Applied Scientific Research and Engineering Developments for Industry

Selected, peer reviewed papers from the 2013 International Conference on Mechanical and Electronics Engineering (ICMEE 2013)

Applied Mechanics and Materials Volumes 385-386

Tianjin, China
17 – 18 August 2013

Part 1 of 3

Editors:
Zhifeng Liu

Some format issues inherent in the e-media version may also appear in this print version.
Table of Contents

Preface and Organizing Committee

Chapter 1: Advanced Materials Engineering, Technologies of Processing

Influential Factors on Microstructure of LaB$_6$ Films
J. Xu 3

Research on Structural Properties of FePt: C Thin Films with FePt Underlayers
L.F. Jin and H. Zhuang 7

Effect of UV Radiation on Different Voltage Grade of HTV-Silicon Rubber in Dry Conditions Performance
Y.P. Liu, Q. Shi and Y. Liang 11

Hydrothermal Synthesis of Zn$_2$(MoO$_4$)(SeO$_3$) and Photocatalytic Applications
Y.Z. Zhen, D.J. Wang, F. Fu and G.L. Xue 16

Numerical Simulation of the Plasma-Assisted Combustion of Methane HCCI
H.C. Wang, C.M. Wang, S.W. Zhu and X. Liu 19

Effect of Growth Temperature on Thin Films Structure and Blue Photoluminescence Spectrum of Nanocrystalline ZnO Films
G.L. Song and H. Liang 23

Discussion and Improvement of Carburizing Defects
Y.Y. Liu, X.H. Gao and H.N. Li 27

Recovering of Iron from Feebly-Magnetic Iron Tailings Containing High Silicate
X. Xie, X. Wang and X. Tong 30

Boom Section’s Bionic Design Based on Bamboo
F. Xie, Z.P. Zhang, X. Li and Q. Miao 34

Chiral Liquid Crystalline Ionomers Containing Sulfonic Acid Groups and Isosorbide
Z.X. Xu, L. Gao, D.S. Yao, X.Z. He and M. Tian 39

The Model of Thermal Ignition of Gasoline-Air Mixture
Y.H. Ou, X.S. Jiang, H.B. Qian, D. Wang, J.J. Liang and Y. Du 43

Multi-Scale Analysis for Tensile Mechanical Properties of Carbon Nanotube Fibers by In Situ Raman Spectroscopy
Q. Li, Y.L. Kang and W. Qiu 47

Sum-Frequency Generation of Antiferromagnetic Sandwich Structure

Effects of Plug Position on Mannesmann Piercing in Drill Steel Production
Y.Q. Zhao, E.L. Yu, D.X. Hou and X. Tang 55

Numerical Simulation and Experiment Research on Surface Defects for Thick Plate Multi-Point Forming Process
L. Li and L.Y. Wang 59

Chapter 2: Developments and Technologies for General Mechanical Engineering

Numerical Simulation and Structure Optimization on the Corrugated Tubes of a Double Pipe Heat Exchanger
J.H. Han, Y. Liu, Z.C. Wang and S. Li 65

The Research on the Workspace of the 3-TPT Parallel Machine Tool
H.H. Zhao, H. Yang and H.S. Fu 69

Large-Tonnage Double Rotary Railway Crane Rotating Platform Finite Element Analysis and Optimization Design
Y. Di, Z.P. Zhang, S.L. Shen and B.L. Wen 73

Research on Parameters Optimization of Biodiesel Engine Combustion System
Y.S. Xu, H. Zhu and K.J. Lu 77
Large-Tonnage Double Rotary Rail Crane Chassis Based on ANSYS Optimization Design and Research
Y. Wang and Z.P. Zhang 81

Research about Slider Three-Dimensional Frictional Contact Problem of the Polygonal and Similar-Oval Jib
S.L. Shen, Z.P. Zhang, B. Gu and R. Chen 85

Research on Vibration Model of Special Vehicle Based on Dual-Mass System
Y.J. Shao, Q.H. Gao and H.J. Cheng 89

Digital Analysis of Hydraulic Cone Valve Turbulence Based on Fluent 3D Solver
H. Ji, W.G. Zhu, S. Chen and J. Zhao 93

Analysis of the Laminar Flow in the Hydraulic Poppet Valve Based on the Fluent 3D Solver
H. Ji, W.G. Zhu, S. Chen and J. Zhao 97

Study on Vertical-Horizontal Coupling Vibration of Mill Rolls Based on the Nonlinear Rolling Force Model

Influence of Curve Geometric Parameters on the Curve Negotiation Performance of Hot-Metal-Car
G.S. Feng, H.Y. Liu, S.M. Jia and C. Wang 105

Damage Analysis of Naval Gun Guided Projectile to Typical Anti-Ship Missile in Proximity Mode
C.C. Wang, X.F. Xie, T. Sun and Y. Wang 109

Optimal Design of Lifting Mechanism for Standing Rehabilitation Bed Based on MATLAB
G.M. Wu and X. Shi 113

Inherent Strain Analysis of Thin-Walled Structure Welding Deformation
L.L. Lin 117

Precision Analysis of Parametric Modification of the Die Face Based on Reverse Engineering
J. Fan and L.G. Wang 121

Finite Element Analysis of Drill Tower Structure Based on ANSYS
J.T. Chen, H.Y. Song, W.W. Ge and Y.Y. Li 125

Study on Symmetrical Machining Technology of a Ship Model Surface
L.S. Zhu 129

Finite Element Analysis of Shelves Manipulator Bracket Based on Solidworks
W.W. Ge, S. Zhang, W.L. Sun and Y.Y. Li 133

Structure Analysis of Inner Cylinder Components of Drum Washing Machine Based on Ansys/Workbench
W.L. Sun, S. Zhang, W.W. Ge and Y.Y. Li 137

Optimization for Loading Path in Rear Sub-Frame Hydroforming Using Uniform Design and Response Surface Method

Dynamic Analysis of Rotary Drillstring in Horizontal Well Based on the Fluid-Structure Interaction
M. Luo, T.T. Xu, T.T. Zhao, W.X. Zhao and J.B. Liu 146

Optimization and Force Analysis of Bar Linkage Hinge Point of Self Erecting Tower Crane
J.M. Luo, Y.Z. An, M.S. Zhang and Y. Liu 150

The Mechanical Analysis of the Coiled Tubing
J.B. Liu, C.S. He and Q.B. Yue 154

Finite Element Analysis of the Packer at Fracturing
Z.M. Li, J.B. Liu and Y.Q. Ding 159

Stiffness Optimization for Springs in a Gun Cartridge Retaining Mechanism
L.M. Chen, L.F. Qian and R.X. Zhao 163

The Fatigue Life Prediction for the Transmittal Belt
Q.B. Yue, J.B. Liu and S.R. Gao 168

