

Table of Contents

Preface and Conference Organization

Chapter 1: Acoustics and Ultrasonic Measurement

Cellulose Fiber Reinforced Concrete Fracture Mechanisms and Damage Detection Using Acoustic Emission Y. Chen, D. Bloomquist and R. Crowley	3
Comparison of Hydrophone Calibration by Reciprocity and Heterodyne Interferometer in the Frequency Range 500 kHz to 15 MHz G.Z. Xing, P. Yang and L.B. He	10
Acoustic Information Acquisition and Time Domain Analysis on Alternating Current Rail Flash Butt Welding Q.B. Lv, K.L. Tan, X. Zhang, J. Chen and G.Q. Liu	16
Detection and Characterization of Intergranular Stress Corrosion Cracking on Sensitized 304 Stainless Steel by Acoustic Emission Techniques X.W. Mao, J. Li, X.H. Wang and W.K. Wang	21
The Research of Glucose Solution Based on Photoacoustic Measurement D.J. Zhao, G.D. Liu, Z. Ren and L.M. Zeng	27
Acoustic Modal Test and Finite Element Analysis on Vehicle Cavity W.L. Hou, H. Zhou and S.L. Wang	32
Design and Implementation of Ultrasonic Ranging System C.L. Mao, E.H. Wang and H.Q. Lin	37
Identify on Acoustic Emission Signals of Tank Bottom Corrosion Using Hidden Markov Model Y. Yu and M.Y. Zhang	42
Application of Parametric Acoustic Receiving Array to Underwater Acoustic Measurement S.W. Li	47
Denosing and Defect Diagnosis of Material Ultrasonic Detection signal Based on Best Wavelet Packet Base X.L. Yan, S.Y. Dong, W.L. Wang and B.S. Xu	52
The Realization for Sound Pressure Unit Using Laser Doppler Anemometry in a Travelling Wave Tube L.J. Li, L.B. He, X.J. Wang and P. Yang	57
Optimal Selection of Long Time Acoustic Features Using GA for the Assessment of Vocal Fold Disorders S. Ravindran, N. Siew-Chin and H. Muthusamy	65
The Study of Using Ultrasonic Sensors to Detect Degradation Characteristics of the Ferrite Core M.S. Sung, S.H. Lee, J.H. Park and K.S. Lee	71
Attenuation Characteristics of Sound Wave in Silicon Dioxide ER Fluid J.J. Fan and N.H. Yu	76
The Ultrasonic Wave Method to Pile Test and Detection Analysis of a Complex Building C.L. Chen and Y.P. Zhu	80
Object Detection with Ultrasound Sensors in Mobile Robots Working Area B. Mihai-Alin and D. Valer	84
An Investigation of Size Effect on Fatigue Property of 3000 MPa-Class Mould Steel Under Ultrasonic Fatigue Testing W.J. Peng, H.C. Long, L. Yu, H. Xue, B.W. Qiu and Y.W. Zhang	88
Biquaternion Model of Vector Hydrophone Array and DOA Estimation Algorithm G.J. He, J.F. Cheng and W. Zhang	92
An Investigation of the Fatigue Property of Ultra-High Strength Mould Steel at 130 Hz and 20 kHz W.J. Peng, L. Yu, H.C. Long, H. Xue, L.X. Kuang and B.W. Qiu	96

Acoustic Doppler Velocimeter in Measurements of Turbulent Boundary Layer Flows H. Lu, B. Wang, H.Q. Zhang and X.L. Wang	100
Semi-Supervised Ultrasound Image Segmentation Based on Curvelet Features T. Yun, Y.Q. Xu and L. Cao	104
Echo Sounder Survey in Dongzhai Bay to Detect the Earthquake Event in 1605, Hainan, South China Z.K. Zhang, L. Xie, Y.F. Zhang, L.H. Zhang and J.X. Lu	115

Chapter 2: Light/Radiation Monitoring

MPPT of Two-Peak PV System Combined the Hysteresis Comparison Method with Incremental Conductance D. Wu, J. Xue and T.T. Li	123
Surface Reconstruction Method by Photometric Stereovision Based on Oren-Nayar's Model X. Huang, X.B. Wang and G.D. Tong	129
Multi-Focus Fusion Based on the Imaging Fuzzy Mechanism X.F. Yue, T.S. Li and Z.X. Feng	135
Two Spectral Reconstruction Methods and their Accuracy Comparison Y.H. Zhu, B. Li, Q. Chen and S.H. He	140
A High Precision Pico-Amperes Scale Current Measurement System in Radiation Detection J. Wang, B.K. Li, L.B. Ruan, G. Tian, X.B. Li and H.G. Qu	145
Precise Measurement on Form of Horizontal Tank Used for Liquid Volume Metrology by Laser Scanning Method J.T. Wang, Z.Y. Liu, L. Tong, L.G. Guo, X.S. Bao and L. Zhang	152
Wavelength Shift Detection Methods Based on Cross-Correlation Analysis for Signal Demodulation of Fiber Bragg Grating Sensing System F. Yang and B. Wei	156
Using near-Infrared Spectroscopy to Investigate the Amylose Content in Rice H.A. Rahim and S. Ibrahim	163
Modeling Study on Random Error of Fiber Optic Gyro F. Zhang	167
Effect of Imaging Induced by Defilement on Lens J.J. Zhao, J. Liu, Y.X. Niu, H.B. Wang and S. Yan	172
Comparison of Mid-Infrared Regular Transmittance Measurement G.J. Feng, Y. Wang, P. Li and T.T. Guo	176
Feasibility Study of Discriminating and Quantifying Low Levels of Melamine Contamination in Fishmeal by Fourier Transform near Infrared Spectroscopy X.L. Liu, G. Jia, M.Q. Wang, C.M. Wu, X.Q. Wu and K.N. Wang	181
Study of the Interaction between Three New Amantadine Schiff Bases and BSA by the Multi-Spectroscopic Method H.Y. Niu, B. Liu, P. Ma, X. Wang, B.M. Liu and D.J. Wang	193
Relations of the Laser Intensity Value, the Laser Ranging Value and the Laser Incident Angle X.J. Cheng, K. Tan and Q.Y. Lou	198
MMW Radiometric Characteristic Experiments of Water Plant for Environmental Protection G.F. Zhang, Q. Wang and G.W. Lou	202
Angle Measurements with Laser Y. Wang, C.X. Yan and Z.L. Gao	206
Small Infrared Target Detection Based on Low-Rank and Sparse Matrix Decomposition C.Y. Zheng and H. Li	214
Traditional Chinese Medicine Clustering Analysis Based on Near-Infrared Spectroscopy C.J. Long, P. Wan and X. Li	219
Applied Study of Pattern Recognition and Near Infrared Spectroscopy J. Yin	223
Fusion Algorithm of Infrared and Visible Images Based on Multiresolution Decomposition C. Ding	229

