

# Table of Contents

## Preface and Organizing Committee

## Chapter 1: Materials Science and Engineering

|                                                                                                                                                 |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Characterization and Analysis on the Thermal Transformation of Boehmite Synthesized by Yoldas Method</b>                                     |    |
| Q.C. Su, S.H. Zhang, P.L. Chen, X.J. Li, J. Fu and L.L. Ma                                                                                      | 3  |
| <b>Two-Photon Three-Dimensional Optical Storage of a New Photobleaching Material</b>                                                            |    |
| J.W. Cai                                                                                                                                        | 8  |
| <b>Kinetics of Thermal Oxidation of TA2</b>                                                                                                     |    |
| J. Hu, Y. Fang and Y. Wang                                                                                                                      | 12 |
| <b>Experimental Study of Squeeze Casting of AZ31 Magnesium Alloy</b>                                                                            |    |
| Z.H. Guo, H. Hou, Y.H. Zhao and S.W. Qu                                                                                                         | 16 |
| <b>Modified N Doped TiO<sub>2</sub> Nanotubes with Magnetic <math>\gamma</math>-Fe<sub>2</sub>O<sub>3</sub> as Visible Light Photocatalysts</b> |    |
| Y.Z. Wang, G.L. Zhang, F.B. Zhang and X.B. Fan                                                                                                  | 20 |
| <b>Effect of Diamond on the Thermal Conductivities of Diamond-Copper Composites Prepared by Spark Plasma Sintering</b>                          |    |
| Y.H. Dong, R.Q. Zhang and Z.G. Ye                                                                                                               | 25 |
| <b>Polyamide 6/Polyurethane/Graphite Composites Prepared by Anionic Polymerization Process. II. Friction and Wear</b>                           |    |
| X. Deng, D.X. Li, J. Wang and J. Yang                                                                                                           | 30 |
| <b>Investigation on Preparation and Electrical Properties of Novel Perovskite Cathode Materials Doped with Multi-Elements for IT-SOFC</b>       |    |
| J. Zhao, L.L. Kong, C. Li and Y.C. Ma                                                                                                           | 35 |
| <b>Polyamide 6/Polyurethane/Graphite Composites Prepared by Anionic Polymerization Process. I. Mechanical Properties</b>                        |    |
| X. Deng, D.X. Li, J. Wang and J. Yang                                                                                                           | 40 |
| <b>Study of Detecting Flaws in a Heavy Bridge-Making Steel Plate</b>                                                                            |    |
| H.H. Luo, H.X. Dong, Z.B. Dong and J. Hong                                                                                                      | 45 |
| <b>Fractal Characteristic and Impact Strength of PLA-Based Wood Plastic Composites</b>                                                          |    |
| T. Qiang, D.M. Yu and H.H. Gao                                                                                                                  | 49 |
| <b>Properties of Si<sub>3</sub>N<sub>4</sub> Based Nanocomposites Prepared by Pressureless Sintering Method</b>                                 |    |
| M.L. Li, Q. Yu, Y. Xu, Q.G. Lu and C.J. Zhou                                                                                                    | 53 |
| <b>Preparation and Properties of Si<sub>3</sub>N<sub>4</sub> Based Composites for Broad Band Radomes</b>                                        |    |
| M.L. Li, Q. Yu, Y. Xu, C.J. Zhou, Z.C. Qi and Q.G. Lu                                                                                           | 57 |
| <b>Synthesis and Characterization of Terthiophene-Based Rod-Like Liquid Crystals</b>                                                            |    |
| X.H. Liu, Z.X. Li, S.Y. Zhang and J.L. Pu                                                                                                       | 61 |
| <b>Study on the Microstructure in Weld Metal of Cr-Ni Stainless Steel under Different Welding Technology</b>                                    |    |
| H.B. Li, H.T. Li, M.Q. Li, X.J. Su and C.J. Li                                                                                                  | 66 |
| <b>Fabrication of SnO<sub>2</sub>/Zn<sub>2</sub>SnO<sub>4</sub>/ZnO Nanocables through Thermal Oxidation of Zn and Sn Mixture Powders</b>       |    |
| L.M. Yu, X.H. Fan, J.Y. Shui, L. Cao and W. Yan                                                                                                 | 70 |
| <b>Fundamental Research of Sintering Process and Properties of Iron Base Composites</b>                                                         |    |
| Y.F. Yang, W.B. Liu and Q. Mu                                                                                                                   | 74 |
| <b>Study on the Interface Bonding Mechanism of Steel Sheet/Aluminum Foam/ Steel Sheet Sandwiches</b>                                            |    |
| M. Zhang, C.J. Chen and Q.M. Chang                                                                                                              | 78 |
| <b>Study on the Cu-ZSM-5 Catalyst for SCR System of Diesel Engine</b>                                                                           |    |
| W. Li, L.S. Chen, X. Liu and Y. Liu                                                                                                             | 82 |
| <b>Ti-Nb-Ta-Zr Alloy Rolling Deformation Texture</b>                                                                                            |    |
| L. Yan, Y.L. Liu, L.G. Zhang and H.W. Yu                                                                                                        | 87 |

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Fabrication of Electrospun Si/Carbon Composite Nanofibers as Anodes Materials for Lithium-Ion Batteries</b>                     |     |
| H.M. Huang, Z.C. Chen and J. Yu                                                                                                    | 92  |
| <b>Properties of Fluorene Derivatives: DFT Investigation</b>                                                                       |     |
| B.W. Chen, G.J. Chang and L. Zhang                                                                                                 | 97  |
| <b>Wearing Performances of Floret Silk/Cotton Blended Sports Socks</b>                                                             |     |
| W.L. Chen, M.M. He, M.Y. Zhang and Z.C. Tang                                                                                       | 101 |
| <b>Hot Forming Flow Stress Prediction of Steel 50A1300 by BPA ANN</b>                                                              |     |
| Z.X. Tang and X.D. Zhou                                                                                                            | 105 |
| <b>Study on the Influencing Factors Effecting Temporary Cavity Caused by a High Speed Steel Ball when Penetrating into Gelatin</b> |     |
| X. Zeng, K.D. Zhou, L. He, P.H. Gong and Y.X. Jin                                                                                  | 110 |
| <b>Technology Study on Sichuan Refractory Lead-Zinc Ore</b>                                                                        |     |
| S.Q. Zeng, X.L. Zhang, D.W. Liu and Z.C. Wei                                                                                       | 115 |
| <b>Preliminary Study on Injection Molding Process of Single Polymer Composites</b>                                                 |     |
| Q.C. Mao, J.N. Chen and J. Wang                                                                                                    | 121 |
| <b>Properties of Environment Friendly Nitrogen-Free Materials for Leather Deliming</b>                                             |     |
| Z.H. Sui, L. Zhang and J. Song                                                                                                     | 126 |
| <b>Mechanical and Tribological Properties of Diamond-Like Carbon Coatings with Different Ni Content</b>                            |     |
| X. Ling, S.R. Yu and J.Y. Zhang                                                                                                    | 131 |
| <b>Effects of Operating Parameters and Loading Modes on the Dynamic Cell Performance of PEM Fuel Cells</b>                         |     |
| H.C. Chiu, J.H. Jang, W.M. Yan, C.I. Lee and C.C. Yang                                                                             | 135 |
| <b>Synthesis and Structure of Zinc Oxide Aerogel</b>                                                                               |     |
| B.W. Chen, Y.T. Bi and L. Zhang                                                                                                    | 140 |
| <b>Study on Light Porous Unsintered Building Material</b>                                                                          |     |
| C.C. Jiang, G.Z. Li and Q.J. Li                                                                                                    | 144 |
| <b>Effects of Annealing Temperature on Crystallization Feature of BaSi<sub>2</sub> Films</b>                                       |     |
| Z.T. Hao and Z.Y. Yang                                                                                                             | 149 |
| <b>Photocatalytic Properties of Ag Surface Doped Nanocrystalline TiO<sub>2</sub>-SiO<sub>2</sub> Composite Films</b>               |     |
| L.X. Guan, N. Zhao and M.M. Yao                                                                                                    | 153 |
| <b>Preparation of Nanostructured TiO<sub>2</sub> Electrode by an Organic-Medium Screen Printing Technique</b>                      |     |
| H.P. Zhang and L.L. Qin                                                                                                            | 157 |
| <b>Preparation of Green Packaging Materials of Synthetic Paper and its Performance Research</b>                                    |     |
| E.Q. Yin, H.G. Sun and K. Li                                                                                                       | 161 |

