Table of Contents

Preface and Committees

Chapter 1: Design and Modeling Technologies in Manufacturing Engineering and Processes, Power Engineering Applications

Analysis of Key Technology of NC Turning Machining C.X. Tian	3
Computer Aided Design of Auto-Location Head-Controlled Talking Machine for Visually Impaired People with Multiple Disabilities F.H. Yeh, H.S. Tsay and C.C. Yang	7
Design and Research of a Sliding Mode Observer Based on Line Back-EMF for Brushless DC Motors	
L.C. Ju, Z.Q. Wang and M.Y. He	11
Design of Phase Synchronization Unit for Active Power Filter in Superconducting Magnet Power Supply S.M. Chen and X.N. Liu	18
Distribution Law of Excavating Load of TBM Disc Cutter and Cutterhead X.H. Zhu, Y.M. Xia, T. Ouyang and K. Yang	22
Equivalent Modeling and Simulation of Large Photovoltaic Station H. Li, S.L. Pang and J.D. Huang	27
Fixtures Design Based on RP Technology Z. Zhang, D.T. Li, J.W. Deng, M.Y. Huang, X.F. Wan, Q. Wu and Y.D. Zhou	31
Modeling, Analysis and Synthesis of Hybrid System: A Review P. Mahemuti, L. Yang and L.L. Luo	36
Research Progress in Diamond Cutting Tool Materials and Preparation Technology G. Ma, Q. Wu, H.J. Ni and Y.D. Zhou	44
Study of the Active Power Filter for the Electric Vehicle Charging Stake C.P. Wang, S. Zeng and J. Liu	48
The Control System Design of the Pod Based on Fuzzy-PID B.G. Wang, Y. Liu, Y.B. Song, J. Wang and Z.G. Zhang	52
The Development and the Field Application of the On-Line Dry Ice Washing Vehicle System	
Z.Z. Li, F. Jiang, J.J. Zheng, J.M. Zou, C.G. Tu, X.X. He, Z.Z. He and W.J. Zhou	58
The Research on the Impulse Characteristics of the Extended Grounding Electrode in the Layered Soil	
J.J. Zheng, B. Cao, M. Liu, C.Z. Xia, C.G. Tu, J.M. Zou and W.J. Zhou	66
Forewarning of Cascading Failure Based on Comprehensive Entropy of Power Flow D.D. Zhu, W.Y. Liu, Q.C. Lv, W.Z. Wang and N.B. Wang	74
Power System Transient Stability Assessment Based on Critical Cutset Transient Stability Available Capacity	0.0
K. Wang, D.H. You, C. Long, P. Xu, L.L. Pan and L. Zheng	80
Research on Alarming Device for Warp Stop Motions of Computer Sewing Machines D. Sun, J.F. Ni, J.S. Wang and Z.H. Feng	84
Study on Risk Assessment of Power Transformer Based on Life Cycle Quality Information T.S. Bi and J.M. Chen	88
A Research on the Methods of Fatigue Analysis for Vehicle Body Based on Real Road Conditions	
X.C. Zhong, Z.Y. Wu and K. Song	93

Chapter 2: Robotic and Intelligent Automation, Measurement, Instrumentation, Detection, Monitoring and Recognition Technologies