Research on Measuring Gas Refractive Index with Microcomputer in Real-Time Based on Michelson Interference Theory	
H. Xiao, X.L. Chen, S.N. Zhou and J.J. Qi	233
A Straight-Line Trajectory Tomography Method Based on Multiple Tilted X-Ray Cone-Beams	
J. Fu, J.W. Zhang and R.B. Tan	238
The Research of Nondestructive Testing of Apple Acidity Based on Near Infrared Spectroscopy	
K. Zhao, H.W. Si and Y. Xiong	243
Research on the Free Choice Cooperative Learning: Taking the Optical Fiber Circuit Measurement as the Problem-Solving Example	
C.Y. Juan, C.Y. Chou and H.S. Lin	247

Chapter 3: Electromagnetic Measurement and Resistance Measurement

Design and Implementaion of Data Processing and Control Module in Millimeter-Wave Radiometer	
G.Y. Zheng, L. Wu, F. Xu and S.S. Peng	253
3-D Eddy Currents Analysis in Orthotropic Materials Using Truncated Region Eigenfunction Expansion Method	
Y.J. Bai, X.Z. Zhang, L. Jiang and C.L. Tang	258
Four Order ESD Generator Circuit Model and its Simulation	
J.S. Wang, K. Wang and X.D. Wang	264
Experimental Study on Insulators Pollution Detection with Microwave Radiometer	
Q.X. Zhao, F.Z. Wang, X.Q. Lin and J.S. Liang	270
Study on the Aperture Leakage EMI Problems and its Simulation	
Y.H. Gao, J.J. Gu, K.Y. Yang, J.Z. Li and H. Zhang	274
A Complex Voltage Ratio Measurement System for the Audio Frequency Range	
C.X. Yue, E. Mohns, F. Zhou, M. Lei, S.H. Zhang and Q. Xiang	278
Analysis on the Shielding Effectiveness of Metallic Box with Apertures Based on FDTD	
Y.H. Gao, J.J. Gu, K.Y. Yang and H. Zhang	283
Study on Neutron Energy Spectrum in the TMSR	
X.M. Zhou, G.M. Liu and Y.F. Liu	287
Research on Over-Ground Electromagnetic Inspection Technique for Buried Pipelines	
S.H. Lu, Z.D. Han, W.B. Wang and Z.J. Feng	293
Electromagnetic Induction Angle Sensor Error Correction Method	
W. Zhou, J. Zhang, S.Q. Wang, K. Zhu and Z.L. Xu	301
Research on Spatial Distribution and Mutual Inductance of Superconducting Pancake Coils	
F. Guo and Z. Li	305
Electromagnetic Interference Shielding Properties of Silver-Plated Polyester Fabric	
M.L. Jiao, S.H. Wang and W.X. Zhang	310
Constitutive Relationship of 3A21 Aluminium Alloy Tube for Magnetic Pulse Forming	
Z.D. Xu, J.J. Cui, H.P. Yu and C.F. Li	314
Research on 3mm Band Radiometric Brightness Temperature Inversion	
G.F. Zhang, Q. Wang and G.W. Lou	320
The Volumetric Clipping for Industrial Computerized Tomography Based on CUDA	
S.F. Jiang, H.G. Liu and J.L. Sun	324
Reliability Analysis of Door Magnetic Switch under Different Permanent Magnetic Distribution	
X.H. Yi, X.M. Cheng and M.J. Wang	328
A Real Time Measurement for Power System Parameters Based on Zero-Crossing Detection of CPLD	
B. Wang and H.L. Zou	332
The New Magnetic Survey Method for Underwater Pipeline Detection	
Y. Liu, Y.F. Zhang and H. Yi	338
Measurement Range Validation of the Through Casing Resistivity Logging Instruments	
J.T. Zhang and M.Z. Huang	344

Implement of UWB Radar for Human Life Detection J. Lou and Y. Wang	348
Experimental Resistance Measurement on Solid-Liquid Two-Phase Flow in Microchannel Y.H. Liu, J.E. Choi, M. Takei and X.T. Wang	353
Theoretical Analysis of Instantaneous Microwave Frequency Measurement Using Microwave Phase Shift Detection X.M. Zhang and P. Cheng	359
The Building Waterproof Test and Inspection Based on IRT Technology Y.C. Xia	363
Rapid Detection of Avian Influenza Virus Using Immunomagnetic Separation and Impedance Measurement X.F. Yan, M.H. Wang, X.H. Wen and D. An	367
Algorithm Research on Tower Grounding Resistance On-Line Measurement T. Wang, B. Li and H.X. Yang	372
Orthogonal Binary Waveform Optimization for Mimo Radar Systems D. Ebregbe and W.B. Deng	376
Suppression of Sea Clutter of Skywave Radar Based on AR Model X.H. Zhang, W. Sheng and S.H. Liu	382
Design of a Current Source for Bioelectrical Impedance Measurement K.N. Wang, H. Zhao and W. Wang	387
Design of a Bioelectrical Impedance Spectrometer Based on AD5933 K.N. Wang, H. Zhao and W. Wang	392
Segmentation in Field Emission Image Based on Improved Watershed Algorithm Using Mountain Areas Simulation Method Z.L. Li, J.S. Lai, H. Liu, Y.W. Zhang, Q.Z. Liu, L.N. Wei and Z.J. Fang	397
Composition and Experiment Analysis of an Impedance Analyzer Based on LabVIEW Z. Zhang, Y.H. Liao, T.M. Zhang and J.G. Ou	403