## Chapter 2: Design and Manufacturing

|                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------|-----|
| <b>The Design and Optimization of Micro-Displacement Worktable</b>                                    |     |
| D.N. Guo and X.Z. Zhao                                                                                | 167 |
| <b>Selection of Bar Code in Timber Circulation</b>                                                    |     |
| H.Q. Xu and L.H. An                                                                                   | 173 |
| <b>The Present Development Situation of Air-Coupled Ultrasonic Non-Destructive Testing Technology</b> |     |
| Z. Dong, Z.R. Jun, Y.Z. Ma and X.N. An                                                                | 178 |
| <b>Optimal Design of the Needle Bed Slot Milling Machine Based on ANSYS</b>                           |     |
| W.J. Qi and Z.K. Xu                                                                                   | 183 |
| <b>Design of SPI Bus Communication in the Multi-Channel Data Acquisition Systems</b>                  |     |
| B. Yang and X.W. Ding                                                                                 | 187 |
| <b>Module Knowledge Management in Manufacturing Process</b>                                           |     |
| B. Ma and J.H. Che                                                                                    | 192 |
| <b>Formal Specification Technology of Modeling Based on Feature</b>                                   |     |
| X.F. Zhao, Y.Y. Wang and Y.Q. Zhou                                                                    | 197 |

|                                                                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Process Evaluation of Key Parameters during Plant-Field Composting Using Genetic Algorithms and Near-Infrared Spectroscopy</b><br>G.Q. Huang, L.J. Han and X.Y. Wang | 202 |
| <b>Three Dimensional Design and Unfolding Method of Sheet Metal Parts</b><br>B. Sun and H.F. Zhang                                                                      | 208 |

### **Chapter 3: Mechanical Engineering and Applied Mechanics**

|                                                                                                                                                                               |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Wind Tunnel Test and the Analysis of Buffeting Performance of Free-Standing Tower of Cable-Stayed Bridge under Yaw Wind</b><br>G.H. Zhao, Y. Li and H. Bai                 | 215 |
| <b>Vibration Reduction of Water Source Heat Pump Units Based on Particle Damping Materials</b><br>Z.Q. Sun, C.Z. Chen and H. Liu                                              | 220 |
| <b>Hydraulic High Speed On-Off Valve and its Application on Industry</b><br>W.N. Chen, Y.Z. Xu and L.H. Yang                                                                  | 224 |
| <b>Comparative Study on Dynamical Performance of Hybrid Ceramic and Steel Ball Screw Mechanism Based on Multi-Body Dynamic Simulation</b><br>H.K. Jiang, L. Liu and X.C. Song | 229 |
| <b>The Effect of Heat Treatment on Mechanical Properties of Car Interior Fabric Used for Injection Molding</b><br>W.L. Chen, D.H. Yi and J.F. Zhang                           | 234 |
| <b>Integrity Assessment of Tubular Joints in Aging Offshore Platform Based on Reliability Theory</b><br>H. Lin, G.M. Chen, Z.F. Wang and L. Yang                              | 238 |
| <b>Absolute Blood Flow Measurement of early Stage Chicken Embryo Heart Using High Speed 4D Optical Coherence Tomography</b><br>Z.H. Ma, X. Liu, Q.Y. Wang and Z.H. He         | 243 |
| <b>A New Millimeter Wave Mixer Based on the Groove Guide</b><br>Y.F. Sun, Z.Q. Sun and P.Z. Wang                                                                              | 248 |
| <b>Research on the Influence of the Aerodynamic Measure on the Flutter Derivative of the Steel Truss Suspension Bridge</b><br>H. Bai, W. Guo, W. Li and Y. Li                 | 252 |
| <b>Numerical Simulation for Subcooled Boiling Flow Process of High Pressure Liquid</b><br>A.M. Zhou, Y. Jiang, J. Chen and S.Z. Wang                                          | 257 |
| <b>Effect of Thermal Charging of Iron Ore Pellets on the Reduction Rate and Compressive Strength in Gas-Based Reduction Process</b><br>Z.C. Huang, D.G. Yang and L.Y. Yi      | 262 |
| <b>Design of Subsoiling Mechanism Based on Self-Excited Vibration Technology</b><br>X.Y. Wang                                                                                 | 267 |
| <b>Finite Element Analysis of the Process of Drilling Medical Titanium Sheet</b><br>H. Shen, Y.F. Deng and J. Hao                                                             | 272 |
| <b>Structure Design of a Novel Four Tracks Umbilical Tensioner</b><br>W.M. Wang, Y. Li, S.M. Zhang, D.X. Luo and X.X. Zhu                                                     | 277 |
| <b>Influencing Factors of Hydraulic Property of CFBC Ashes</b><br>Y.M. Song, J.X. Liu, C. Wang, H.H. Zhong and T. Ding                                                        | 282 |
| <b>CFD Simulation of Volute of Variable Geometry Turbocharger</b><br>J. Lei, Y.S. Wang and H.J. Ren                                                                           | 287 |
| <b>Design and Implementation of IEEE 1588 High Precision Clock Synchronization Based on GPS Time Service</b><br>K. Wang, Y.H. Hu, Z.M. He and H.J. Ma                         | 292 |
| <b>Finite Element Simulation on Stress of Steel Sphere Shell</b><br>C.L. Song and J. Ji                                                                                       | 297 |
| <b>Adjustment of the Resonant Cavity and Cooling System for Laser Machine</b><br>X.L. Yang and X.J. Li                                                                        | 301 |
| <b>Dynamic Characteristics of Bridge under Moving Constant Load</b><br>C.L. Song and J. Ji                                                                                    | 306 |