Study on Cold Start Influence Factors of Three Way Catalytic Converter

Integrated Support Decision of Aircraft Hydraulic System Based on Sequence Operation Theory
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Study on Fatigue of Metal Rubber Vibration Isolator under Pulsating Cyclic Stress</td>
<td>H. Yan, W.J. Zhang, H.Y. Jiang and L. Chen</td>
<td>180</td>
</tr>
<tr>
<td>Research on Thermal Balance of Oil Gas Suspension Based on Vehicle Dynamics</td>
<td>Y.J. Chen, Y.F. Zhang, J.J. Guo, Y.J. Wang and D.L. Feng</td>
<td>184</td>
</tr>
<tr>
<td>The Research on Reliability of Drilling Automatic Sampling Mechanism</td>
<td>L.L. Wang and Y. Pang</td>
<td>188</td>
</tr>
<tr>
<td>Modeling and Modal Analysis of Less-Teeth Gear Shaft</td>
<td>D.S. Zhang and J.J. Zhang</td>
<td>192</td>
</tr>
<tr>
<td>Choice of Less-Teeth Gear Parameters Based on MATLAB</td>
<td>D.S. Zhang, Z.L. Lv and J.J. Zhang</td>
<td>200</td>
</tr>
<tr>
<td>Numerical Simulation of Conical Pick Cutting Coal and Rock Process Based on ABAQUS</td>
<td>C.S. Liu, Y. Song and C.P. Ren</td>
<td>203</td>
</tr>
<tr>
<td>The Analysis of Coke Pusher Ram's Vibratory Response with Different Coke Pushing Speed</td>
<td>G.Q. Zhao, J. Zhang, Y.K. Zhang and L. Xu</td>
<td>208</td>
</tr>
<tr>
<td>Kinematic and Workspace Simulation of Flexible Assembly Tooling for Aero-Engine</td>
<td>H. Shi, W.N. Li and N. Zhu</td>
<td>212</td>
</tr>
<tr>
<td>Analysis of the Ground Rib Axial Profile of the Spiral Guid Roller</td>
<td>Z.B. Gao, W. Ma and X.Z. Deng</td>
<td>216</td>
</tr>
<tr>
<td>Evaluation of a Steam Jet Refrigerator with the Varying Specific Heat Ratio</td>
<td>W.B. Cui, F.M. Su and H.J. Li</td>
<td>220</td>
</tr>
<tr>
<td>Analysis on some Mechanical Properties of the Horizontal Opening Catenary</td>
<td>X.J. Pan, F. Xie and M.Z. Sun</td>
<td>225</td>
</tr>
<tr>
<td>Based on the Nonlinear Dynamics of Linkage Analysis of Vibration Characteristics and Control Strategy</td>
<td>M.Q. Wu</td>
<td>229</td>
</tr>
<tr>
<td>To Improve the Performance and Efficiency of Refrigeration Systems by Using Refrigerant Pumps</td>
<td>Q.J. Liu, Z.Z. Yuan, J.T. Sun and F. Han</td>
<td>233</td>
</tr>
<tr>
<td>Application of Composite Core-Pulling Mechanism in Mobile Phone Cover Injection Mould</td>
<td>J.M. Hong</td>
<td>237</td>
</tr>
<tr>
<td>Research on Vehicle Dynamics Random Response to Uneven Road</td>
<td>P.C. Shi and Y.M. Sun</td>
<td>242</td>
</tr>
<tr>
<td>The Stress Analysis of Joint Connecting Bolt of Submersible Electric Pump</td>
<td>Y.Q. Ding, J.B. Liu, L.Q. Tao and Y.C. Wang</td>
<td>246</td>
</tr>
<tr>
<td>Dynamic Simulation and Optimum Design for the Main Drive System of Reciprocating Compressor Considering Joint Friction</td>
<td>J.Y. Xu, Z. Li and Z.X. He</td>
<td>250</td>
</tr>
<tr>
<td>Research on Calculation Method of Equivalent Stress for Main Shaft in Wind Turbine</td>
<td>H.C. Guo, L.P. Dai and C.Y. Ding</td>
<td>255</td>
</tr>
<tr>
<td>Numerical Simulation of Energy Saving at Different Air Supply Angles in Air-Conditioned Room</td>
<td>J.Q. Yang and M.J. Li</td>
<td>263</td>
</tr>
<tr>
<td>The Design of Wind Tunnel to Research the Features of Insulator Deposition of Dirt</td>
<td>H. Huang, F.C. Lv, Y.P. Liu, Q. Liu, T. Xu and X.D. Wan</td>
<td>268</td>
</tr>
<tr>
<td>Analysis and Study of the Transmission Path Based on the Body and NVH</td>
<td>X. Liu, H.J. Yan, X.J. Liu and X. Sun</td>
<td>272</td>
</tr>
<tr>
<td>Simulation and Realization of Gas and Liquid Special Effect in Hovercraft Sailing Scene</td>
<td>L. Song, X.L. Bai, Z.Y. Yang and S.J. Xu</td>
<td>276</td>
</tr>
<tr>
<td>The Cleaning Performance Simulation of Rear Rolling Type Sweeper</td>
<td>Z.Q. Wang, X.L. Bian and Y.N. Feng</td>
<td>281</td>
</tr>
<tr>
<td>Analysis and Optimization on the Front Supporter of Concrete Mixer Truck</td>
<td>Y.D. Gao, Y.Z. Ma and X.G. Kong</td>
<td>288</td>
</tr>
</tbody>
</table>
Dynamic Damage of Aircraft Wing Leading Edge Impacted by Birds
L. Jun 292

Modal Analysis of Arrow Shaped Shovel Based on ANSYS Workbench

Optimizing for Lead-Bismuth Fast Reactor Guard Vessel Thickness
M. Huang, J.N. Tang, J. Ma and H. Yuan 300

Design Study on Skirt Support of Lead-Bismuth-Cooled Fast Reactor Vessel under Seismic Loading
M. Huang, J. Ma, J.N. Tang and H. Yuan 304

Design of High-Efficient Bits for Igneous Rock in Xushen Gasfield
L.G. Zhang, T. Yan and S.B. Li 308

Interactive Visual Modeling and Simulation for Virtual Maintenance of Aircraft Landing Gear
Z.H. Li, L. Chen and Q.C. Zhang 312

Boom Buckling Instability Capability Studies
Q. Miao, Z.P. Zhang, F. Xie and X. Li 316

Modal Analysis and Structure Optimization of a Printed Circuit Board NC Drilling Machine

Based on ANSYS Workbench High Speed Electricity Spindle Dynamics Characteristic Analysis
X.H. Song and S.L. Wu 324

Differential Thread Principle’s Application in Manual Drawing Device
W. Liu, Y. Shen and C. Lu 329

Numerical Simulation on Convective Heat Transfer in Microchannels of Two-Stage Y-Branch Bifurcation Structures
Y.L. Huang, B.M. Zhu, Y.T. He, H. Li and W.F. Li 334

Research on Repairing Deformation Rapidly for Steel Strip
H.W. Chen and Y. Zheng 340

Study on the Structure of the Flexspline of Harmonic Reducer
X. Wang, X. Zhou and C.Q. Li 344

Verifying Three Nodes Optimization Based on LM-BP Neural Network and Hybrid Genetic Algorithm
X. Li, Z.P. Zhang, S.L. Shen and F. Xie 348

Chapter 3: New Technologies and Methods in Construction, Geology and Engineering of Environment

Shear Displacement Method of Grouted Pile
J.L. Ye, S.C. Chen and L.Q. Bao 355

The Study on Development and Utilization of Coastal Environment
J. Li, Y.J. Chu, X.Q. Han and W.M. Gao 359

The Study of Evolvement in Muddy Coast
C.H. Zhang, Y.J. Chu, X.Q. Han and W.M. Gao 363

Research on Dynamic Load and Static Load Combination Effects on the Railway Bridge and Piers Impact
Y.X. Shen and G.F. Ren 367

Effect of Longyangxia Reservoir on the Variation of Water and Sediment
S.Z. Hou, Y. Guo and P. Wang 372

Integration of Tree Models into a Real-Time Pollution Dispersion Simulation
S.H. Chen and S.G. Dayan 378

Research for Rectangular Beam of Dual-E Elastic Body of Six-Axis Force Sensor Based on Limit Memory Extended Kalman Filter
W.C. Zhu and D.Z. Xu 382

Analysis the Vegetation and Soil Moisture in Beijing-Tianjin Area to Prevent Desertification by Long-Term Satellite Remote Sensing
J. Li, F.Z. Dai, Y. Li, C.Y. Yu and N. Hirose 388
Evaluation of the Ecological Civilization Construction of Inner Mongolia  
J.H. Zhen  
392