Chapter 4: Measurement of the Noise and Vibration

Voice Activity Based on Noise Estimation in Noisy Environments S.L. Liu and Z. Pei	409
A Method for Detecting Noise, Single Pass, Cross Pass and Echo of Mobile Phone L. Chen, P. Wang, F.Q. Liu, Q. Ai, H.F. Pang, Y.C. Li and H.L. Cao	415
Identification for the Active Noise Control System Based on Neural Network B. Wang	422
Software Development in Frequency Domain Modal Parameter Identification X.H. Sun, M.M. Hao and Z.T. Li	426
Study on the Use of Blind ICA in Diesel Engine Vibration Processing C.M. Huang, P. Zhang and H.L. Yu	430
PCA Feature Selection For Recognition of Chatter Gestation Q. Shao, C.J. Feng and J. Kang	434
Experimental Research on the Vibration and Noise Characteristics of the Marine Diesel Engine Turbocharger H.B. Wen, Z.W. Xia and K.L. Wang	438
Axial Vibration Characteristics of a Metal Diaphragm Coupling G.P. Wang, H.L. Chen, S.M. Qi and L. Yu	443
Micro Vibration Measurement Sensor Based on the Tunneling Effect M.C. Li, Z.H. He and Z.H. Ma	452
Design and Application of Aeolian Vibration Monitoring System for Overhead Transmission Line B.S. Tong, Y.X. Lv, B.G. Yang, H. Xue and S. Zhi	456
Vibration, Sound and Thermal Analysis as a Condition Monitoring Methods for Electric Motors M. Orman and C. Pinto	462
Data Acquisition and Vibration Analysis Based on LabVIEW L.L. Kang, Z. Zhang and J.M. Yu	468

A Modal Analysis of Giant Shipbuilding Tower Crane G.J. Huang, C.Z. He and X.H. Wang	473
Study on the Motor Noise Based on LabVIEW and FFT Y.C. Liang, J.N. Zhang and Z.J. Wang	478
Identification of Noise Source Based on Partial Coherence Analysis H.P. Wu, J.J. Lou and W.W. Liu	482

Chapter 5: Remote Sensing and Telemetry

Analysis of Adaptive Detection Threshold for High Sensitivity Compass Navigation Receiver W. Xiang, S.J. Ni, W. Wu and F.X. Wang	489
Fusion of Panchromatic and Multispectral Remote Sensing Data Using an Improved Region Regression Model X. Xie, Q.L. Dai, Q.H. Zeng and Y.Y. Chen	494
Land Utilization and Classification Method Based on Remote Sensing Technology T.H. Sun and G.Q. Yan	501
Application of Global Position System Real Time Kinematic to Photocontrol Point Measurement in Large Scale Aerial Survey and Analysis of the Precision T.Z. Li and C.H. Liu	507
A Novel Single-Borehole Radar for Well Logging T.J. Li, H.N. Yang, Q. Zhao and Z.O. Zhou	511
UAVRS Technique Applied to Emergency Response Management of Geological Hazard at Mountainous Area C.G. Zheng, D.X. Yuan, Q.Y. Yang, X.C. Zhang and S.C. Li	516
Improving the Error Model for POS Application to Airborne InSAR L.Z.T. Chen and J.C. Fang	521
Study of DEM Generation Method Based on Multi-Baseline Image Sequences in Alpine-Gorge Areas H. Li, S. Chen, B. Su and B. Yang	530
Spatial and Temporal Analysis of Pit Deformation Monitoring Based on GIS Z.G. Lu and J.D. Zhang	536
Optimization Analysis of GDOP of PL-Aided Navigation and Positioning System C.Q. Gong, Z.C. Jiang, C.H. Huang, P. Wang and T. Wu	544
The Compass Time System and its Interoperation S.W. Dong	548
The Application of IBIS-L Remote Monitoring System for Micro Deformation of Terrain in Dam Safety Monitoring W.S. Wang, D.C. Tian, J.H. Sun, L. Jiang and H.B. Rao	552
Flood Disaster Monitoring and Evaluation System Based on GIS and Remote Sensing: Case Study in Hejiang River T. Sun, R. Li, H.Y. Deng and X.T. Li	560
Monitoring Subsidence in Tianjin Area Using the Multi-Baseline D-InSAR Technique H.L. Zhao, J.H. Fan and X.F. Guo	565
A Method for InSAR Baseline Refinement Based on CR H.L. Zhao, J.H. Fan, S.C. Fu and X.F. Guo	569
A GNSS IF Signal Simulator Based-on FPGA M. Huang, X. Kong, W.J. Lu and D.S. Yu	573
Remote Data Acquisition and Transmission System Based on GPRS X.G. Fan, Y. Lu, Z.B. Hu and Y.J. Xu	577
New Progress of Contemporary Cartography-Navigable Electronic Map L. Liu, W.W. Li, C. Sun and T. Xu	582
An ENVI+IDL+ArcEngine Tool for Detecting Harmful Algal Blooms in East China Sea C. Zeng, H.P. Xu and H.X. Zhang	587
Research on Deformation Monitoring on Supporting Structure of Deep Foundation Pit Engineering Based on GPS Z.X. Liu and X.J. Zhang	595