|                                                                                                                                                                            |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Study on the Stress Relaxation of Polychloroprene Rubber by Molecular Dynamics Simulation at Different Temperature</b><br>Y.K. Gao, X.J. Ding, T. Hu, Y. Li and S.Z. Wu | 311 |
| <b>Thermal Stress Simulation of Cooling Tube with Grid Plate Using Indirect Finite Element Method</b><br>C.L. Song and J. Ji                                               | 316 |
| <b>The Disease Treatment Measures and Intensification of Reinforced Concrete T-Shaped Girder Bridges</b><br>Y.X. Yang, Z.K. Yang and C. Qiao                               | 321 |
| <b>Research on the Impact of Damping to the Flutter Derivatives of Steel Truss Suspension Bridge</b><br>H. Bai, C. Fang and Y. Li                                          | 325 |
| <b>Analysis of Image Characteristics of Plume and Spatter of High Power Disk Laser Welding Based on K-L Transform</b><br>Q. Wen and X.D. Gao                               | 330 |
| <b>Study on Fatigue Resistance Design of A-Alloy Automobile Wheel</b><br>B. Zhang                                                                                          | 335 |
| <b>The Analysis of Composite Yarn Fabric Mechanical Properties by KES System</b><br>J.J. Shi, B. Hu and Y. Xue                                                             | 340 |
| <b>Extraction of Molten Pool and Keyhole Characteristics during High Power Fiber Laser Welding</b><br>R.H. Zhen and X.D. Gao                                               | 344 |
| <b>Wavelet-Based Finite Element Simulation of Alloy Crack</b><br>S. Zhang and L. Meng                                                                                      | 348 |
| <b>The Numerical Simulation of the Impact on the Hangzhou Bay Bridge Offshore Platform and the Sightseeing Tower</b><br>H. Bai, F.L. Wang and Y. Li                        | 352 |
| <b>The Influence of Matrix Concrete on the Strength of Recycled Concrete</b><br>H.Q. Zhao and G.Z. Li                                                                      | 357 |
| <b>Dynamic Mechanical Properties of Cyanate Ester Resin Modified by Functionalized POSS</b><br>Z.P. Zhang, J.Z. Pei, C.Q. Fang and S.F. Chen                               | 361 |
| <b>Improvements on Throttling Pipelines Basing on Numerical Simulation</b><br>B. Zhu, Y. Su and H.J. Zhang                                                                 | 365 |
| <b>The Present Development Situation of Laser Ultrasonic Nondestructive Testing Signal Processing System</b><br>L.X. Xia, Y. Zhao, Y.Z. Ma and X.N. An                     | 369 |
| <b>Optimization and Simulation Analysis on Bar Truss System of the Variable Parameters</b><br>C.L. Song and J. Ji                                                          | 374 |
| <b>Parameter Optimization of Passive Dynamic Walking Biped with Knees</b><br>P.J. Zhang and K.F. Song                                                                      | 379 |
| <b>Contact Characteristics Analysis of Water-Lubricated Thrust Bearing under Low-Speed and Heavy-Load Situation</b><br>X.Y. Zhang, W. Wu, J.H. Zhou and Q.J. Wu            | 385 |
| <b>Design of Automatic Detection Device for Steel Bar Surface Defects</b><br>J.C. Zhang, W.B. Li and C.H. Lu                                                               | 390 |
| <b>Seam Tracking Monitoring Based on Molten Pool Infrared Images</b><br>R.H. Zhen and X.D. Gao                                                                             | 394 |
| <b>The Integrated Mechanical Function Test System of Material and Structural Fatigue Damage</b><br>Y.L. Wei, B. Li, S.Y. Jin and K.K. Chen                                 | 398 |
| <b>Influence of Lumped Mass on the Natural Frequency of Cylindrical Pipe</b><br>B. Li, Y.L. Wei, D. Zhang and Q. Huang                                                     | 403 |
| <b>An Efficient Response Surface Method Using Givens Transformation for Structural Reliability Analysis</b><br>W.T. Zhao, Y. Yang and T.J. Yu                              | 408 |
| <b>Structural Design of Experimental Study on Rain-Wind-Induced Vibration of Strayed Cables</b><br>W. Li, W. Guo and H. Bai                                                | 412 |

|                                                                                                                                                             |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Numerical Simulation on Heat Dissipating Performance of New Pipe with Grid Plate</b><br>C.L. Song and J. Ji                                              | 417 |
| <b>Research of Path Control Algorithm the Joint Cotton Bundle Stowage</b><br>J.L. Li, C.Y. Lv, S.Y. Ling and Z.F. Wang                                      | 422 |
| <b>A Discussion about Finite Element Analysis of Aircraft Wing Structure</b><br>W.T. Zhao, T.J. Yu and Y. Yang                                              | 427 |
| <b>Numerical and Experimental Study on a Honeycomb Ceramic Monolith</b><br>C.Z. Mao, Q.J. Guo and L. He                                                     | 431 |
| <b>Numerical Model of the Start-Up Process of a Honeycomb Regenerator</b><br>C.Z. Mao, Q.J. Guo and L. He                                                   | 436 |
| <b>Integrated Rolling Bearing Type Selection and Parameter-Driven Graphic Resource System</b><br>H. Yao and Y. Cao                                          | 441 |
| <b>Disease Detection and Capacity Analysis of the Double Arch Bridge</b><br>Y.X. Yang, Z.K. Yang and C. Qiao                                                | 446 |
| <b>Excavation and Support of Deep Foundation Pit Finite Element Analysis</b><br>X.L. Dong and D.N. Han                                                      | 450 |
| <b>Simulation of Underground Water Inrush Spreading Based on Multiple-Phase LBM</b><br>Q.Q. Lu and G.Q. Huang                                               | 455 |
| <b>Nonlinear System Modeling Study Based on Fuzzy Neural Network with Chaotic Mechanism</b><br>W. Li and Y. Guo                                             | 460 |
| <b>Analysis of Rifle Recoil Based on Different Methods of Support</b><br>C.G. Wang, W.H. Xu and C. Xu                                                       | 465 |
| <b>Test Study on Aerodynamic Performance of Three-Dimensional Stayed Cables in Two-Dimensional Flow Field</b><br>X.F. Xue, H. Bai, Y. Li, W. Li and S. Gong | 469 |
| <b>Flow Analysis of Axial Compressor AV63-15 Variable Stator Simulation</b><br>W.H. Cheng, M.C. Li and C.P. Li                                              | 474 |
| <b>Fault Detection, Isolation and Tolerance Control for Robots: A Brief Survey for Last Decade</b><br>M.J. Shi                                              | 479 |
| <b>The Simulation Analysis of Manipulator Grab the Workpiece Based on PRO/E</b><br>L.M. Wang, L.L. Zhang, D.H. Jiang and D.W. Shao                          | 483 |

## **Chapter 4: Automation and Control**

|                                                                                                                                            |     |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Design and Implementation of Intelligent Parking Management Based on the SNMP Protocol</b><br>Q.N. Yang and Y.M. Li                     | 491 |
| <b>Fuzzy Linear Matrix Inequalities Control for a Rectangular Thermosyphon</b><br>K. Qian, X.P. Pang, H. Yan and K. Liu                    | 496 |
| <b>Design of Neutral Network–Sliding Model Based Large Envelope Flight Control Law</b><br>G.C. Xin, W.L. Chen and J.N. Tao                 | 503 |
| <b>Neural Network Soft Sensor Model Based on Mechanism Chaotic Analysis and its Application</b><br>Y.H. Zhao, Y.H. Zhang and Z.G. Su       | 508 |
| <b>Center of Gravity Fuzzy Systems and the Probability Distributions Based on the Circle Operators</b><br>X. Yang, X.T. Wang and X.H. Yuan | 515 |
| <b>Robust Fault-Tolerant Control for a Class of Uncertain Discrete Time-Delay Systems</b><br>D.G. Zhao and Y.C. Ma                         | 521 |
| <b>An Investigation of Variable-Rate Fertilization Controlling System Based on XS-Base270 Platform</b><br>W.Y. Liu, Z.B. Su and Y.S. Yang  | 527 |
| <b>Debug and Development of ADAM 6022 Communication in Industry Automation Control</b><br>Y.C. Li, X.W. Liu, J. Kang and F. Gao            | 531 |
| <b>Control Types Option Research at Signal Intersection Based on LOS</b><br>T.X. Jiang, Q. Yu, N. Li and X.H. Deng                         | 535 |