Under the Action of Earthquake Mechanics Analysis of the Infill Wall in Plane  
H. Cheng and X.D. Yang  
396

Numerical Simulation and Analysis for Influence of Wall Effect on Cavity Shape  
F.Y. Li, Y.W. Zhang and X.Z. Du  
400

Analysis of Engineering Geological Mechanics on the Jiasikou Debris Flow  
M.H. Su, X.D. Ma and X. Li  
404

The Research of the Water Quality Prediction Model for the Circulating Cooling Water System  
Q. Gao, T.L. Ma, J.F. Li and C.G. Li  
408

Study on Mineral Blending Models for Poly-Metallic Open-Pit Mine  
D. Li, N.L. Hu, G.Q. Li and J. Gong  
412

The Study of Water Resources Optimal Allocation of South-North Project Receiving Area  
B. Liu, J.X. Sha, Z.H. Yan and T.T. Zhang  
420

Water Exchange in North Harbor of Lingang Economic Area, Tianjin  
C.X. Zhang, X.Y. You and Y. Liu  
424

Transferring Simulation of Pollutants in YinLuan River Open Channel under Traffic Accidents  
C.X. Zhang, L.L. Wang, C. Wang, S.Y. Yang and X.Y. You  
429

Numerical Simulation of Pressure Loading Effects on Occurrence of Rock Lateral Cracks under Confining Pressure  
Y.L. Kang, P.Q. Chen and G.Y. Huang  
433

Collapse Simulation of Bricklaying Arch Based on 3D Distinct Element  
Y.H. Ou, H.B. Qian, Y. Wu, D. Wang, Y. Du and X.S. Jiang  
437

Flaws Simulation of Cave Depot in the Process of Explosion  
Y.H. Ou, H.B. Qian, D. Wang, Y. Wu, J.J. Liang and Y. Du  
441

The Genesis of Layer-Bound Polygonal Faults in the Sanzhao Sag of Songliao Basin  
G.D. Ping, X.F. Fu and Z.H. Xie  
445

Influence of Porous Structure Properties on Anti-Drillability Characteristics of Rock  
L.G. Zhang, T. Yan and S.B. Li  
449

Chapter 4: Instrumentation, Technologies of Measurement and Detection

The Design of a Portable Instrument for Straightness Measurement of Large Machine Tool  
R. Zhang, X. Sun, X.Y. Guo and J. Chen  
455

Design of Flare Gas Flow Measurement System on Offshore Oil Platform  
Q. Gao and H.Y. Zhao  
460

Development of Detecting System of Fighter Electrical Boxes  
Z.X. Zhang, H.Z. Mi, Z.H. Liu and D.G. Sun  
464

Design of Distribution Bench for Precision Measurement of Micro-Irrigation Sprinkler Irrigation Uniformity Coefficient  
W. Lou and J.L. Hou  
468

Numerical Simulation Study of Daqing Wuzhan Low Permeability Gas Reservoir  
Y.F. Lu, M. Yang, S.C. Li and B. Lv  
474

Design and Simulation of Measurement and Control System for Silage Cylindrical Baler Based on LabVIEW  
L.H. Zhang, G.H. Li, J.W. Zhao and B. Li  
478

The Technology of Ventilator Airflow Control  
Y.Y. Yuan, C.C. Yang and Z.X. Cao  
484

Ultrasonic Slurry Concentration Meter Design  
X.M. Han, J.M. Wang and C.C. Wang  
488

Development of a Multi-Function Virtual Instrument Based on a Constant Current Source  
D.B. Dai, Y.J. Wang, Y.P. Sun and Z.G. Liu  
492

The Research of Gray Bus Positioning System  
C. Cui, C. Hao and D.D. Li  
496
Research on Monitoring System for Transfusion in Hospital
H.Q. Wang and M. Xu 500

Application of Distributed Measurement and Control System
S.F. Li and L. Yang 504

Information Extraction Method of SO₂ Using Differential Optical Absorption Spectroscopy
Y.J. Gao and Y.N. Gao 510

Simulation for Range Prediction of Active Sonar in Shallow Water
L. Zhang, C.X. Meng and J. Na 514

Camera Calibration Method Based on Halcon
Z.X. Zhang, L. Liang and Y. Deng 518

The Application of Visual Attention Mechanism in Road Disaster Identification and early Warning System
S.Y. Hua and N.F. Xiao 523

Research on Purification Performance of Diesel Exhausts Four-Effect Catalytic Purification System

Incipient Fire Detection Method Based on Comprehensive Feature of Flame
Z.H. Li, X.Z. Fan and N. Qu 532

The Innovative Design of Measuring and Metrological Instruments Using Dimensional-Analysis
L.H. Ma, Y.Y. Gao, H. Sun, X.H. Hou, M.J. Qi and G.H. Li 538

Decision Strategy for Fault Troubleshooting Using Bayesian Influence Diagram
Y.S. Wang, Y.P. Huang and R.J. Zhang 541

Effects of Eddy Current within Particles on the 3D Solenoid Microfluidic Detection Chip
X.M. Zhang, H.P. Zhang, Y.Q. Sun, H.Q. Chen and L. Guo 546

The Design and Implementation of Cable Condition Monitoring System
L.P. Yue, H. Zhang, H. Gong and F.X. Wei 550

Measuring and Analyzing of Static Characteristics of Vehicle Capacitance Weighing Device
H. Shi 554

Fault Diagnoses Technology of Broken-Blade Propeller Induced Shaft Vibration
L.J. Ou, J. Li and D.Y. Li 560

Geo-Acoustic Parameters Inversion from Vertical Coherence Characteristic of Ambient Noise
C.X. Meng, G.J. Li and L. Zhang 567

Mechanical Press Slide Bottom Dead Center Measurement Based on Macro-Micro Adjustment Device
X.B. Pan, G.J. Song and G.P. Li 571

Performance Monitoring and Analysis of the Process Compressor
X. Xing and W.K. Xing 576

Fault Diagnosis for Temperature Signal of Turbine Blade Based on LS-SVM
L.W. Chen and C.D. Wang 580

Switching Multisensor Improved Current Statistical Model for Maneuvering Target Tracking
Q.F. He, Y.B. Li, H. Lv and G.J. He 585

Research on Intelligent Diagnosis Technology of Transformer Fault
H.Q. Wu and X.B. Li 589

Fault Diagnosis of Metro Vehicle Auxiliary Inverter Based on PSO-KPCM Algorithm
Z.T. Ma, J.W. Gao, Y. Qin, D.C. Yao and B. Zhang 593

Algorithm of Change Points Detection for a Trip Coil
Y.H. Zheng 597

Application of Multi-Sensor Information Fusion Technology in the Fault Diagnosis of Transformer
H.M. Ye and Z.D. Xiao 601

The Study and Application of High-Voltage Capacitive Equipments On-Line Monitoring System
J.Q. Zhang, Z.M. Su, T. Zhao and Y.P. Liu 605