A Universal Parallel Framework For Remote Sensing Process X.W. Cai, J. Hu, Z.Y. Li and B. Zhu	599
GNSS Signal Power Spectrum Density Analysis X.F. Huang and J.K. Chen	603

Chapter 6: Mechanical Measurement

Analysis on Measurement Errors of Critical Dimensions of HSK Cone and its Application W.H. Chen, S.L. Wang and R.H. You	611
Mechanical Test System for Large-Scale Structures in the Field Environment of Low Temperature Z. Jun, N. Li, W. Li and X.L. Ni	617
Monitoring of Deformation of Steel Structure-Roof of Football Stadium Slavia Prague J. Litos, E. Vejmelková and P. Konvalinka	622
Dynamic Position Detection Method for Large-Diameter Rotary Shaft Based on MIFA-AFKF X. Feng, W.T. Gu, S.K. Lei and S.W. Zhou	631
Applying an Improving Measurement of Cutting Force to Study Machinability of Gray Cast Iron R. Wu, D.W. Zhang, J. Sun, F.Z. Ren, Y.F. Wang and L.L. Xiao	640
Research and Practice on New Measuring and Drafting Mode of Mechanical Drawing Based on Reverse Engineering D.Y. Fang, A.M. Zhang and Y. Qiu	645
Drilling-Hole-Loading Method for Measuring Tensile Strength of Irregular Small Stones J. Chen, M. Liu and J.M. Liu	649
The Highway Bridge Load Subentry Coefficient and Their Combination Effect Comparative Analysis D. Dang and J. Sun	654
Advanced Prediction of Surface Roughness by Monitoring of Dynamic Cutting Forces in CNC Turning Process S. Tangjitsitcharoen	661
Multi-Axle Moving Train Loads Identification on Continuous Bridge from Bridge Displacement Responses Y. Wang and C.S. Luo	670
LabVIEW Based Data Analysis for Automotive Steady Static Circular Test H.F. Li, Y.Z. Luo, X.L. Zhang and P. Zhao	675
Research on Straightening Force Measuring Technology for Pre-Stress Straightening Machine Z.H. Sun and W.Y. Chen	680
Study on Load Spectrum Correlation between Service Roads and Proving Ground Roads Based on Spindle Wheel Forces Y.D. Hu, H. Zhou, G. Xu, C. Guan and Y.X. Wu	685
Test and Simulation Study on Stiffness of Automotive Door H. Ding, H. Zhou and Y.L. Ren	690
Surface Parameterization for the Shape Analysis of Tube-Like Objects L.F. Yao, J.F. Ouyang and X. Ma	694

Chapter 7: other Measurement Methods and its Application

Establishment of Digital Human Head Model Coordinate System Based on Mean Curvature Analysis Q. Han, J.F. Ouyang, X. Ma and Y.G. Yan	703
Measurement of Proppant Geometrical Characteristics Based on Chain Code L.Y. Zhang and X.J. Zhang	708
A Novel High Accuracy Sub-Pixel Corner Detection Algorithm for Camera Calibration F.J. Yu, X. Luan, D.L. Song, X.F. Li and H.H. Zhou	713

Research on River Channel Terrain Measurement Method Based on Binocular Vision P.L. He and W.L. Liu	717
A Novel Markov Model and its Application to BIT System W.R. Zheng and S.Z. Wang	721
Measurement of Semiconductor Silicon Wafer's Doping Concentration and it's Uniformity Based on Thermo-Needles Method Q.L. Wang, Y. Zhao, R.F. Lv and Y.Y. Zhu	726
Study on Method for Test Points Selection under Uncertainty Based on MBQPSO J. Sun, Q.L. Sun, K.L. Huang, Y. Xie and H.R. Li	730
Analysis on the Measurement of Bullet Impact Coordinates with Use of Acoustic Array and Optical Detection Sensor B. Feng and X.Z. Meng	735
A Non-Contact Method to Measure the Spatial Axis Position for Large-Scale Holes S.H. Zhang, X. Meng and W.Y. Wan	739
The Coal Production Anomaly Detection Based on Data Mining G.H. Wang, Y.L. Kuang and Z.G. Wang	744
Theory Analysis of Thermocouple Temperature Measurement H.T. Liu, D. Shao and B.Q. Li	749
Measurement of Rotation Angle about Rotating Object Based on Digital Image B. Huang, J.W. Zhao, H.B. Wu and X.M. Fu	754
An Analysis Model for Structural Optimization of Polygon Ranging-Based Space Coordinate Measurement Network J.W. Hu, X.F. Yu, J.T. Miu and M. Zhu	760
Application of Flame Image Recognition-Based Information Fusion Technology to Roller Kiln Temperature Detection Y.H. Zhu and Y.F. Liu	769
A Study of the Electrostatic Field Networking in Three Isolated Thunderstorms Z.H. Wang, Q.F. Zeng, F.X. Guo, D.P. Xu and H. Wang	775
Context-Aware Monitoring of Cardiac Health H.X. Wu, L.Y. Ji and J.K. Wu	785
The Impact of Wavelength Step on Radial Velocity Error F. Zuo and A.L. Luo	794
3D Accuracy of Deciduous Tooth Model Reconstructed from CBCT Scan H.B. Li, L. Liu, Y.X. Gao and X.W. Shi	798
Application of Rock Mechanics Parameters to Obtain Formation Pressure Y. Tian and H. Lin	803
Detection of Life Characteristic Signals Based on High Order Statistics J.J. Li and J.F. Zhao	807
Double Feature Combination: Region Contrast for Visual Salient Object Detection Z.H. Sun, T. Song, W.H. Zhou and H. Zhang	811
Measurement and Evaluation of the Wearing Condition of the Tire Tread Y.Y. Yang and L.L. He	816
Identification of Eddy Dynamometer in Vehicle Emission Test Based on SMI Method P. Liu	821
Establishment and Instrumentation of a Full Scale Laboratory for Thermal and Hygroscopic Investigations of Soil Behavior in Cold Climates S.E. Sveen and B.R. Sørensen	827
Study on the Factors Influencing on the Variation of the Temperature in Cell Suspensions Exposed to Microwaves Based on the Temperature Sensor Technique Y.R. Qin, N. Chen, H. Lin, D.L. Huang and Z.Y. Zhang	836