|                                                                                                                                                                     |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Multi-Vehicle Tracking Based Traffic Illegal Parking Detection</b><br>J. Wang and F. Chen                                                                        | 540 |
| <b>Study on the Key Distribution Mechanism of Feeder Automation System</b><br>J. Song and L.L. Wu                                                                   | 546 |
| <b>Design of a Switching Control Scheme for Uncertain Objects Based on PID-Type FNN and LS SVMs</b><br>J. Zhao, G.P. Li and C.D. Zheng                              | 550 |
| <b>Research and Design of Distributed Data Integration and Management for Electric Energy Information</b><br>X. Li, H.S. Ye, Q. Wang, J. Liu and X.X. Liu           | 555 |
| <b>Study on the Requirement Model for Battle Damage Assessment</b><br>C. Zhang, Q. Shi, T.L. Liu and W.K. Zhao                                                      | 560 |
| <b>Multiagent Based Dynamic Resource Control for Decentralized Multi-Project Using Combinatorial Exchange</b><br>L. Wang, D.C. Zhan, L.S. Nie, D.H. Chu and X.F. Xu | 566 |
| <b>Network Performance of a PLC Protocol for Smart Grid</b><br>L.P. Lu and P.X. Xu                                                                                  | 571 |
| <b>Research of RFID Intelligent Access Control System in the Internet of Things</b><br>K.C. Wang, T.T. Wang, Z.F. Jia and M.K. Zong                                 | 576 |
| <b>The Application of LabVIEW in Data Acquisition System of Solar Absorption Refrigerator</b><br>L. Wang, Y.Y. Tan and X.L. Cui                                     | 581 |
| <b>Design and Implementation of Authorization Management System Based on RBAC</b><br>F. Zhao, L. Wang and X. Tian                                                   | 586 |
| <b>Design and Implementation of Pan-Tilt Control System</b><br>Y.H. Wang, Z.C. Shi and H.W. Miao                                                                    | 591 |
| <b>Research on Agricultural Ecology Video Monitoring Systems Based on the Internet of Things</b><br>T.T. He, H.R. Bai, L. Wang and Q.P. Jiang                       | 596 |
| <b>Design and Implement of Dynamic Context-Aware Monitoring System Based on OWL</b><br>D.J. Xue and W.X. Zhang                                                      | 601 |
| <b>Design of a Remote Wireless Surveillance System Based on 3G</b><br>B.Y. Hu, Z.W. Ke, L. Huang and C.W. Wang                                                      | 606 |
| <b>Performance Analysis of WiMAX System Base on AMC Optimized Algorithm</b><br>L. Liu, X.P. Zheng and L.J. Li                                                       | 610 |
| <b>Research on Coach Control System in Voyage Training Simulator Based on GIS</b><br>J. Yuan, Y. Wu and J.B. Xiao                                                   | 615 |
| <b>Equipment Command Simulation Based on Workflow</b><br>L. Chen, H.M. Yu, T. Jia and C. Ye                                                                         | 620 |
| <b>An New Agent Based Distributed Adaptive Intrusion Detection System</b><br>Y.B. Liu, L. Shi, B.Z. Wang, Y.Q. Wu and P.H. Wang                                     | 624 |
| <b>Implementation of Intelligent Laboratory Management System Terminal</b><br>Z.G. LIU                                                                              | 630 |
| <b>Face Detection Based on Statistical Color Model and Haar Classifier</b><br>X.B. Jia and L.Y. Li                                                                  | 634 |
| <b>Damage Evaluation Method for Integrated Electronic Information</b><br>C. Zhang, Q. Shi, T.L. Liu and W.K. Zhao                                                   | 639 |
| <b>A Simulation System of Anti-Ship Missile Path Planning Oriented Ship Formation</b><br>G. Liu, S.Y. Lao, L.L. Hou and C. Yuan                                     | 645 |
| <b>The Optimized Analysis to Stock Management of Spare Parts Used for Maintenance and Ensurence</b><br>T. Liu, L. Zhang, Y.G. Chen, P. Xu and K. Lian               | 650 |
| <b>Simulation and Analysis to Control Algorithms of the Large Time-Delay System Based on Simulink</b><br>S.Z. Li, Y.G. Ma and Z. Zhao                               | 654 |
| <b>The Application of Expert System in Automation Testing</b><br>L. Wang                                                                                            | 659 |

## Chapter 5: Information Processing and Computational Science

|                                                                                                                                                |     |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Design and Implementation of Embedded System Based on Modbus TCP/IP</b><br>Y.X. Li, M.L. Zhang, D.M. Niu and X.L. Zhang                     | 667 |
| <b>Implementing Online Viterbi Algorithm as Standard Relational Queries over Streaming Data</b><br>R. Li and L. Zhang                          | 672 |
| <b>A Memory Architecture Design for High-Performance Cloud Computing</b><br>L.Q. Luo and S.J. He                                               | 677 |
| <b>Design and Implement of Operation Simulation Scenario Generation Toolkit</b><br>Y.P. Fan, G.H. Li and J. Bai                                | 682 |
| <b>Feature Extraction Technique of Acoustic Target Based on Wavelet Packet Energy and Principal Component Analysis</b><br>Y.L. Lü and Z.H. Zi  | 687 |
| <b>The Detection Method of Image Regional Forgery Based DWT and 2DIMPCA</b><br>X.Z. Pan and H.M. Wang                                          | 692 |
| <b>Research on Fingerprint Image Segmentation</b><br>J.T. Xue and H.W. Li                                                                      | 697 |
| <b>Doppler Signal Denoising Based on Feature Adaptive Wavelet Shrinkage Method</b><br>Z. Yin, J. Jin, Y. Wang and Y. Shen                      | 702 |
| <b>Coexistence and Numerical Solutions of the Unstirred Chemostat Model</b><br>X.Z. Feng, M.H. Wei and C.T. Li                                 | 708 |
| <b>Implementing and Optimizing DES on Stream Processor</b><br>L. Yang, X.Q. Ni and H.Z. Liu                                                    | 714 |
| <b>Computer Simulation for Medical Ultrasound C-Mode Imaging Based on 2d Array</b><br>S.Y. Hua, Y.C. Ming and M.Y. Ding                        | 719 |
| <b>An Improvement of the Response Surface Method Based on Successive Linear Interpolation</b><br>W.T. Zhao, T.J. Yu and Y. Yang                | 724 |
| <b>The Modeling of Visual Perception for Virtual Soldier Based on Limited Rationality</b><br>Q. Xue, W.C. Xu, Y.X. Mao, P.G. Yu and Y.H. Li    | 728 |
| <b>Texture Image Segmentation Based on MRMRF in Contourlet Domain</b><br>X.J. Wang and X.F. Zhao                                               | 732 |
| <b>Application and Research of Bayesian Network in Data Mining</b><br>C.F. Zheng, L. Jiang, L.Q. Jiang and Z.J. Wu                             | 738 |
| <b>Eight-Neighborhood Based Background Modeling</b><br>Y. Lu, M. Dai and L. Jiang                                                              | 743 |
| <b>Research of Chinese Multi-Pattern Fuzzy Matching Method for SMS Spam Monitoring</b><br>J. Qin and S.Q. Yin                                  | 748 |
| <b>L-R Logical Key Tree Management Scheme Applying Hierarchical Data Processing</b><br>Y. Li, Z.P. Wang and H. Xu                              | 753 |
| <b>A Joint Method Based on Wavelet and Curvelet Transform for Image Denoising</b><br>H. Wang, J.Z. Cao, L.N. Tang and Z.F. Zhou                | 758 |
| <b>Based on Immune Algorithm Heat Treatment Analysis of the Alloy</b><br>S. Zhang and L. Meng                                                  | 763 |
| <b>Applying Web Mining Techniques for Constructing Webometrics Ranking early Warning System</b><br>S.M. Hsieh, S.A. Lo, C.C. Hsu and D.R. Chen | 767 |
| <b>A Multiagent-Based Network Information Filtering System</b><br>Z.H. Mu                                                                      | 772 |
| <b>Anomaly Detection for DDoS Attacks via Behavior Profiles Deviation Degree</b><br>Y. Liu, J.P. Yin, Z.P. Cai and J.R. Lin                    | 777 |
| <b>The Application of IaCLA Model to Adaptive Image Quantization</b><br>Y. Jiang, L.S. Wu and T. Huang                                         | 782 |
| <b>Blind CFA Interpolation Detection Based on the Entropy</b><br>X.Z. Pan and J. Xie                                                           | 787 |