A Mobile Robot Path Tracking Method Based on Fuzzy Logic and Artificial Emotion S.Y. Li	103
A Real-Time and Effective Object Recognition and Localization Method X.L. Ding, Q. Zhao, Y.B. Li and X. Ma	107
Analysis of Mine Hoist System Monitoring and Fault Diagnosis J.Y. Bai and L.P. Yan	113
Application of Multi-Sensor Data Fusion Method in the Ammonia Modification System H.L. Zhu, Z. Meng, Y.Z. Sun, W. Lu and Z.N. Zhu	118
Multi-Legged Robot that Can be Assembled by Two-Wheeled Self-Balance Robots S.H. Li and X. Song	122
On the Development of Precision Seeder Intelligent Monitoring System Controlled by Single-Chip Microcomputer Q.Y. Yin	130
Real-Time Time Synchronization Detection System Application and Analysis G. Qu, X.L. Bi, Z.Q. Ge, P.H. Zhang and H. Yuan	135
Recent Advances in Planetary Gearbox Fault Diagnosis M.H. Li	140
Trajectory Control of Museum Commentary Robot Based on Machine Vision W.T. Xia, Y.Y. Wang, Z.G. Huang, H. Guan and P.C. Li	145
OpenCV-Based Automatic Detection System for Automobile Meter Z.L. Hao, X.H. Chen, J.Q. Hu, X. Wen and X.D. Wang	149
A Research on the Trajectory Optimization Method of Automatic Feeding Ship Z.Y. Zheng, D.A. Zhao, Y.P. Sun, J.Q. Hong and H.G. Liu	153
A Self-Adaptive Corner Detection Algorithm for Low-Contrast Images L. Sun, J.C. Xing, S.Q. Wang and S.Q. Wang	158
Detecting Technology for External Anticorrosive Coating Defects of Buried Pipelines X.Z. He	165
Application of Support Vector Machine in Identifying inside Moldy Chestnut Using Near Infrared Spectroscopy	
J. Liu, X.Y. Li, W. Wang and J. Zhang Design and Simulation on Inspection Robot for High-Voltage Transmission Lines	169
Y.G. Wang, H.D. Yu and J.K. Xu	173
Finger Recognition and Tracking Algorithm Based on Single Optical Camera R. Nan and M.L. Yang	181
Optical Trap Stiffness Online Measurement System Based on FPGA P.F. Li, J. Li and C.L. Zhu	189
Study about Recognition of Digital Meter Dial Reading Based on SVM Z.Y. Tu, F.H. Ning and W.J. Yu	194
Chapter 3: Development Electrical and Electronics, Intelligent Information Methods and Algorithms in Systems Applications	
A Method for Measurement Traceability of Calibrator for Electronic Instrument Transformer Tester M. Lei, Y. Guo and X. Zheng	201
A Single-End Method for Fault Section Estimation in Distribution Network Using Wavelets L. Ye, Y.C. Song, C.H. Li and L. Wu	201
Analysis of Sequences Harmonics Measurement Impact Using Potential Transformers Grounded through Ferroresonance Eliminator Y.H. Chen, Y.C. Li, J. Wu and K.P. Liu	215
Anti-Collision Technique of SAW Tags Using Walsh Code S. Kang, J.L. Li, J.C. Xing, L.Q. Xie and X.B. Wang	222
Application of Rotation Vector in SINS Algorithms L.J. Wan and C. Dong	229
Calculation of Self-Healing Contract Resistance of Metallized Film Z.H. Kong, L.G. Wu, C.Y. Tong and Z.F. Luo	236