Chapter 8: Data Acquisition

The Data Acquisition and Transmission System Design and Realization of Mine's Dynamic Weighbridge J.Z. Chen, F. Shen and M.S. Xu	843
An Empirical Study on Feature Subsampling-Based Ensembles Y.Y. Wei and T.S. Li	848

Design of 3780 Points FFT Processor for DTMB Receiver L. Dai, X. Hui and T. Sun	853
An Improved Digital Servo Burst Signal Sampling Model for Disk Drives Q.D. Wang and F. Wu	857
Data Acquisition System Design and Data Analysis on Automatic Transmission Y.Q. Li and C.F. Li	861
An Efficient Data Acquisition System for Automatic Transmission C.F. Li and Y.Q. Li	865
Designs for Synchronous Data Acquisition of a Distributed System Z.X. Tian, F. Yu and Z.W. Liu	869
IBperf: A Testing and Evaluation Model of IB Datacenter Transmission Control Z.W. Zhang, Z.G. Sun and X.C. Lu	873
The Electric Quantity Data Acquisition System Based on Wireless Sensor Network J.N. Wang and W. Wang	879
Research on Application of High-Speed Data Acquisition System for AC Rail Flash-Butt Welding Q.B. Lv, K.L. Tan, X.G. Dai and X. Zhang	884
Development of a High-Speed Ion Signal Acquisition System for Mass Spectrometer H.Q. Yu, Y.N. Wang, J.L. Xing, P. Wang, H.S. Liu, Y.W. Hou, N. Li and Z.L. Sun	889
The Current Situation and Development of Electric Energy Data Acquisition System in China Q. Chen, Z.S. Zhao and J. Li	895
Data Acquisition and High Speed Storage by FPGA Implementation in the Quadrupole Mass Spectrometry Y.H. Gao, J. Zhou, W. Wang and B.J. Wu	901

Chapter 9: Signal & Data Processing Technology and System

The Application of Wavelet Transform in Image Dispose R. Ren, X. Zhou, J. Han and S.M. Xing	907
The Design of Low Complexity Decoder Based on DVB-S2 LDPC Z.X. Wang and S.S. Yin	911
A Simulation Method for Memristor Based Dopant Drift Model J.T. Diao and X.B. Tian	915
Automatic Detection of Interictal Epileptiform Discharges Based on the Similarity of Time-Series Sequence J. Zhang, J.Z. Zou, L.L. Chen, C.J. Zhao and G.S. Wang	921
Template Based Table Document Recognition J.P. Jia	932
An Image Tracking Method Based on Color Co-Occurrence Histograms W. Wang, C.P. Wang and Q. Fu	936
New Method of Moving Targets Passive Tracking by Single Moving Observer Based on Measurement Data Fusion J.G. Wang	942
Improved Empirical Mode Decomposition Based on Harmonic Wavelet Filter Y. Liu, Y. Liu, S.J. Yu and J.F. Yang	946
Robust Image Information Identification Algorithm Based on Time-Frequency Chirplet-Radon Transformation M.H. Deng, Q.S. Zeng and L.Y. Zhang	950
An Efficient Real-Time Filtering Approach for Image Processing of Digital Subtraction Angiography Z. Hong	955
Research on the Relationship between the Depth-Movement of the Stereoscopic HDTV and Visual Comfort J.X. Yu	959
Multivariate Shrinkage for Image Denoising in Shearlet Domain C.Z. Deng	966

Palmpoint Verification by Scene Matching Approaches H. Zhang, G.Y. Feng and D.W. Hu	970
Feature Extraction by Combining Wavelet Packet Transform and Common Spatial Pattern in Brain-Computer Interfaces R.X. Han and Q.G. Wei	974
Methods of Dynamic Tire Pressure Judgment Based on Image Processing R.B. Chen, J.J. Zhang, H.F. Xiao and F.H. Meng	980
A Non-Contact Finger Vein Image Quality Assessment Method H. Ma, F.P. Cui and P. Oluwatoyin P	986
Measurement Error Detection, Elimination Method and its Application X.P. Ren, Z.C. Xue and K. Zhao	990
Improved SNR Estimation Technique for BPSK and QPSK Signals G.Z. Liu and J.X. Wang	994
Algorithm of Color Detection for Moving Video Objects Based on Mode Matching Z.Q. Cai, H. Hu, T. Xu, W. Luo and Y.C. He	1000
A Novel Approach for Active Contour Initialization in 3D Medical Image Segmentation Y.J. Peng and S. Zhang	1004
Particle Size Measurements Using a New Signal Processing Method Y.M. Xu	1011
Using Improved Wavelet Networks in Image Compression W.W. Xiao and W.J. Luan	1018
Communication Performance of RFID System and Anti-Interference in the Multipath Rayleigh Fading Channel X.L. Yu, Y.S. Yu, Y.Y. Ji and D.H. Wang	1022
Cultural-Based Multi-Objective Particle Swarm Optimization for EEG Channel Reduction in Multi-Class Brain-Computer Interfaces Q.G. Wei, Y.M. Wang and Z.W. Lu	1027
Classification of EEG Signals Using Filter Bank Common Spatial Pattern Based on Fisher and Laplacian Criteria Q.G. Wei, B. Wan and Z.W. Lu	1033
A Demodulating Approach Based on Local Mean Decomposition and Combined Morlet Wavelets and its Application in Mechanical Fault Diagnosis H.M. Li, Z.Z. Cai and G. An	1039
Comparing Different Means of Signal Treatment for Improving the Detection Power in HPLC-UV-HG-AFS J. Cui, Y. Wang, X.H. Zhao and L. Dai	1045
Extraction of Online Monitoring Signals by Lifting Wavelet in Digital Substation P.B. Wang and P. Chen	1052
The Research of Signal Detection Method Based on LFMCW Lidar B. Xia, Z.Y. Zeng and Y.L. Zhang	1059
A Data Transmission Strategy Applied to Implantable Wireless System for Small Animal Monitoring C. Huang, W.H. Chen, Y.W. Tang and S.M. Ye	1064
Research on Enhancement Method of Feather Images Based on Color Constancy J.F. Ming, R.H. Wang, S.X. Tang and Y. Zhu	1069
Extraction Method of Path Based on Hough Transformation Z.W. Qiu and C.L. Zhang	1074
A Novel Method for the Detection of Sleep Apnea Syndrome Based on Single-Lead ECG Signal Y.W. Tu, X.M. Yu, H. Chen and S.M. Ye	1079
An Adaptive Multiple LS Channel Estimation Method for MIMO System J.L. Chen	1084
Study on Measured Data Processing Method of Model Test for Relative Motions between Two Side-by-Side Replenishment Ships in Waves P.A. Shi and J.W. Ye	1089
The Influence of Parameters on an Individual Neuron Firing Patterns G.P. Wang, W.Y. Jin and C.B. Hu	1095