|                                                                                                                                                     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>A New Method for Content-Based Image Retrieval via Subsets of Key Contours Fragments</b><br>C.Q. Tan, Y.F. Chen, F.X. Li and Z.Z. Yang           | 792 |
| <b>Image Denoising New Method Based on Fractional Partial Differential Equation</b><br>W. Jiang and Z.X. Wang                                       | 797 |
| <b>Application of Data Analysis of Public Transit Passenger Flow in Line Classification</b><br>T.T. Tong and J. Wang                                | 803 |
| <b>A New Storage Design of Distributed Geographic Information</b><br>Y.L. Liu, Y. Yu and X.C. Du                                                    | 808 |
| <b>Design and Implementation of Scalable Autonomous Centralized Fault-Tolerant Scheme for Satellite System</b><br>H. Zhou, Y.H. Tang and J.F. Jiang | 813 |
| <b>The Multi-Level Metadata Indexing in Mass Storage System</b><br>D.J. Niu, Y.Z. Zhan and T. Cai                                                   | 818 |
| <b>Application of Virtual Reality Technology in Teaching of Architectural Design &amp; Construction</b><br>Y.X. Wang                                | 823 |
| <b>Study on FSK Signal Demodulation Based on Chirp-Z Transform</b><br>J.H. Xia, J. Guo and X.M. Wang                                                | 827 |
| <b>The Method of Generating Building Ladder Profile Based on SketchUp</b><br>X.L. Zhang and G.W. Han                                                | 832 |
| <b>Designing Family Ontology with the Protégé OWL Plugin</b><br>L.P. Jiang                                                                          | 836 |
| <b>A Layered Trusted Computing Platform Module with Unified Deployment on Server</b><br>P.P. Shen, J.B. Yang, C.D. Gu and Y. Jiang                  | 841 |
| <b>Research of Multi-Data Sources Report Model Based on Data Dictionary</b><br>Y.J. Lu and Q.H. Hu                                                  | 846 |
| <b>The Application of Chaotic Encryption Model in the Network Identity Authentication</b><br>C.J. Pang                                              | 850 |
| <b>Detection of Pulmonary Nodules in CT Scanned Images Based on Region Growing with Optimization Parameters</b><br>Y. Li, Z. Miao and B. Chen       | 854 |
| <b>Multi-Scale Semantic Model for Unsupervised Object Segmentation</b><br>Y. Li, X.J. Li, Y.S. Zhang, X. Sun and H.Q. Wang                          | 859 |
| <b>The Design of Storage Not Overflow Based on NAND Flash</b><br>J. Zhang, Y. Chu and S.C. Li                                                       | 865 |
| <b>Characteristics Analysis and Model Application of Traffic Speed-Volume Relationship in Urban Elevated Roads</b><br>R. Song and K.F. Yan          | 871 |
| <b>A Novel Method to Estimate ARMA Time-Varying Parameter Using Grey Forecasting Model</b><br>W.Z. Chen                                             | 876 |
| <b>Parameter Optimization of Decentralized OS-CFAR System Based Modified PSO Method</b><br>P.Z. Liu, R.Y. Pan and G.F. Guo                          | 881 |
| <b>A Survey on Mobility-Assisted Data Collection in Wireless Sensor Networks</b><br>J. Yu, Y. Hua and H.Q. Deng                                     | 887 |
| <b>Active Contour Driven by Edge and Region Image Fitting Energy</b><br>H.Y. Xu and M.H. Liu                                                        | 892 |
| <b>Study on Clustering-Based Location Dependent Query</b><br>M.J. Wei, L.C. Xia, J.G. Jin and Q.H. Fan                                              | 897 |
| <b>A Model of Caching Geo-Data Sharing Based on Computer Cluster Technology</b><br>Y.M. Liu and W.C. Zhang                                          | 902 |
| <b>Design of the Software System of a Digital Axle Detector</b><br>Y. Wang, L.J. Zhang, X. Han and Z. Yin                                           | 908 |
| <b>A Grouping Cache Based Joins Query Algorithm in MANET</b><br>Y.H. Guo, X. Liu and Q.Q. Ren                                                       | 914 |
| <b>Research on Data Mining Technology in Web Based on the Cloud Computing</b><br>F. Zhang and L. Liu                                                | 919 |

|                                                                                                                                         |      |
|-----------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Low-Altitude Airship Remote Sensing Images Matching Based on Improved Hybrid Ant Colony Algorithm</b>                                |      |
| B.L. Pan, W.N. Yi and X.H. Wang                                                                                                         | 924  |
| <b>A Model Study on Emergency Information's Spread under Mobile Internet Environment</b>                                                |      |
| X.W. Hou, H.Y. Shu and Y.P. Zhao                                                                                                        | 929  |
| <b>Image Recognition and Wireless Transmission-Based Intelligent Vehicle Access Control System</b>                                      |      |
| Y.Q. Feng and X. Li                                                                                                                     | 934  |
| <b>Topical Concept Based Text Clustering Method</b>                                                                                     |      |
| Y. Ding and X. Fu                                                                                                                       | 939  |
| <b>Design of USB Communication System Based on C8051F340 MCU</b>                                                                        |      |
| H.S. Huang, K. Liu, L. Xue and X.Q. Zhang                                                                                               | 944  |
| <b>Trademark Image Retrieval Using Weighted Region Information Entropy</b>                                                              |      |
| Q.Q. Sun, Z. Ma and B. Dong                                                                                                             | 949  |
| <b>Image Matching Based on Analysis of Reliability in Log-Polar Field</b>                                                               |      |
| Y.P. Xu, J. Tan, H.P. Li and Y. Tian                                                                                                    | 954  |
| <b>A New Outlier Mining Method Based on CLIQUE in Multi-Database</b>                                                                    |      |
| X.Q. Xiang and D.S. Liu                                                                                                                 | 959  |
| <b>Design of the Information Service Platform Based on Expert Knowledge Database</b>                                                    |      |
| S.Y. Dong, S.J. Li and J.Y. Wang                                                                                                        | 964  |
| <b>An Alpha-Dominance Relation in Disjunctive Set-Valued Ordered Information Systems</b>                                                |      |
| Y.J. Lv and W.S. Yang                                                                                                                   | 969  |
| <b>Research and Design of Face Detection Based on OpenCV in CodeBlocks</b>                                                              |      |
| X.C. Lv and Z.B. Zhang                                                                                                                  | 974  |
| <b>A Frequency Estimation for TD-SCDMA UE</b>                                                                                           |      |
| R.M. Peng and Y. Mei                                                                                                                    | 979  |
| <b>A Study on Localization of Acoustic Emission Source Based on Algebraic Neural Network</b>                                            |      |
| Z.Z. Lin and X.M. Cheng                                                                                                                 | 984  |
| <b>Nonlinear Analysis of EEG Using Fractal Dimension and Approximate Entropy</b>                                                        |      |
| S.J. Geng, W.D. Zhou, Q.M. Yao and Z. Ma                                                                                                | 988  |
| <b>AJAX-RMI Serialization and Deserialization Model Based on JSON and IocContainer</b>                                                  |      |
| J. Li, Q. Huang and Y. Long                                                                                                             | 993  |
| <b>A New Smoothing Method Based on Nonsmooth FB Function for Second-Order Cone Programming</b>                                          |      |
| Y.F. Zeng, J.B. Jian and C.M. Tang                                                                                                      | 1000 |
| <b>The Application of Distributed Multi-Sensor Information Fusion Technology in Underwater Vehicle</b>                                  |      |
| Y. Li and Y.Q. Jiang                                                                                                                    | 1006 |
| <b>A Bimaximum Entropy Method for Solving Nonlinear Constrained Continuous Minimax Problem</b>                                          |      |
| Q.H. Huang and D.X. Cao                                                                                                                 | 1011 |
| <b>Earthquake Prediction Research Based on the Mining in Time Series of Groundwater Temperature</b>                                     |      |
| J. Zhang, Y.L. Lu and S.C. Wu                                                                                                           | 1016 |
| <b>Wavelet Shrinkage Based Variational Image Decomposition Model</b>                                                                    |      |
| M. Li, X.L. Sun and C. Xu                                                                                                               | 1021 |
| <b>Research of Adaptive Synthesis Rule for Conflict Evidences</b>                                                                       |      |
| S.W. Li and H. Li                                                                                                                       | 1026 |
| <b>The Application of MLAMBDA for Time Series Radar Interferometry</b>                                                                  |      |
| J.Q. Mu and S. Zhan                                                                                                                     | 1031 |
| <b>Research on Internet Monitoring System Based on Multi-Layer Text Information Filtering Method through Artificial Neural Networks</b> |      |
| J.Q. Liu and M. Luo                                                                                                                     | 1036 |
| <b>An Adaptive Image De-Noising Method Based on Singular Value Decomposition</b>                                                        |      |
| C.B. Zhou and Z.J. Zhang                                                                                                                | 1041 |
| <b>Evaluation for the Hypersonic Near-Space Target Threat Based on GRA-TOPSIS Model</b>                                                 |      |
| X.D. Wu, W.M. Li and L. Zhang                                                                                                           | 1046 |