Application of EKF for an Electro-Hydraulic Servo System Using Model-Based Approach
L. Zheng, L.L. Wu, X. Gu, Z. Shi and A. Ball 609
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study of Circuits Fault Detection Based on Infrared Technology</td>
<td>X.Q. Liu and J.G. Jiang</td>
<td>618</td>
</tr>
<tr>
<td>The Research of Full Digital Beneficiation Metal Detector</td>
<td>D.D. Li, C. Hao and C. Cui</td>
<td>622</td>
</tr>
<tr>
<td>Design of Mine Ventilators Monitoring System Based on ZigBee</td>
<td>S. Fu and H. Lin</td>
<td>626</td>
</tr>
<tr>
<td>Assessing Coronary Arterial Dynamics from Cineangiograms</td>
<td>Z. Sun and Q.X. Gao</td>
<td>631</td>
</tr>
<tr>
<td>A Grating-Based Dynamic Measuring Method of Small Three-Dimensional Angles</td>
<td>L. Sen</td>
<td>635</td>
</tr>
<tr>
<td>Research on 3D Modeling System Based on Binocular Vision Image Acquisition</td>
<td>J. Zhang, R. Gao, C.Y. Liu and Y.W. Zhao</td>
<td>640</td>
</tr>
<tr>
<td>Design of Temperature and Humidity Monitoring System Based on Wireless</td>
<td>Q. Gao, X. Gao and H.Q. Wu</td>
<td>644</td>
</tr>
<tr>
<td>A Fault Diagnosis Method Based on Artificial Immune Network</td>
<td>W.K. Jiang, Y.J. Chen and J. Zhang</td>
<td>658</td>
</tr>
<tr>
<td>Water Film Detection in Water Distribution Test of PCCS</td>
<td>X.F. Li</td>
<td>663</td>
</tr>
<tr>
<td>An on Line Method of the Steady-State Data Acquisition</td>
<td>J. Yang, H. Bao, L. Wang and G. Liu</td>
<td>668</td>
</tr>
<tr>
<td>Multi-Sensor Multi-Target Data Association Algorithm Based on Swarm Intelligence</td>
<td>D.P. Yuan, J.Y. Zheng and H.S. Shi</td>
<td>675</td>
</tr>
</tbody>
</table>

**Chapter 5: Mechatronics and Robotics**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of Household Conveying Robot Control System Based on STM32</td>
<td>W.J. Li, J.H. Ding, D.Q. Wang, T. Gao and F.Z. Yan</td>
<td>687</td>
</tr>
<tr>
<td>Design and Research on Actuator of Robot Joint Based on GMM</td>
<td>Y.Y. Li, S. Zhang, W.W. Ge and W.L. Sun</td>
<td>691</td>
</tr>
<tr>
<td>Open Service Robot Development Platform</td>
<td>X.P. Ma, B.F. Qian and T. Wu</td>
<td>704</td>
</tr>
<tr>
<td>Robot Stereo Vision Guidance System Based on Attention Mechanism</td>
<td>L. Yang and N.F. Xiao</td>
<td>708</td>
</tr>
<tr>
<td>Design of a Pan-Tilt System for Substation Inspection Robot</td>
<td>P. Xiao, H.P. Wang, Y.Q. Luan, L. Li and T.B. Wang</td>
<td>712</td>
</tr>
<tr>
<td>Path Planning for Mobile Robot Based on Improved Ant Colony Algorithm</td>
<td>R. Wang and Z.T. Wang</td>
<td>717</td>
</tr>
<tr>
<td>Ship Rust Removal Spray Painting Robot Finite Element Analysis Based on ANSYS</td>
<td>S.F. Zhou, Y. Zheng and N. Wang</td>
<td>721</td>
</tr>
<tr>
<td>Studies on the Algorithm for Five-Axis NC Machining with Triangular Facet Model</td>
<td>R.X. Geng, H.J. Qi, X. Pan and Z.G. Liu</td>
<td>726</td>
</tr>
<tr>
<td>The Design and Implementation of the Expert System for Cutting Parameters Based on CLIPS</td>
<td>X.B. Liu, X.B. Wang, C.N. Li and S.P. Deng</td>
<td>731</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Vehicle Network System CAN Protocol Based on the Anti-Jamming Methods Research</td>
<td>B. Zhang and S.W. Zhang</td>
<td>735</td>
</tr>
<tr>
<td>The Automobile Brake Guards against Holds the Dead (ABS) Simulation Experiment to Install the Brake Flowing Tubing Head Pressure Examination System the Design</td>
<td>B.H. Zhong</td>
<td>739</td>
</tr>
<tr>
<td>The Application Study of Image Recognition Technology in Substation Sequential Control</td>
<td>Z.L. Wang, Y. Sun and B.H. Wang</td>
<td>751</td>
</tr>
<tr>
<td>Research on Control Methods of Speed Stability by AR Model Based on Linear Ultrasonic Motor</td>
<td>Z.L. Xu and Z.Y. Yao</td>
<td>777</td>
</tr>
</tbody>
</table>

**Chapter 6: Modern Control and Automation**

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis for Operation Control System Based on IDEF Method</td>
<td>K.L. Zhou, Q.Q. Li and R.S. Guo</td>
<td>783</td>
</tr>
<tr>
<td>Control of Pulse Fatigue Test Press of Oil Cooler Based on Repetitive Control</td>
<td>H. Zhu</td>
<td>787</td>
</tr>
<tr>
<td>PLC Applied in the Three-Phase Stepper-Motor Control System</td>
<td>X.Y. Bu and P. Liu</td>
<td>791</td>
</tr>
<tr>
<td>Studies on the Low-Voltage Dynamic Reactive Power Compensation and Switching Control for Capacitors Device</td>
<td>Q. Guo, X.L. Xie, Y. Li and X.Y. Chen</td>
<td>799</td>
</tr>
<tr>
<td>Fuzzy Control System of Water Level Based on Fuzzy Reasoning</td>
<td>T. Han and X.H. Chen</td>
<td>803</td>
</tr>
<tr>
<td>Research of Robust Fault-Tolerant Control for T-S Fuzzy Time-Delays Descriptor System</td>
<td>C.L. Zhao, Y.N. Xu, D.B. Zhu and C.Z. Xu</td>
<td>808</td>
</tr>
<tr>
<td>Robust Control of Modular Gun Propellant Select Mechanism with Unknown Dead-Zone</td>
<td>Q. Zou, L.M. Chen and L.F. Qian</td>
<td>812</td>
</tr>
<tr>
<td>Design and Application of Measure and Control System Based on CAN-Bus for Large Pumping Station Auxiliary Equipments</td>
<td>G.L. Zheng and Z.J. Wang</td>
<td>818</td>
</tr>
<tr>
<td>Optimization Design of CVT Electro-Hydraulic Servo System Based on H∞ Control</td>
<td>Y.Q. Wang, Q.S. Jiang and H.S. Yang</td>
<td>823</td>
</tr>
<tr>
<td>Fuzzy Control Based on Genetic Algorithm to Optimize the Mill Load</td>
<td>Y.J. Li, J.M. Wang and J. Zhang</td>
<td>827</td>
</tr>
<tr>
<td>Application of Auto-Control and Measurement System for Three Gorges Shiplocks Model</td>
<td>D.H. Yan</td>
<td>835</td>
</tr>
<tr>
<td>Port-Controlled Hamiltonian Control of IM Based on Back-to-Back Converter</td>
<td>N. Zhu, H.S. Yu and B.Q. Shan</td>
<td>839</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Control System of Sensorless BLDCM Based on F28335</td>
<td>Y. Zhu, K.P. Feng and Y.F. Wu</td>
<td>843</td>
</tr>
<tr>
<td>Intelligence Predictive Control Study on Lime Rotary Kiln Temperature</td>
<td>L. Zhang, S. Wang and G.J. Su</td>
<td>848</td>
</tr>
<tr>
<td>The Automatic Control System Based on PROFIBUS for the City Sewage Treatment</td>
<td>X.P. Huang and Q.X. Qing</td>
<td>857</td>
</tr>
<tr>
<td>Motor Control Application Based on STM32 and PID Control Theory</td>
<td>Z.T. Zhao</td>
<td>867</td>
</tr>
<tr>
<td>Nonlinear Coordinated Control of STATCOM and Generator Excitation Based on Improved Dynamic Surface Control Method</td>
<td>W.L. Li and W.X. Lin</td>
<td>872</td>
</tr>
<tr>
<td>Analysis on Improved Dijkstra Algorithm in Intelligent Transportation System</td>
<td>H.Y. Wang, C.J. Ji and X.J. Ji</td>
<td>877</td>
</tr>
<tr>
<td>Steam Dewaxing Casting Controller Based on S7-200 PLC</td>
<td>J.B. Zong, J.H. Ding, Q.Q. Rong, D.Q. Wang, T. Gao and X.M. Li</td>
<td>882</td>
</tr>
<tr>
<td>Application of Double Motor DC Drive in the Crane Control System</td>
<td>S.F. Guo and H. Li</td>
<td>886</td>
</tr>
<tr>
<td>Asymptotic Stability Analysis and Controller Design for a Class of Switched Uncertain Singular Systems with Time-Delay</td>
<td>Y.S. Luo, S. Gao, Y. Gao, T. Li and C.F. Liu</td>
<td>890</td>
</tr>
<tr>
<td>Speed Loss Compensation Simulation Analysis on Variable-Speed Pump-Control-Motor System</td>
<td>T.H. Peng and T. Ma</td>
<td>896</td>
</tr>
<tr>
<td>Control Strategy of the DC Drive Systems Based on the State Error Port-Hamiltonian Theory</td>
<td>B.Q. Shan, H.S. Yu, Z.B. Teng and N. Zhu</td>
<td>901</td>
</tr>
<tr>
<td>Design of Cable Main Insulation and Outer Sheath Insulation Online Monitoring System</td>
<td>H. Zhang, L.P. Yue, F.X. Wei and H. Gong</td>
<td>907</td>
</tr>
<tr>
<td>Two Synchronization Schemes for Chen Chaotic System</td>
<td>X.P. She</td>
<td>915</td>
</tr>
<tr>
<td>A New Method for Full State Hybrid Projective Synchronization of Different Fractional Order Chaotic Systems</td>
<td>H. Feng, Y. Yang and S.P. Yang</td>
<td>919</td>
</tr>
<tr>
<td>Research on Control System of Tropical Intelligent Agriculture in Hainan</td>
<td>Y.B. Kan, L.L. Wang, Y.S. Zhang and E.P. Liu</td>
<td>923</td>
</tr>
<tr>
<td>The Generation of the Fuzzy Control Rules Based on Association Rules with Temporal Constraints</td>
<td>Z.G. Li and F.L. Yang</td>
<td>931</td>
</tr>
<tr>
<td>Study on Dynamic Performance of UPFC Based on PSASP</td>
<td>L.C. Li, Y.F. Chen and F. Zhang</td>
<td>941</td>
</tr>
<tr>
<td>Finite-Time Chaos Synchronization of Lorenz Chaotic System Based on the Passive Control Teachnique</td>
<td>Y.F. Wei</td>
<td>945</td>
</tr>
<tr>
<td>Simulation Study on Drawworks Heave Compensation System of Offshore Oil Drilling</td>
<td>L.M. Huang, Y.T. Zhang, L. Zhang and M.Y. Liu</td>
<td>951</td>
</tr>
</tbody>
</table>
Design of Neural Network Controller Based on FPGA Distillation Column
J.B. Yang, M.Y. Jia, L.H. Su and L.L. Yao 956