Research on Mongolian Acoustic Model Based on the Triphone DDBHMM J. Yun, Z.Q. Ma, Y.L. Su and X.L. Xie	1100
Threshold Modification Model for the Optimal Evolution Algorithm Z.C. Lin, C. Wang, C.J. Jiang, C.C. Xu, Y. Gong, T.Y. Feng, Z.H. Zhong and J.X. Chen	1104
Extract Characteristic Parameters of FID Signal Combining Autocorrelation Function with the Least Absolute Value H.C. Hao, J. Lin, B.F. Tian and Q. Wan	1108
Effect of SNR Estimation in Defocus Blurred Image Restoration F.Q. Qin	1113
Wavelet Audio Coding by Fixed-Point Short Block Processing for Real-Time Wireless Applications G.Y. Luo and Y.P. Liu	1118
A Novel Harmonic Calculating Method Based on Multiple-Average Algorithm J.H. Xue, T.Y. Li, H. Rong, Z. Yang and X.D. Yang	1125
2-D Image Matching Based on Global Harmony Search Optimization L.M. Guan, Q.K. Yang, J. Lin and Y.F. Wu	1133
Parameter Estimation and Restoration of Motion-Blurred Images P.Z. Wen, K. Guo and L.F. Li	1138
Wavelet Packet Transform Method and its Application in Analysing Ocean Signals S.J. He and W.J. Zhou	1142
The Improvement of Katsevich Reconstruction Algorithm Based on Cone-Beam CT L.F. Wang	1148
Find Point Correspondences on Contour between Template Image and its Target with SVD and Euclidean Distance L.Y. Zhang, Q. Wang, H.Y. Liu and G. Wang	1152
Frame Reconstruction with Missing Data from Multiple Images G.Y. Luan, X.D. Zhu, A.C. Li, Z.S. Lv and R.S. Che	1158
Removing Blinks in Video-Oculography X.J. Chen and C.H. Zhang	1165
An Analysis Research for Digitized Features of Epileptic EEG Using SVM X. Xu, B. Lv, J. Song, W.X. Shi, Y.T. Hu and S.C. Yan	1169
Study on Filtering Algorithm of Image Using Matlab M.J. Zhang and X.Q. Yuan	1173
Design and Implementation of SoPC based Low power Asynchronous Image Processor T.N. Prabakar, G. Lakshminarayanan and G. Seetharaman	1179
Radar Target Tracking Error Research Using Kalman Filter-Based Algorithms Q.L. Chai, Y.L. Bai and C.H. Dong	1184
Carrier Tracking Performance Comparison of Standards and the Square-Root Kalman Filter S.J. Ni, J. Pang, X.M. Tang and F.X. Wang	1188
Research of Sea Clutter Suppression Algorithm Based on GPU Y. Guo, S.D. Li and D.S. Wang	1194
An Improved Design of Conducted EMI Signal Suppression in SMPS P.F. Xu, Z.R. Chen and X. Xiao	1202
A Novel Spoofing Mitigation Method of GNSS Receiver W.M. Zhang	1206
Simultaneous Least Squares Wavelet Decomposition for Multidimensional Irregularly Spaced Data M. Shahbazian and S. Shahbazian	1213
Digital Medical Image Enhanced by Stationary Wavelet Transform X. Jie and Z.Y. Qin	1219
A Steganographic Method Based on Double Layers Wet Paper Code in IWT Domain M.Q. Zhang, X.L. Yang and G.W. Su	1225
An Improved SIFT Matching Algorithm C. Ding, C.W. Qu and F. Su	1232
Design, Deploy and Signal Analysis of Different Types of CR J.H. Fan, H.L. Zhao and Y. Wang	1238