|                                                                                                                                                                        |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Database Encryption for Database-as-a-Service</b><br>Z. Xiang                                                                                                       | 1051 |
| <b>The Visualization for SMT Based on Raster Data Engine</b><br>C. Liu, A.T. Zhang, T. Liu and H.S. He                                                                 | 1056 |
| <b>The Research on Slices' Data Repair and Filling Path Optimization</b><br>G.S. Zhu, W. Xu and Z.F. Xu                                                                | 1060 |
| <b>The Implementation of Trusted Computing Based Network Trusted Management Information System</b><br>H.H. Lu                                                          | 1064 |
| <b>Time Series Data Mining in Process Industry</b><br>J. Ren and J.F. Gao                                                                                              | 1069 |
| <b>Research of Face Recognition Method Based on Multiple Classifier Fusion</b><br>Y.L. Xu and Y.M. Zhang                                                               | 1075 |
| <b>Scalable MD5 Crypt Cracker on PetaScale Supercomputer</b><br>Z.C. Shi, C.Q. Yang and Q. Wu                                                                          | 1080 |
| <b>Research on Farmland Information Acquisition System Based on IoT</b><br>Y.E. Duan and X.J. Niu                                                                      | 1085 |
| <b>A Text Categorization Method Based on Features Clustering</b><br>Z.B. Feng, P.J. Zhang and J.J. Zhao                                                                | 1090 |
| <b>Design of Real-Time Image Collecting Module Based on FPGA</b><br>J.W. Wang, M.Y. Ma and J.M. Leng                                                                   | 1095 |
| <b>Research on Internet of Things Based on RFID</b><br>L. Li                                                                                                           | 1100 |
| <b>A New Ship Detection Method for Massive Data High-Resolution Remote Sensing Images</b><br>H. Sun, Y. Li, G. Liu, H. Long and H.Q. Wang                              | 1105 |
| <b>Design of SoC Verification System Based on Multi-FPGA</b><br>X. Han, Z.Y. Li, Y.S. Liu and W.L. Niu                                                                 | 1110 |
| <b>Parallel Performance of MPI Based Parallel FDTD on NUMA Architecture Workstation</b><br>X.M. Guo, W. Zhao, L.H. Zhang and W.H. Yu                                   | 1115 |
| <b>Based on Convolution Algorithm Single Crystal Finite Element Analysis</b><br>S. Zhang and L. Meng                                                                   | 1120 |
| <b>Study on Adaptive QoS Solution of Real-Time Video Stream in Wireless Network</b><br>X.Y. Xiong, B. Wang and D.X. Wang                                               | 1124 |
| <b>Research on Adaptive Mobile Map Based on Spatiotemporal Data Mining</b><br>Z. Yang, F. Ju and B. Shao                                                               | 1130 |
| <b>The Research of LDPC Code in Communication System</b><br>D. Hu                                                                                                      | 1135 |
| <b>Fine-Grained Access Control Technology in the Data-Centric Business Process Model</b><br>C. Yan and S.J. Yu                                                         | 1140 |
| <b>Road Conditions Test in Virtual Driving System Based on Cohen-Sutherland Algorithm</b><br>H. Sun, Y.Z. Wang, Y.L. Li and B.Z. Li                                    | 1147 |
| <b>The Redevelopment of Matrox Meteor-II/Digital Image Grabbing Board with VC++</b><br>C.F. Liu, B.L. Hu, C.L. Wang and L. Liu                                         | 1152 |
| <b>Improvement of Fractal Image Compression Coding Based on Quadtree</b><br>H.T. Hu and Q.F. Liu                                                                       | 1157 |
| <b>Research of Robust Feature for Speech Recognition</b><br>X.H. Ren and Y.X. Jiang                                                                                    | 1162 |
| <b>A Video Compression Method for Wireless Transmission</b><br>Y. Zhou                                                                                                 | 1167 |
| <b>A Method of Solving Data Consistency of Disk Array Cache</b><br>W. Wang and S.Q. Yin                                                                                | 1172 |
| <b>XML Query Based on Indexed Sequential Table</b><br>Y. Yang and H.G. Li                                                                                              | 1177 |
| <b>A Computer Simulation Study of the Rainfall Infiltration and Evaporation Process of Sand-Mulched Field</b><br>H.C. Zhao, H.T. Peng, G.F. Li, X.P. Zhang and B.X. Gu | 1182 |

