analysis of the Wedge Block Surface of NYD Contact Backstop Q.W. Wang, M.H. Wang, D. Li, D.M. Wan and R. Meng	2277
Investigating Current Status of Container Housing G.J. Lim, J.S. Jeong, T.H. Jung and S.C. Kim	2282
Strength Analysis for Frame of Pavement Accelerated Loading Experimental Facility Q. Jia, H.J. Wang and X.Y. Guo	2286
Collapse Simulation of Plane Irregular Isolation Structures Subjected to Near-Fault Seismic Motion Y.F. Du, X. Zhu, H. Li and G.H. Wang	2290
Defensive Analysis of Bunker within Taiyuan Iron & Steel (Group) Co., Ltd W.T. Yan	2295
Finite Element Analysis of Prestressed Steel Reinforced Concrete Beam C.Q. Wang, Y.F. Zhu and Y.G. Shen	2302
A Novel Numerical Method for Ground-Coupled Heat Transfer Problems X.Q. Li, W.W. Wang, M.H. Li and M.Y. Zhen	2309
The Obstruction to the Use of Building Information Modeling in China H. Liu, Y. Liu and T. Xin	2313
Application of CFD Simulations in Studying Outdoor Wind Environment in Different Community Building Layouts and Open Space Designs K.L. Wu, I.A. Hung and H.T. Lin	2317

Chapter 19: Industrial Engineering and Production Operations Management

Main Existing Problems and Respective Countermeasures of Ground-Source Heat Pump Technique Applications Z. Li and W.W. Wang	2327
Comparative Analysis of Two Methods for Conduction Transfer Functions of Building Constructions X.Q. Li, W.W. Wang, M.H. Li and M.Y. Zhen	2331
An FPTAS for Uniform Parallel-Machine Scheduling Problem with Deteriorating Jobs and Rejection C.X. Luo	2335
D. Wu and C.X. Luo	2339
Research on Dynamic BOM Based on Manufacturing Resources of Supplier J.F. Tu and Y.L. Zhang	2343
An Adaptive Assembly Scheduling Approach in Knowledgeable Manufacturing H.X. Wang and H.S. Yan	2347
Application of Case Based Reasoning in Technology Industry Competency Development H.L. Hsu and L.C. Chao	2351
Research of Parts Inventory Classification and Management Strategy in Manufacturing Enterprises D.J. Xue, T.Y. Gao, G.Y. Mu and Y. Pan	2359
Scheduling Jobs on Dedicated Parallel Machines S.O. Shim and S.W. Choi	2363
The Financial Risk Assessment of Manufacturing Firms under the Supply Chain Environment L.J. Li and M.T. Si	2367
Real Estate Groups Core Business Process Design Based on BRI J.P. Yang, T. Xin and Y. Liu	2373
Influencing Mechanism of Productivity Load Ratio to Enterprise Business Efficiency J.F. Tu and W.D. Xie	2377
The MPS Model of Node Enterprises in Manufacturing Network under Uncertain Environment Q.S. Zhang and X.X. Qi	2381

The Measurement of Economic Growth Contribution Rate by Population Quality in China Base on Cobb-Douglas Model	2385
D.J. Liu	
Analyses on W&R and BIAS Expert System of Stock-Market Software	2391
H.P. Huang and P. Wang	
Design and Implementation of Supply Chain Integrated System Based on Internet of Things	2395
L.Y. Chu, X.Q. Chen and S. Dang	
Identify the Spatial Characteristics of Employment Density in Northeast China with Software GIS and Spatial Statistics	2401
X.H. Zhang, T.Y. Shen, D.C. Wang and H. Xu	
Improve the Mechanisms Product Yield through Cycle Time Optimization	2409
F. Xiong and J. Yao	
Modular Production Network and the Development of Strategic Emerging Industries in China	2413
H.J. Cao, D. Liu, H. Zhang and Y.Q. Zhang	
Research of Location Selection of Distribution Center for Service Based on Gravity Method	2419
S.J. Liu, Z. Wang, R. Miao, J. Xu and H. Huang	
Study on Decision-Making System and its Data Mining Application of Logistics Intelligent	2424
X. Wang	
Uniform Machine Scheduling Problem with Deteriorating Jobs and Rejection	2429
S.H. Zhao and C.X. Luo	
The Design and Implementation of New Energy Enterprise Internal Control Evaluation System	2433
Y.N. Wu, Y.W. Yin and L.Q. Jiao	

Chapter 20: Engineering Education

Fuzzy Evaluation on College English Teachers' Comprehensive Quality	2441
L. Rui	
DEA-Based Efficiency Assessment of Railway Diversified Enterprises	2445
L.S. Geng	
Research of the Condition and Strategy of the Network Information Literacy of the College Students	2449
F. Xu	
Engineering Training System for Jewelry Materials Majors	2454
T. He and Q. Zhang	
Establishment of NC Technology Specialty Practice Teaching System Based on PETOE	2458
Z.D. Jiang and Y.F. Jiang	
International Scientific Collaboration in Nanobiopharmaceuticals and Decision-Making	2462
Q.J. Zhao	
Information Equivalent of Content for a Physics Learning Module	2466
T.N. Gnitetskaya and E.B. Ivanova	
Issues in Students' Computer Skills	2471
T.N. Gnitetskaya and P.V. Gnitetskiy	
Research of Knowledge Management during Products Design Process	2476
D.J. Xue, T.Y. Gao, Y. Pan and G.Y. Mu	
Key Technology on Construction of College English Multimedia Teaching Website	2480
L. Rui	