Two-Dimensional Finite Difference Forward Modeling for Stable Point Power Field Based on Optimized k Value	1242
X. Jiang, S.B. Yu and H. Luan	
The Output Model of FOG North-Finding System Constructed by the ARMA Timing Analysis	1246
W. Liu and Z.P. Chen	
A Novel GVF-Based Adaptive Extracting Formulation for Image Reconstruction	1250
B. Zhao, Q.L. Li, Y.C. Wang and G.X. Jiang	
A Simplified Carrier Frequency Offset Estimation Algorithm for Burst Digital Transmission	1255
X. Man, H.T. Zhai and E.Y. Zhang	
The Characteristic Parameters Extraction of the Drawing Forming Cracks Based on Time-Series Analysis and ICA	1259
Z.G. Luo, J.J. Zhang, J.L. Zhao and X.D. Li	
An Improved Speech Blind Separation Algorithm Based on Non-Linear Function	1264
Z.C. Li	
Applications of Statistical Directional Characteristics in Synthetic Aperture Radar Imagery Interpretation	1269
S. Chen, D.Y. Wang and J. Yang	
Research on the Speech Enhancement Method based on PCA/KLT Algorithms	1274
G.Y. Wang, Y.X. Geng and X.Q. Zhao	
Bridging a Gap in Independent Component Analysis	1279
G.H. Dong, Y. Li and D.W. Hu	
A QRS Wave Detection Algorithm Based on Complex Wavelet Transform	1284
W. Wei, C.X. Zhang and W. Lin	

Chapter 10: Intelligence Algorithm, Optimization Algorithm and their Applications

A Particle Swarm Optimization with Variety Factor	1291
H.S. Qin, D.Y. Wei, J.H. Li, L. Zhang and Y.Q. Feng	
Projection Position-Based Sequential Pattern Mining Algorithm	1298
W.N. Wang, T.S. Li, H.Y. Zhang and Q.F. Chen	
Research on Algorithm for Mining Frequent Itemsets Based on Cloud Computing	1303
S.Z. Huang, T.S. Li and D. Luo	
Study of Multiple-Kernel Relevance Vector Machine Based on Kernel Alignment	1308
L. Zhao, Y.D. Su, H. Qin and P.P. Ma	
An Improved Cohen-Sutherland Region Encoding Algorithm	1313
W. Wei, P.H. Ma and W. Lin	
A Network Decomposition-Based Text Clustering Algorithm for Topic Detection	1318
Z.Q. Meng, S.M. Shen and Q.L. Chen	
An Anycast Routing Algorithm Based on the Combination of Genetic Algorithm and Ant Colony Algorithm	1324
T.S. Li and Z.C. Li	
Trust-Based Particle Swarm Optimization for Grid Task Scheduling	1331
W.M. Huang, Z.R. Deng, R.H. Li and X.X. Tang	
Image Fusion Using Wavelet Transform and Fuzzy Reasoning	1336
X.W. Ding, B. Mahundi, F. Yang and G.Q. Xu	
Study on Application of Genetic Algorithm in Maintenance Support Schedule	1340
Q.T. Han, W.J. Cao and T. Su	
Application of Monte-Carlo Tree Search in Tsumego of Computer Go	1344
F. Wang and Y. Peng	
Research on Improved Ant Colony Algorithm for the Optimization of the Large Storage Picking Path Based on RFID	1348
P.Z. Wen, Y.B. Wang and L.F. Li	
Position Estimation of Single Camera Visual System Based on Total Least Squares Algorithm	1352
J. Zhou, Y.H. Gao, C.Y. Liu and J.Z. Li	

Spectrum Measurement Network Based on Labview S.J. Mu, D.Z. Chen, H. Tang, J.J. Yang and M. Huang	1356
Area Partition-Based Suppression Algorithm for Contention-Based Forwarding in Mobile Ad-Hoc Networks Y.J. Qin and Z.H. Ge	1360
Niche PSO Particle Filter with Particles Fusion for Target Tracking H.T. Yao, H.Q. Chen and T.F. Qin	1368
Cardinality Estimation-Based Adaptive Multi-Tree Splitting Algorithm for RFID System Y. Tan, G.X. Liu and G.G. Wu	1373
The ACA-BP Algorithm Based Controller of PID Neural Network and its Simulation F. Ding and D.J. Huang	1377
A Research on Methane Prediction Model Based on Improved BP-GA Network Z.M. Hao, J.Y. Du and Z.C. Zheng	1382
Constrained All-k-Nearest-Neighbor Search S.L. Li, L. Chen, Q. Liu and J. Zhang	1387
Application of on-line Adaptive Weighted Fusion in Mine Gas Measurement System Y.J. Wang, L.K. Yang and Y.T. Wang	1395
The Quantity Optimization of Integrated Testing Vehicle Based on Genetic Algorithm A.Z. Liu, L.Y. Chen, X.Y. Du and X.F. Gao	1399
Detecting and Quantifying T Wave Alternans Using Linear Least Squares Curve Fitting Method X.K. Wan, K.H. Yan and M.G. Li	1404
Application Analysis of Compressive Sensing/Sampling Theory on Source Localization X.B. Han, C.H. Qiu and Z.J. Jiang	1409
Time Series Prediction of Landslide Displacement Using SVM Model: Application to Baishuihe Landslide in Three Gorges Reservoir Area, China C.H. Zhu and G.D. Hu	1413
Simplified Design of Dual Quaternion Strapdown Inertial Navigation Integration Algorithms Y.R. Lin, L. Chen and Z.X. Fu	1421
Research on Maintenance Resources Distribution Based on Queuing Theory Q.T. Han, W.J. Cao and Y. Zhang	1428
Contourlet Transform in the Application of the Image Fusion Z.Z. Zhao	1432
Novel Compact Genetic Algorithm for WTA Problem Z. Liu and Y.A. Hu	1437
The Main Steam Temperature Cascade PID Controller Parameters Tuning Optimization Based on Ant Colony Algorithm J.M. Hu and Q.S. Ji	1442
Auto-Clustering Algorithm for Heterogeneous Information Network Using Improved Particle Swarm Optimization C.P. Liu, Y. Liu and J.S. Chen	1448
GLCM Inspired Fingerprints Segmentation Algorithm with Adaptive Block Size H.N. Li and J.L. Luo	1456
Study and Discussion on the Theory of Compressive Sensing Y. Zhu, Y.X. Jia and Y. Wang	1462
A Method for Extracting QR Code from Complex Background Based on Morphology X. Yang, X. Gao, S.Q. Jia and Q.Y. Lu	1466
Multi-Modal Medical Image Registration of by Combining Improved Mean Shift and RPM D. Ai, J.L. Shi, J.J. Cao and H.Y. Zhong	1472
Application Study of Fuzzy Comprehensive Evaluation Method on Ammunition Management in Rear Depot X.H. Zhang, H.L. Pan, S.L. Yang, T. Li and Q. Zhang	1476
Based on SVD MEMS Microstructure Amplitude Measurements of the New Algorithm Z.F. Hu, C. Ji and Y. Luo	1480
Application of Intelligent Algorithms to Interruptible Load Dispatch Model Q. Sha and S.H. Zhang	1487