Design of the Wireless Data Acquisition System – Substation Management System
J.F. Li, P. Zhang and Q. Gao 960

Research on Appropriate Automatic Control Model in Rural Waterwoks
L. He 964

The Control System of Test Bench for Thermal Insulating Properties of Building Doors and Windows Based on Fuzzy-PID Control

Design of Soil Temperature and Humidity Remote Monitoring System of Tea Garden Based on GPRS
Z.B. Wang 973

Adaptive Control of Pulse Width Modulation Voltage-Source Rectifier with Disturbance Signals
B.B. Liu 977

A Health Condition Monitoring Method of Aeroengine Gas Path System Based on Consistency Fusion and Neural Network
J.G. Cui, C. Wu, L.Y. Jiang, Y.W. Qi and G.Q. Li 981

Chapter 7: Power System and Energy Engineering, its Applications

Prediction of Insulator's Equivalent Salt Deposit Density in Power System
L. Ai and J.T. Cheng 987

Research on the Reactive Power Optimization
Y.Y. Wang and Y.S. Li 991

Research on the Improvement of OCT Used in Power System
H.P. He and J. Liu 995

The Optimal Controlled Partitioning Strategy for Power System Based on Master-Slave Problem
W. Wang, T. Yu, T.J. Pu, A.Z. Tian and J.K. Lin 999

An Efficient Key Management Protocol for Multi-Microgrid Distribution System
Y.H. Ma, D.D. Cui and X.Y. Wang 1007

A Long-Term Frequency Dynamic Simulation Method of Power System with the Wind Farm Based on Quasi-Steady State Simulation

External Network Equivalent of Wind Power Simulation for Fu Jian
C.D. Li, J.J. Xu and H.Y. He 1017

Relay Protection Security Analysis of Jiuan Substation under Complex Power Transmission Environment
L. Dong, W.D. Li, W.P. Zhou and T.J. Pu 1021

Analysis of Residential Loads Behaviors Integrated with Distributed Generation under Different Pricing Scenarios

Metering Infrastructure and its Reference Architecture of Smart Distribution Grid Based on the Domain Model
Y.Y. Sun, Y.X. You and Y. Chen 1030

Analysis on Influence of Complex Power Transmission Environment on Main Equipment Safety of Jiuan Substation
T.J. Pu, A.Z. Tian, Z. Fan, Y. Li and D. Li 1036

Multi-Scenario Based Generation Scheduling of Power System with Wind Farms
L. Dong, J.K. Yang, T.J. Pu and H.M. Zhou 1040

Influence of Fuel Supply Advance Angle on Fuel Economy of Diesel Engine with Ethanol–Diesel Blend Fuel
A.K. Wu, H. Zhu and K.J. Lu 1045

Reliability Compliance Test Method Research for Wind Turbine
H.C. Guo, L.P. Dai and C.Y. Ding 1049
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Impact on the Voltage Fluctuation of Wind Power Integrated Separately in Chongqing Distribution Network</td>
<td>1053</td>
</tr>
<tr>
<td>Study of Grid Trust Model Based on Virtual Domain</td>
<td>1059</td>
</tr>
<tr>
<td>Design and Implementation of Wind Farm’s Power Prediction Web System</td>
<td>1066</td>
</tr>
<tr>
<td>Experimental Performance for a Universal Single Mooring Platform Applied to Wave-Energy Conversion System</td>
<td>1070</td>
</tr>
<tr>
<td>Study on Collection Efficiency of Buoy in Wave Power Generation</td>
<td>1074</td>
</tr>
<tr>
<td>Research on Power Flow Control of UPFC Based on PSASP/UPI</td>
<td>1078</td>
</tr>
<tr>
<td>Study on Improvement Transient Stability of the Large-Scale Wind Farms Integration with STATCOM</td>
<td>1082</td>
</tr>
<tr>
<td>Study on Simulation System of Relay Protection for Smart Substation</td>
<td>1086</td>
</tr>
<tr>
<td>Research on Networking of the Large Capacity Power Backbone Transmission Network Based on Cross Technology</td>
<td>1090</td>
</tr>
<tr>
<td>Study on Topology Optimization Algorithm of Power Communication Network Based on Complex Network Theory</td>
<td>1095</td>
</tr>
<tr>
<td>Research on Optimal Gradient - Climbing Algorithm in Wind Power Generation</td>
<td>1100</td>
</tr>
<tr>
<td>A Self-Tuning Power System Stabilizer Design</td>
<td>1104</td>
</tr>
<tr>
<td>Analysis on Altitude Correction Factor of 750kV Transmission Line Conductors Corona Inception Voltage</td>
<td>1108</td>
</tr>
<tr>
<td>Influence of Icing to the Corona Loss Characteristics of the AC Power Transmission Lines</td>
<td>1112</td>
</tr>
<tr>
<td>Research on the Optimal Dispatching Strategies of Power System with Large-Scale Wind Power</td>
<td>1117</td>
</tr>
<tr>
<td>The Study of Wind Turbine Based on Fuzzy Logic</td>
<td>1122</td>
</tr>
<tr>
<td>Backup Protection for Six-Phase Transformer Based on Six-Sequence Components</td>
<td>1127</td>
</tr>
<tr>
<td>Novel Global Maximum Power Point Tracking Algorithm for PV Array under Partially Shaded Conditions</td>
<td>1131</td>
</tr>
<tr>
<td>The Fast Estimation of the Electromechanical Oscillation Frequency</td>
<td>1135</td>
</tr>
<tr>
<td>Wind Turbine Risk Assessment Using Modified Failure Mode and Effects Analysis</td>
<td>1141</td>
</tr>
</tbody>
</table>