Majorized Algorithm and Best Efficiency Unbiased Estimation of Life Functions Parameter in Reliable Analysis of Existence and Life	
X.N. Xiao Real-Time Signal Denoising Algorithm in Wheel Force Transducer	240
D. Wang, G.Y. Lin and W.G. Zhang	244
Research on the Image Enhancement Algorithm of Pointer Instrument under Inadequate Light	
L. Zhang, J.L. Zhang, T. Rui, Y. Wang and Y.N. Wang	248
SINS Alignment Using Velocity Matching and Simplified Cubature Kalman Filter C.Y. Ran, X.H. Cheng and L. Wang	255
Parallel Programming and Optimization Based on TMS320C6678 X.G. Mou, G.H. Wei and X. Zhou	259
Speaker Identification Using a Novel Combination of Sparse Representation and Gaussian Mixture Models Y.J. Ma	265
Gliding Trajectory Optimization Method Based on Particle Swarm Optimization and Direct Shooting Method W.J. Zhang and F.F. Xiong	270
Research on Anti-Saturation Attack Model of Ship Formation for Anti-Ship Missile Targets J.Y. Zeng, J.L. Zhong, Y.P. Xie and X.L. Fan	276
The Effects of Noises in the Marr-Pirt Model H.H. Dong, L. He and H.W. Lu	282
Evaluation of Cyberwar's Synthetical Ability Based on TOPSIS Method J.P. Tian, S.N. Cao, J.X. Du, P. Chen and H. Zhan	286
Study on the Feeder Selection Method for 10kV Regional Compensation Type Dynamic Voltage Restorer	
H.Y. Zhang, S.J. Yao, Z.G. Zhu, J.W. Cao and Y. Liu	290
Chapter 4: Mechanical Engineering, Applied Mechanics and Dynamics Systems	
A Hydrodynamic Analysis of Offshore Platform Based on the AQWA S.M. Wang, B.F. Shi, Z.N. Lin and W. Zou	301
A Two-Stage Double-Acting Hydraulic Pump Based on Crank Rod in Series with Symmetrical Hinge N. Zhang, C.F. Sun, X.D. Cheng and W.W. Zhang	305
Computer Aided Optimal Design and Dynamic Analysis of Piezoelectric Braille Display Cell F.H. Yeh, H.S. Tsay and C.C. Yang	309
Dynamic Performance and Structural Optimization of Large-Scale Machine Table Z.L. Chen, L.H. Deng and C. Jing	313
Experimental Study of Compliant Mechanism Considering Thermal Effect W.F. Hou	317
Research on Inverse System Decoupling of Three-Axis Flight Simulator Based on the High-Speed Rotation Missile X.Y. Yan, B. Mo and Y.H. Li	323
Strength Analysis of the Railway Truck Body Based on ANSYS Z. Fang and M. Han	329
Application of Random Average Method in Remain Useful Life Prediction of Rolling Bearing	32)
Z.W. Wang, W. Li, G.B. Zhou and B. Wu	335
Chapter 5: Control System Modeling and Applications	
Chapter 5: Control System Modeling and Applications A Simple Improvement of Fuzzy Control on Converter Technique of Fan J.Y. Zhang	343

Milking Controller Design Based on Infrared Communication P. He, Y. Li, G.L. Gu and M. Wang	352
Multiple Control System Design for Superconducting Power Supply Based on RST	
Algorithm M.H. Song, J.J. Long and X.N. Liu	356
PLC Based Bottling Process Control System J.W. Zhu	361
Precise Control of High-Speed BLDCM Based on BP Neural Network Y. He, B. Mo and Y.H. Li	365
Research on Supervisory Control and Data Acquisition System Based on Stacker J. Ji and S.Z. Cao	370
Sliding Mode Control Based on Novel Nonlinear Sliding Surface for a Class of Time-Varying Delay Systems Q.F. Ren, C.C. Gao and S.H. Bi	375
The Kitchen Vehicle Pressure Autocontrol System Based on SC-UWB Technology of Internet Things H. Yang, H.Y. Zhang, Z.Q. Li and H. Yang	382
Simulation Research of Switching Power Supply Based on CMAC and PID Compound Control J.H. Fang, J.Q. Wang, Y. Xu and P.F. Hou	387
Application of Immune Algorithm Optimizing PID Parameters in Simulink S.B. Zhang	391
Research on Triple-Loop Control of BLDCM Based on Fuzzy PID Y.H. Li, B. Mo, Y. He and W.J. Zhang	395
Study on Direct Torque Control of Brushless Doubly-Fed Machine Based on Discete Space Vector Modulation	
W.J. Yang Design of BP Neural Network Controller for Infrared Seeker Servo System Based on	402
Stribeck Friction Model X.Y. Yan, B. Mo and Y. He	409
Vehicle Noise Main Control Technology and the Important Parts L.S. Xie, X.Y. Chen, C. Lin, T.L. Hu and L. Wang	415
Research on Pressure Control Method of some Wind Tunnel Spraying Water Supply	
System Y.L. Xu, S.C. Li, N. Liu and D. Chen	420
Adaptive Maximization of Power Extraction of a Single Wind Turbine S.Y. Lin	426