|                                                                                                                                                                                                     |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>The Index Storage Model for Urbanization Data Combined Query</b><br>L.L. Zhao, S.A. Liu and J.S. Li                                                                                              | 1186 |
| <b>Design of Text Categorization System Based on SVM</b><br>Z.Y. Liu, W.P. Wang and Y. Wang                                                                                                         | 1191 |
| <b>Parallel Processing of Product Configuration for Cloud-Based Mass Customization Service Platform</b><br>J.H. Che, B. Ma and Q. Zeng                                                              | 1196 |
| <b>The Time Analysis of Perception</b><br>Q. Xue, W.C. Xu, Y.X. Mao, P.G. Yu and Y.H. Li                                                                                                            | 1201 |
| <b>An Improved Anisotropic Diffusion Model Based on Wavelet Transform for Image Denosing</b><br>R.L. Zhang, H.M. Liu, Z.H. Hu and W.J. Guo                                                          | 1205 |
| <b>Design and Implementation of WebGIS Based Information System for Nature Reserve</b><br>X.X. Xue, W.D. Ding, M.C. Shi and W.B. Guan                                                               | 1209 |
| <b>3DTV Video Acquisition and Processing for Visual Discomfort Alleviation</b><br>Y. Yang, Y.C. Zhang and J.Z. Li                                                                                   | 1214 |
| <b>An Improved Error Concealment Based on Redundant Motion Vector Information</b><br>H.T. Deng                                                                                                      | 1219 |
| <b>Paratactic Spatial-Temporal Two Dimension Data Fusion Based on Support Vector Machines for Traffic Flow Prediction of Abnormal State</b><br>L. Chen, Q.R. Li, X.Y. Tian, X.S. Chen and R.X. Wang | 1225 |
| <b>Design and Verification of Security Protocol for Information Transmission in Digital Campus</b><br>X.L. Li, Y.J. Luo, Y. Liang and Y. Wen                                                        | 1230 |
| <b>Multiprocessor Scheduling Problem Based on Ant Colony Optimization Algorithm</b><br>Y. Li                                                                                                        | 1235 |
| <b>Realization of Text Categorization for Small-Scaled Dataset</b><br>H. Liu                                                                                                                        | 1239 |
| <b>Automatic Construction of Collocation Dictionary Based on Text Mining</b><br>H. Zhang and Y.Q. Wang                                                                                              | 1243 |
| <b>Research of the Construction of Network Data Storage in the New Period</b><br>X. Fang                                                                                                            | 1248 |
| <b>A New Method for Noisy Speech Classification Based on Gaussian Mixture Models</b><br>L.H. Yao, J. Xu and H. Jiang                                                                                | 1253 |
| <b>Multi-Objects Detection in Remote Sensing Images Using Multiple Kernel Learning</b><br>X.J. Li, H. Sun, X.W. Zheng, X. Sun and H.Q. Wang                                                         | 1258 |
| <b>Research on Construction of Semantic Web of 3D Model Database</b><br>H. Jia, G.H. Geng and J.X. Yang                                                                                             | 1263 |
| <b>Key Technologies in the Construction of a GIS System for Weather Data</b><br>D.Q. Li and D.W. Seng                                                                                               | 1268 |
| <b>Research of Flood Prediction Based on Subjective/Objective Evidences Fusion Model</b><br>W. Wu and Y.M. Chen                                                                                     | 1272 |
| <b>A Multi-Dimensional Time Series Data Mining Model for Weather Forecast</b><br>K. Liu                                                                                                             | 1277 |
| <b>Research and Improvement on Content-Based Web Search Engine</b><br>Z.C. Lin, L. Sun and X. Liu                                                                                                   | 1282 |
| <b>Simulation and Spectral Analysis of Sea Wave</b><br>J.B. Xu, X.Q. Bian and M.Y. Fu                                                                                                               | 1287 |
| <b>Computer Simulations of Chua's Circuits with Small-World Connection</b><br>G.Y. Zhang and J. Xing                                                                                                | 1292 |
| <b>A Survey on Emotional Semantic Mapping in Image Retrieval</b><br>Z.R. Liu, Z. Li and X.L. Yu                                                                                                     | 1297 |
| <b>Virtual Assembly Simulation Method for Complicated Mechanical Product</b><br>B. Sun, S.Y. Zhang and Y. Cao                                                                                       | 1303 |
| <b>The Simulation Method of the Torpedo Magnetic Fuse Introduction Signal</b><br>Z.L. Liu, H.J. Zhang and H. Li                                                                                     | 1308 |
| <b>Design and Implement of Intelligent Orientation Online Help</b><br>Q. Zhang, C.F. Zheng, Y. Rong and X.L. Zhu                                                                                    | 1313 |

|                                                                                                                                                         |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Constructing a PU Text Classifier with Incremental Characteristic</b><br>S.Y. Ling and J.H. Gong                                                     | 1318 |
| <b>Construction of Question Chain Data Center Systems Supported of Data Mining</b><br>L. Liang                                                          | 1324 |
| <b>The Summary of the Application of Pattern Recognition in Image Progressing</b><br>Z.H. Xi, H.P. Liu, Z.Q. Ren and N. Li                              | 1329 |
| <b>Cloud Storage Technology in Video Surveillance</b><br>Z.F. Zhao, X.J. Cui and H.Q. Zhang                                                             | 1334 |
| <b>Research for the SSD-Based Storage Technology of Mass Remote Sensing Image</b><br>W.C. Zhang and Z.P. Chen                                           | 1339 |
| <b>Knowledge Integration for Analyzing ChIP-seq</b><br>D.Y. Zhou and Y.L. He                                                                            | 1344 |
| <b>Development of Vibration Data Processing Program</b><br>Y.F. Xu and Y.D. Zhou                                                                        | 1349 |
| <b>Harmonic Monitoring Based on BP Neural Network</b><br>B.F. Liu, Y. Chen and X.W. Fang                                                                | 1354 |
| <b>Image De-Noising Based on Improved Data-Adaptive Kernel Regression Method</b><br>Z.P. Qiang, X. Chen, H. Lin and T.L. Zhao                           | 1359 |
| <b>Research of Query Optimization Based on Improved Quantum Particle Swarm Optimization Algorithm in Distributed Database</b><br>F.M. Liu and J.Y. Wang | 1365 |

## Chapter 6: Algorithm Design

|                                                                                                                                                               |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Adaptive K-Means Algorithm with Dynamically Changing Cluster Centers and K-Value</b><br>A.P. Deng, B. Xiao and H.Y. Yuan                                   | 1373 |
| <b>Blind Source Separation Based on Non-Gaussianity</b><br>B.Z. Yang                                                                                          | 1378 |
| <b>Decision Tree Based Rules Redistribution Algorithm for IP Monitoring of Lawful Interception on IPv4 Networks</b><br>X. Ma, S.K. Qu, Q.Q. Tang and X. Huang | 1384 |
| <b>A Robust Image Perceptual Hashing Scheme Based on Improved Normalization Algorithm</b><br>S.S. Sun, Y. Zeng, H.X. Zhang and J.S. Gui                       | 1389 |
| <b>Research on the Adaptive Algorithm for Interference Cancellation</b><br>J. Dai, F. Zhang and H. Zhang                                                      | 1394 |
| <b>A New Video Watermark Algorithm Based on the Property of the Video</b><br>C.Z. Yang, L.F. Liao, X.S. Zheng, Y.L. Zhao and G.Q. Liu                         | 1399 |
| <b>Image Encryption Algorithm Based on Image Element and DFRCT</b><br>G.L. Zhu, X.L. Qin and X.Q. Zhang                                                       | 1403 |
| <b>Reduction Algorithms of Incomplete Covering Decision Systems</b><br>S.P. Zhang and T. Feng                                                                 | 1409 |
| <b>A Faster Pattern Matching Algorithm for Intrusion Detection</b><br>F. Du                                                                                   | 1414 |
| <b>FPGA Based Implementation of Semi-Fragile Watermarking Algorithm</b><br>F.M. Liu and X.Z. Pan                                                              | 1419 |
| <b>OpenMP-Based Parallel Algorithms for Pi on Multi-Core Platform</b><br>Z.J. Gao                                                                             | 1424 |
| <b>A Diversity Guided Particles Swarm Optimization</b><br>N. Li and Y.X. Li                                                                                   | 1429 |
| <b>A Novel Quantum Genetic Algorithm Based on Potential</b><br>X.L. Li and F. Meng                                                                            | 1434 |
| <b>A Novel Algorithm of Fractal-Wavelet Image Denosing</b><br>T. Xu and L. Huang                                                                              | 1440 |
| <b>EM Algorithm Based on Fuzzification and its Application</b><br>T.T. Tong and Z.H. Wu                                                                       | 1445 |
| <b>Shape Modification of NURBS Curves Using Genetic Algorithm</b><br>Y.H. Li, G.W. Mu and Z. Guo                                                              | 1450 |