**Chapter 8: Electrical Engineering, Electrical Machines and Apparatuses**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of Chaos in Permanent Magnet Synchronous Motor Optimization</td>
<td>1147</td>
</tr>
<tr>
<td>Output Controllability of Buck Converter in DCM</td>
<td>1151</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>The Influence of Transformer Leakage Inductance and Distributed Capacitance Parameter on the Output of Switch Power Supply</td>
<td>Z.W. Zhang and G.Y. Han</td>
</tr>
<tr>
<td>Modeling for Segmented Tracks Planning of Roadway-Powered Electric Vehicles</td>
<td>Y. Tian, B.Z. Xia, Y. Sun, Z.H. Xu and W. Sun</td>
</tr>
<tr>
<td>Power Line Carrier Communication Channel Model Applied to Shipboard Electric Network</td>
<td>H.J. Li and H.L. Zhang</td>
</tr>
<tr>
<td>The Composite Method of Torque Ripple Restraining in Brushless DC Motor</td>
<td>H.P. Pan, J.J. Gu and M.M. Gu</td>
</tr>
<tr>
<td>The Simulation Study on Transformer Oil-Paper Insulation Polarization Spectrum</td>
<td>J.Q. Zhang, T. Zhao and Y.P. Liu</td>
</tr>
<tr>
<td>Double Closed-Loop Control of the Three-Level Rectifier Based on Synchronous PI Current Decoupling</td>
<td>C.W. Lin, T.J. Liu and J. Gui</td>
</tr>
<tr>
<td>Research on Three-Phase VIENNA Converter for PFC</td>
<td>G.X. Wang, C.L. Xu, H. Zhang, H. Yan and C.Y. Yang</td>
</tr>
<tr>
<td>Optimal Design of Transverse Flux Permanent Motor with Reducing Cogging Torque</td>
<td>S.B. Su, Y.K. Shi, K. Han and X.Q. Yuan</td>
</tr>
<tr>
<td>Switching Power Supply System in Parallel Based on Master-Slave Current Law</td>
<td>G.H. Li and F.Y. Meng</td>
</tr>
<tr>
<td>Research on Anti-Jamming Technology of Variable Adjusting Speed System</td>
<td>J.Y. Zhou</td>
</tr>
<tr>
<td>Study on the Insulating Spacers Surface Discharge of GIS</td>
<td>Y.P. Liu, Z.J. Wang and Y.S. Li</td>
</tr>
<tr>
<td>Study of Capacitor Bank Fault Location</td>
<td>T. Zhao, Y.F. Liao, Z.M. Su, R.H. Li and Y.P. Liu</td>
</tr>
<tr>
<td>Realization of Fixed Switching Frequency Direct Power Control for Three-Phase AC/DC Converter</td>
<td>Y.L. Wang and Y.L. Zhao</td>
</tr>
<tr>
<td>An Optimal Design of PI Control in the Application of Active Power Filter</td>
<td>Y.L. Wang and X.F. Yu</td>
</tr>
<tr>
<td>Hysteresis Current Control Technique Based on Space Vector Modulation for Active Power Filter</td>
<td>Y.L. Wang and Q.L. Gu</td>
</tr>
</tbody>
</table>

Chapter 9: Electronics and Integrated Circuits, Embedded Technology and Applications

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Video Device to Image the Side of Deep Pipe</td>
<td>C.T. Ma, C. Xiong, X.S. Bai and J. Du</td>
<td>1237</td>
</tr>
<tr>
<td>Application of Matlab to write a Script for HFSS's Eigenmode Solution of Circular Cavity</td>
<td>A.G. Ji and D.S. Liu</td>
<td>1240</td>
</tr>
<tr>
<td>A New Improvement of Radial Line Slot Antenna</td>
<td>J.H. Hu, J.C. Lin and W.L. Fu</td>
<td>1244</td>
</tr>
<tr>
<td>A Study on Tracking Accuracy of Netted Radar</td>
<td>Y.L. Zhao, H.B. Wang, X.D. Gao, Y.Z. Chen and Z.J. Yan</td>
<td>1249</td>
</tr>
<tr>
<td>Underwater GPS Positioning System Based on a Dual Acoustic Device</td>
<td>L.L. Ai, W.H. Xu, Y.C. Liu and J.L. Gu</td>
<td>1255</td>
</tr>
<tr>
<td>Vehicle-Carrying Multi Channel Data Acquisition System Based on the CompactRIO</td>
<td>Y.L. Zhang, X. Wu, N. Pan and X. Wang</td>
<td>1260</td>
</tr>
</tbody>
</table>
Comparisons between Ku-Band GaAs SSPA and GaN SSPA with a Same Architecture
H.F. Cheng 1264

Reduction of Glitch Interference in FPGA Design
G.H. Xiong and X.Y. Liu 1268

Design and Develop of Functional Safety Temperature Transmitter for Fault Status
Z.P. Wang, A.D. Xu, Y. Song and B.J. Yan 1272

Design of 25-Gb/s Half-Rate Clock and Data Recovery Circuit for Optical Communication
Z.F. Hu, Y.M. Chen and S.J. Xue 1278

Design of Encoder and Decoder for Q-Ary LDPC Codes Based on FPGA
Z.X. Wang and P.X. Wang 1282

Research and Design of the Solar Charging System Based on FPGA
H.L. Cheng, G.C. Zhang and W. Zhang 1288

A Ku-Band Wideband Power Divider with Defected Ground Structure
X. Han and J.H. Xu 1292

Design of 5.1 Channel Audio System Based on Zigbee and PurePath Wireless Technology
D.S. Wang, Z.C. Wang and C.W. Lin 1296

Automatic Measurement and Modeling Implementation of Diode Reverse Recovery
W. Sun and D.K. Yang 1300

Application of EMI Filter in Design of Switching Power Supply
P.F. Guo, J. Song, H. Zhang, X. Li and R. Lu 1305

Vision-Based Route Recognition of AGV on ARM Platform
X.H. Huang, K. Wang, Z.Y. Huang and C.P. Chen 1309

Design and Implementation of Wireless Medical Monitor Based on WIFI Technology
W.L. Lei, X.C. Ren, X.L. Cao and X. Zhang 1313

Improved Baseband Mapping Method for G3 OFDM Technology
Z.R. Gu, D.W. Liu, H.L. Liu and K. Xu 1318

A Ring Topology of Double Circuit with Multiple Nodes Redundant Bus Design and Communication Strategy Research
G.L. Zheng and X. Chen 1322

Study of an ENG-Inspired Two-Sided UHF RFID Tag Antenna
L. Li, L.C. Wang, X.J. Hu and X.L. Yin 1327

Airborne Doppler Navigation Radar Intelligent Test System
T. Zou, X.L. Zeng and W.D. Zhang 1331

A CMOS Bandgap References Voltage Circuit Using Current Conveyor for Power Management Applications
M.C. Lee and C.J. Hu 1335