The Realization of Smoothed Pseudo Wigner-Ville Distribution Based on LabVIEW G.Q. Liu, X. Zhang and Q.B. Lv	1493
Grid Task Scheduling Algorithm Based on Non-Conflict Degree F. Qiao, Y.J. Zhang, Z.Y. Gu, J. Wang and G.Y. Zhang	1497
A Joint Energy Consumption Optimization Algorithm for Hybrid Air-Cushion Vehicles S. Xu and C.K. Sun	1501
A Novel Grid Phase Estimating Algorithm Based on BP Neural Network L.N. Zhang and J.M. Chang	1507
The Study on Convergence and Convergence Rate of Genetic Algorithm Based on an Absorbing Markov Chain J. Jiang, L.D. Meng and X.M. Xu	1511
Fuzzy-Neural Networks Based on Subtractive Clustering and its Applications in Soft Sensor Y.Y. Sui	1516
A Determinant Elimination Method for Bottleneck Assignment and Generalized Assignment Problems W.B. Wu, Y.F. Jia and H.X. Sun	1522
An Improved Quantum-Inspired Evolutionary Algorithm Based on P Systems with a Dynamic Membrane Structure for Knapsack Problems X.B. Zhang, G.X. Zhang and J.X. Cheng	1528
Classification of Chinese Herbal Medicine Based on Improved LDA Algorithm Using Machine Olfaction D.H. Luo and Y.W. Shao	1532
A Kind of Index Technology Based on Binary Tree Efficient Space H.M. Chen and H.Y. Zhou	1537
A Parallel BP Neural Network Based on the FPGA Y.H. Guo, D.T. Zhou, X.P. Qian and X.Q. Zeng	1541
A Fractal Based Subpixel Image Edge Detection Algorithm Y. Luo, C. Ji, Y. Zhang and Z.F. Hu	1546
Research on Intelligent Layout System of Blanking Parts F.J. Li, Y.Q. Chen and C.X. Hua	1552
A Heuristic Algorithm on Solving the Great Group Dividing of Figure H.Y. Zhou and L.P. Wen	1557
A Distributed Algorithm Based on RSSI for Intelligent Vehicle Localization R. Ren	1561
Optimized Load Distributed of Power Plant Units Based on Branch and Bound Method L.X. Zhang, W. Tan and X.B. Huang	1565

Chapter 11: Materials Properties and Applications

Studies on the Coordination Reaction of VO₂⁺ and Tannic Acid in the Tannin Extract Desulfurization Z.Q. Gao, X.D. Cai and K.C. Ling	1573
The Application of the Non-Ball Mill for Superhard Refractories K.S. Li and Y. Li	1577
Design and Preparation of Feedstock for SiC_p/Cu Powder Injection Molding H.Q. Li, Y.Q. He, B. Qiao and J.M. Yang	1581
A Solution Processed ZnO Thin Film Y.C. Hu, D.T.W. Lin, H.L. Lee and P.Z. Chang	1585
Research of Corrosion and Protection on Boiler and Pipelines by Condensing Water C.S. Huang, J.Y. Wu, H.W. Xu, Y.S. Cheng and M. Zhang	1589
Application of Taguchi Method in the Optimization of Processing Parameters for Green Fiber S.W. Wang and T.L. Su	1596
Design Optimization of Processing Parameters for Polypropylene Fiber Based on the Taguchi Method S.W. Wang and T.L. Su	1600
Effect of Mn, Si on Varistor-Dielectric Characteristics of Nb-doped SrTiO₃ Ceramics N.Z. Wang, J.Y. Li, J. Ning and J. Liu	1604

Chapter 12: Engineering Education

The Probability Analysis of Human Error in Teaching W.J. Yang and P.X. Jiang	1611
The Research of Inspiring Students' Thinking in Engineering Specialized Courses Teaching W.J. Yang, J. Yu, P.X. Jiang and J.Y. Yang	1615
Animation Design and Exploration of Experimental Teaching in Analog Electronic Technology L.K. Liang, Q. Tong and Y.Y. Yin	1619
Study on Practical Method of Mechanical Engineering Management Based on Virtual Sandbox Approaches Y.Z. Men, H.B. Yu, H. Wang and L. Xu	1624
Exploring the Learning Effectiveness of Students with Different Free Choice Cooperative Learning Values: Taking Example of how Operating Optical Time-Domain Reflect Meter Tackle the Optical Fiber Circuit Measurement Problem C.Y. Juan, C.Y. Chou and H.S. Lin	1628
Advantages and Disadvantages of Multimedia Teaching of Fire Combustion Science Z.Y. An	1633
The Analysis and Design of Internet Course Teaching System for Operation System Q.J. Du	1637
Application of Multimedia Animation Technology in Learning Power Updating Knowledge S.Z. Liao, J.H. Liang and Y.D. Li	1641
Research in Teaching Reform of Digital Signal Processing Course Z. Zeng, N. Tao, L.C. Feng and C.L. Zhang	1645