High-Order Active Filter Design Based on Component-Level Signal Flow Graph Method
Y.X. Huang, K. Li, X.W. Xuan and J.F. Teng 1340

Design of Antenna Minimization for Wireless Sensor Network Node
L.Z. Ren, Q.S. Jiang and L. Liu 1344

Chapter 10: Signal and Image Processing, Data Mining

Analysis of Time-Phase Modulation for Multiple Users
L.Y. Fu, B. Deng and S.Q. Cui 1351

Linear Block Codes for Six-Dimensional Signals over Finite Fields
X.D. Dong 1358

Mining Indirect Temporal Sequential Patterns in Large Transaction Databases
W.M. Ouyang and Q.H. Huang 1362

A Robust State Estimation Method Based on Exponential Weight Functions
T.J. Pu, W. Han, J.Y. Dong, Q. Li and J.K. Lin 1366

Foundation of the Speech Source for the Speech Warning System of the Plane
W.D. Zhang, T. Zou and X.L. Zeng 1372

A Novel Approach for Time Registration of Multi-Radar Data
H.B. Yu, G.H. Wang and Q. Cao 1377

Energy Based Dual-Microphone Electronic Speech Segregation
Y. Jiang, H. Zhou, Y.Y. Zu and X. Chen 1381
Emotion Recognition from Speech Signals Using Elicited Data and Fuzzy KDA
Y.Q. Bao, L. Zhao and C.W. Hang

Voltage Flicker Extraction Based on Wavelet Analysis
L. Chai and J.R. Sun

De-Noise of the High Frequency Corona Current with Wavelet Analysis Method

Improved Speech Enhancement Algorithm Based on Bark Bands Noise-Estimation for Non-Stationary Environment

Objective Recognition Algorithm of Remote Sensing Image Based on Wavelet Transform
B.T. Li and Z.C. Yuan

An Algorithm of the LMS Adaptive Filtering in Linear Canonical Transform Domain
Y.H. Zhang, H. Zhao and H.H. Li

ANFIS Model for Time Series Prediction

Recent Frequent Item Mining Algorithm in a Data Stream Based on Flexible Counter Windows
Y.Y. Guo, G. Wang, F.M. Hou and Q.L. Mei

Application Research of the Power Spectrum Estimation in the Ankle-Brachial Index Detection
G.Y. Wang

A Novel Scheme for Time Delay Estimation in the Fractional Fourier Transform Domain
X.M. Li

A Configurable Tilt License Plate Correction Method Based on Parallel Lines
Z.Y. Liang and S.Y. Zhang

Image Threshold Segmentation Method Based on the Gradient Adjustment and Improved Moment Preserving
J.X. Zhu and Q. Tong

Gauss Background Modeling Method Based on Multi-Scale Feature
Z.H. Li, P.B. Yu and Q.C. Zhang

Comparison of Optical and Concentration Feature Used for fNIRS-Based BCI System Using HMM
B.L. Xu, Y.F. Fu, G. Shi, X.X. Yin, L. Miao, Z.D. Wang and H.Y. Li

Alternate Orthogonally Polarization Jamming on ASLC System
X.C. Li and Q. Zhang

A Straight Line Preserving Seam Carving Technique
Y.J. Tsai, H.J. Lin and Y.S. Li

Realtime Recognition of Attention State by Complexity Analysis of Electroencephalogram
L.Y. Huang, H.J. Ma, L. Jin and R. Lu

Detection and Tracking of Cooperative Target for Space Exploration Task Based on Visual Measurement
J.J. Wang, J.Y. Huang and S.Y. Qin

Visual Saliency and Extended Hidden Markov Model Based Approach for Image Splicing Detection
X. Li, X.J. Shen, Y.D. Lv and H.P. Chen

Research of Sandbox Sand Body CT Image Processing Methods Based on Fuzzy Similarity
X.H. Ren and J.Q. Bai

Studies on Phased-Array Radar Jamming and Simulation System
L.X. Li, Y.Z. Hao, H. Chen, Y.C. Liu, H. Liu and M. Li

Multi-Unknown Breaks Estimates in Presence of Fractional White Noise Disturbance
D. Lu

An Improved Tracking Algorithm Combing Color and LBP Texture Features Based on Particle Filter
E.Z. Dong, L.Y. Su and Y.H. Fu

Research Based on Template Matching Technologies Sandbox Sand Body CT Image Processing Methods
X.H. Ren and J.Q. Bai
Chapter 11: Communication and Networks

Measurement and Analysis of the Low-Voltage Power Line Narrowband Carrier Channel Attenuation
X.D. Sun, Y.H. Zhao, M.Y. Zhai, G.L. Xing and D. Li 1519

Design of CAN-FlexRay Gateway based on Node Mapping Methods for In-Vehicle Network System
C.L. Zhao and Y.N. Xu 1523

3-D Research about Walfisch-Bertoni Model

Design and Implementation of Object Monitoring and Management System for Satellite Location
L.W. Tang, X.J. Li and Y.Y. Li 1531

Outdoor Personnel Positioning System Based on GPS
H.P. Pan, L. Wang and D.D. Chen 1537

Study of the Bidirectional PON Performance Based on the Optisystem
S.L. Zhao 1541

Design of Intelligent Addressable Broadcast System Based on Zigbee
D.S. Wang, Y.F. Zeng and J. Wang 1546

Design on the Monitor System of IPTV Program Broadcast
Z.P. Lan, Y.R. Wang, P. Li and D.M. Lei 1550

The Principle of Conditional Access System and the Realization of Set-Top Boxes
Y.R. Wang, Z.P. Lan, P. Li and D.M. Lei 1554

Research on Security Communication for SDG Integrated QKD
Y.H. Ma, X.Y. Wang and D.D. Cui 1558

A Class of Large Family of Binary Sequences with Low Correlation and Large Linear Span
J. Chen and Y. Chen 1562

Modeling and Simulation of the Propagation Characteristics by Underground Current Field
Y.D. Xu 1568

MapReduce Implementation of Face Recognition Based on HOG Feature and NSMD
S.Z. Li, H.F. Huang and N.F. Xiao 1572

Design of Modified Minsum Decoder of LDPC Code in the Simplified Difference-Domain
Z.X. Wang and X.L. Gao 1576

Modeling and Simulation of the Propagation Characteristics by Underwater Conduction Current Field
W. Xue and J. Wang 1582

Joint Selection of OFDM Parameters in Mobile Satellite Communications
J.J. Wang, C.M. Li, B. Li, H. Chang and J.J. Wu 1586

Distributed Group Key Management for Secure Electronic Communication
Q.N. Niu 1591

Effects of ASE on DPSK Modulation Formats with Different Duty-Ratio in Optical Transmission System
J.H. Hu, Y.L. Guan and J.C. Lin 1595
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and Implementation of Fixed-Phone Cluster System Based on Modern Communication Technology</td>
<td>Q.Q. Li, Y. Xiao and F.Z. Xu</td>
<td>1599</td>
</tr>
<tr>
<td>The Network Management Based Multi-Channel Connection Management of MOST</td>
<td>Y.H. Chen, G.H. Qin and Y. Nan</td>
<td>1604</td>
</tr>
<tr>
<td>Wireless Sensor Network Localization Based on Semi-Supervised Local Subspace Alignment</td>
<td>J. Chen and Y. Liu</td>
<td>1618</td>
</tr>
<tr>
<td>A New Key Management Scheme for Hierarchical Wireless Sensor Network</td>
<td>C.Y. Li, X.T. Zhang, Y. Qi, L.W. He, H.S. Chen and X.Y. Zhang</td>
<td>1622</td>
</tr>
<tr>
<td>Study on Best Partner Selection Algorithms in Cooperative Network Coding Systems</td>
<td>M.R. He</td>
<td>1626</td>
</tr>
<tr>
<td>A New Channel Conflict Model for Multi-Radio Multi-Channel Wireless Networks</td>
<td>S.B. Zhu, W.J. Zhang, C.Q. Li and X. Wang</td>
<td>1638</td>
</tr>
<tr>
<td>Performance Analysis of MAC in VDL2 Based on OPNET Simulation</td>
<td>L. Gao and Z.J. Wu</td>
<td>1643</td>
</tr>
<tr>
<td>The SSL MIMT Attack with DNS Spoofing</td>
<td>Y.L. Zhang and G.S. Xia</td>
<td>1647</td>
</tr>
<tr>
<td>OPNET Network Simulations Based on the Performance of WLAN IEEE802.11</td>
<td>T. Yi</td>
<td>1651</td>
</tr>
<tr>
<td>Realization of Real-Time Data Exchange between OPC Client and Multiple Remote Servers</td>
<td>D.H. Li, H. Li and K.L. Zhang</td>
<td>1655</td>
</tr>
<tr>
<td>Improved RFID Anti-Collision Algorithm Based on Dynamic Framed Slotted ALOHA Algorithm</td>
<td>Q. Yu, P. Gu and J.L. Wang</td>
<td>1659</td>
</tr>
<tr>
<td>Chapter 12: Information Technologies and Engineering Management in Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research on the Method of Text Information Hiding Based on XML</td>
<td>L. Chen, W. He, H. Shu and F.C. You</td>
<td>1665</td>
</tr>
<tr>
<td>Research on Entity Resolution Algorithm Based on Domain Ontology Using MapReduce</td>
<td>P.X. Zhou, S.H. Huang, X. Jiang, J.J. Wang and D.P. Dang</td>
<td>1669</td>
</tr>
<tr>
<td>An Improved Estimation of Distribution Algorithm Based on the Entropy Increment Theorem</td>
<td>Y. Yi, M.J. Chen and F.H. Yu</td>
<td>1675</td>
</tr>
<tr>
<td>Web Service QoS Matching Research Based on Ontology</td>
<td>X.B. Ma and X.F. Zhou</td>
<td>1679</td>
</tr>
<tr>
<td>Design and Implementation of a Data Warehouse ETL Tray Program</td>
<td>Z.G. Yang, L. Sun and X.Y. Yu</td>
<td>1684</td>
</tr>
<tr>
<td>Reachability Analysis of Perception Layer Scheduling for IoT</td>
<td>J. Ji, G.X. Liu and L.M. Wu</td>
<td>1689</td>
</tr>
<tr>
<td>Research on Customizable Modeling Workflow Engine in Information System</td>
<td>Q. Yu and C.Y. Zhang</td>
<td>1693</td>
</tr>
<tr>
<td>A Novel Learning Evaluation Method Based on RBF Neural Network</td>
<td>F.H. Yu, M.J. Chen and W.Z. Liao</td>
<td>1697</td>
</tr>
<tr>
<td>CMM Based Requirement Engineering Model in Software Development</td>
<td>Y. Li</td>
<td>1701</td>
</tr>
<tr>
<td>A Hierarchical Access Control Scheme Based on Lagrange Interpolation and ELGamal Algorithm with Numerical Experiments</td>
<td>T.L. Chen, Y.F. Chung, J.M. Hong, J.H. Jhong, C.S. Chen and T.S. Chen</td>
<td>1705</td>
</tr>
</tbody>
</table>
An Adaptive Load Balancing Method of Adjustment Based on Cloud Computing Resources
X.P. Jiang, T. Jiang, T. Zhang and C.H. Li 1708

A New Watermarking Algorithm for Relational Database Copyright Protection
Z.P. Li, C.X. Jiang and Z. Li 1713

A Bit Rate Control Adaptive Optimization Algorithm for H.264/AVC

Iron Ore Grinding Energy Conservation Research Based on Neural Network
T.Q. Sun, C.X. Xie and Z.Q. Qiu 1722

Long-Term Sales Forecast Method Based on Grey Model and Artificial Neural Network
Y.J. Wang and H.Y. Tang 1726

Research on the Smart Grid Dispatching System Based on Cloud Computing
L. Li and Z.X. Huang 1730

Database Design for Archives Management System
K.H. You, H.Y. Li and S. Zhao 1734

A Fast Scheduling Algorithm for Multiple User MIMO-MRC System
D. Tang and M.X. Lv 1738

Use of Information Technology in Design Interface Coordinate
P. Lu, B. Liu and Y.H. Liang 1743

Optimisation of Process Routing in CAPP Using Genetic Algorithm and Graph Theory
S.J. Huang 1747

Study of Crown Three-Dimension Model Rebuilding Based on RE Technology and its Laser RP Technology
D.Q. Zhang and X. Li 1752

Experimental Analysis of RSSI-Based Underground Tunnel Localization with Wireless Sensor Networks
K. Xu, D.W. Liu, H.L. Liu and Z.R. Gu 1756

Study on Feature Modeling Based on Ontology
J.B. Liu and X.F. Zhou 1760

An Implementation of Documents Interoperability Measuring System
Y.W. Gao, X. Hou and N. Li 1764

The Architecture of IOT Smart Service System of Ocean Fishing Vessel and its Application Based on Petri Net

Research on Framework Structure for Scientific Research Management System
K.H. You, L.J. Li and M.Z. Zhao 1776

Semantic-Based Three-Dimensional Modeling of Virtual Reality Scenes
L.J. Xue and L.L. Wang 1780

The Principle of Dynamic Diagnosis Based on Integrated Maintenance Information and its Application
S.L. Wu, S.C. Li and J. Zhao 1785

A Research on KVM I/O Performance
L.B. Yu 1790

Generating Idempotents of cubic residue codes over the field \(F_4\)
X.D. Dong 1797

Multiple Factor Ambiguous Pattern Recognition Based on Secure Multi-Party Computation - An Important Future Technology in Engineering Application
X.M. Wang, Y.F. Yao, S.Q. Bian and A. Wang 1801

An Efficient Parallel Montgomery Cryptography for Multi-Core Processor
S.J. Yuan, M.F. Sun, Z.H. Liu and W.J. Huang 1804

ID-Based Multi-Signature Scheme in Electronic Communication
Q.N. Niu 1808

The Application of Entropy Weighting Ideal Point Method in Electronic Information Equipment System of Systems Construction Decision-Making
Z.Q. Zhao and Z.G. Wang 1813

A Flexible Workflow Engine for Product Design Process
C. Yu, Y. Yan and N. Lv 1819

Application of Digital Factory Technology for Transmission Production Line
D.Q. Wang, J.L. Li, J.H. Ding, T. Gao and T. Ji 1823
Chapter 13: Related Topics

Grey Relational Analysis to Assess Algebraic Reasoning Test of the Pictorial Pattern

New Feedback Optimization Method Based on Arithmetic Sequence for an Extended LED Source

Persistence Properties and Unique Continuation of Solutions of a Two-Component Camassa-Holm Equation
S.G. Kang and J. Jia 1902

Intelligent Optimization Study of Traveling Salesman Problem
Y.Y. Wen 1906

PHD Filter for Multitarget Tracking with Range Ambiguity
S.C. Tan, G.H. Wang, N. Wang and H.B. Yu 1909

A Natural BEM on Non-Uniform Grids and its Coupling Method with their Moving Mesh Applications
Q. Zheng and X.H. Guo 1913

Research on Vehicle Routing Optimization Based on Improved Ant Colony Algorithm
R. Wang and Z.T. Wang 1917

Experimental Investigation of the Water-Based Fog Screen System in Photoelectric Interference
Y.J. He, B.L. Ren, H.G. Xu, W. Hua and C.H. Li 1921
Structural Topology Optimization for Improvements of some Shell Structures' Rib Design Process
J.X. Sun, Y. Yang and J.Y. Tian 1927