|                                                                                                                                                                         |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Investigating the Performance of Cosine Value and Jensen-Shannon Divergence in the kNN Algorithm</b><br>X.D. Li, H. Jia and L. Huang                                 | 1455 |
| <b>A Novel Approach to Computing with Words: A Statistical Algorithm for Algebra Operations of Cloud Model</b><br>Z.Q. Luo, P. Cao, X.W. Liu and S.Q. Ma                | 1460 |
| <b>Based on Ant Colony Algorithm Finite Element Analysis of the Alloy</b><br>S. Zhang and L. Meng                                                                       | 1468 |
| <b>Research on Extension of the Fuzzy Rough Set Theory</b><br>Y. Zhang                                                                                                  | 1472 |
| <b>An Extended Rough Set Model for Generalized Incomplete Information Systems Based on <math>\alpha</math>-Limited Dominance Relation</b><br>J.L. Mo, Y.J. Lv and Y. Wu | 1477 |
| <b>Simulation of Signal Based on the Reproducing Kernel Spline</b><br>X.J. Ma                                                                                           | 1482 |
| <b>The Unscented Kalman Filter Estimators for High Dynamic Doppler Shift Environments</b><br>K. Zhao, K.G. Pan, A.J. Liu and D.X. Guo                                   | 1487 |
| <b>Range Particle Algorithm Application in the Solving Inverse Problem of Line Source</b><br>K.G. Yu                                                                    | 1492 |
| <b>The Research Based on GA-SVM Feature Selection Algorithm</b><br>H.M. Li, L.G. Yang and L.H. Zou                                                                      | 1497 |
| <b>Reliability-Based Structural Optimization Using Sequential Response Surface Method</b><br>W.T. Zhao, Y. Yang and T.J. Yu                                             | 1503 |
| <b>Research in SVM Sample Optimizes of ISODATA Algorithm</b><br>Z.J. Zhao, W. Gao, H.Z. Wang and K.F. Zhang                                                             | 1507 |
| <b>Image Encryption Algorithm Based on Genetic Algorithm</b><br>G.L. Zhu, W.P. Wang and X.Q. Zhang                                                                      | 1512 |
| <b>Research on Encryption Algorithm Conforming to AES in WLAN</b><br>J. Li, L. Gan and F.F. Du                                                                          | 1517 |
| <b>Research on the Application of Co-Evolutionary Algorithms in Automated Negotiation</b><br>Q. Xu, Y. Yuan and F. Zhang                                                | 1522 |
| <b>Application of Least Square Algorithm for Ellipses Detection</b><br>C. Yuan, C. Wang and G. Liu                                                                      | 1527 |
| <b>The Research of Image Segmentation Algorithms</b><br>Z.X. Chi and L. Shi                                                                                             | 1532 |
| <b>2-D Kernel Regression Algorithm for Image Denoising</b><br>Y.F. Yao, Y.G. Hu, C.S. Wang and W.W. Sun                                                                 | 1537 |
| <b>A Heuristic Algorithm for Decision Table Reduction</b><br>N. Su, F.F. Liao and Z.H. Wu                                                                               | 1543 |
| <b>A Universal Steganalysis Algorithm for JPEG Image Based on Selective SVMs Ensemble</b><br>D.Y. Chen and S.P. Zhong                                                   | 1548 |
| <b>Fuzzy C-Means Clustering Algorithm for Image Segmentation Based on Improved Particle Swarm Optimization</b><br>Y. Yang, S.X. Guo, R.L. Tian and P. Liu               | 1553 |
| <b>The Segmentation Algorithm for Hand Vein Images Based on Improved Niback Algorithm</b><br>X.M. Guo, W.D. Zhou and C.Y. Wang                                          | 1558 |
| <b>A Rapid Initial Alignment Alogrithm Based on Strapdown Gyrocompass</b><br>S.H. Li, G.M. Yan, P.X. Yang and Y.Y. Qin                                                  | 1563 |
| <b>3D Visualization Algorithm Based on Terrain Partitioning and Dynamic Levels of Details</b><br>W.H. Wang, H.L. Qiu and W. Li                                          | 1568 |
| <b>Research on Optimize Scheduling Model and Heuristic Algorithm Based on Capacity Balance</b><br>D.J. Xue                                                              | 1573 |
| <b>Medical Image Segmentation Algorithm Based on Granular Computing</b><br>F. Wang, J.J. Ruan and G. Xie                                                                | 1578 |
| <b>A Nighttime Vehicle License Character Segmentation Algorithm</b><br>S.B. Gao and D. Jin                                                                              | 1583 |

|                                                                                                                                                     |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>A Knowledge Rule Mining Method for the Evaluation of Library Service Quality Based on Genetic Algorithm</b>                                      | 1588 |
| P. Wang and T.S. Yan                                                                                                                                |      |
| <b>Visual KEA: A Visual Model Based on Keywords Extraction Algorithm for Hub Pages</b>                                                              | 1593 |
| H. Peng and Z. Chen                                                                                                                                 |      |
| <b>Transitional Compensation Algorithm for Correcting Non-Uniformity of LED Display Image</b>                                                       | 1600 |
| W.X. Su and Y.S. Chen                                                                                                                               |      |
| <b>Application of Data Fusion Based on Genetic Algorithm and BP Neural Network in WSN</b>                                                           | 1606 |
| Y. Xu, Z.X. Li and J.J. Liu                                                                                                                         |      |
| <b>Analysis on Using Average Curvature Algorithm to Simplify the Mapping of Large-Scale Battlefield Terrain Space Grids with LOD and its Errors</b> | 1611 |
| S.B. Liu, X.Y. Liu, Y.P. Yang and C. Wang                                                                                                           |      |
| <b>Cost Optimization Problem of Hybrid Flow-Shop Based on PSO Algorithm</b>                                                                         | 1616 |
| Z.H. Han, X.F. Ma, L.L. Yao and H.B. Shi                                                                                                            |      |
| <b>Image Mosaic Method Based on SUSAN Algorithm and Log-Polar Transformation</b>                                                                    | 1621 |
| C.P. Jiang, Y. Zheng, B. Xu and X.D. Xue                                                                                                            |      |
| <b>An Extended Simplex Algorithm for Linear Programming</b>                                                                                         | 1626 |
| G.G. Zhang                                                                                                                                          |      |
| <b>An Efficient Algorithm for Improved Shape Context Feature's Cost Matrix Computation</b>                                                          | 1631 |
| S.S. Li, Y.H. Zhao and J.A. Wang                                                                                                                    |      |
| <b>Approach for Solving Nonlinear Equation Group Based on Adaptive Genetic Algorithm</b>                                                            | 1636 |
| H.L. Shen, F.L. Cheng and H.R. Ren                                                                                                                  |      |
| <b>On-Line Modeling of Dynamic Nonlinear System Based on Bayesian Inferring Method Combined with Evolutionary Algorithms</b>                        | 1640 |
| Y.J. Liu, L.M. Di and Y.J. Fang                                                                                                                     |      |
| <b>The Research of PApriori Algrithm Based on OLAP</b>                                                                                              | 1645 |
| Y.L. Ma, G.Q. Zhang, W.C. Xu and L.J. Tong                                                                                                          |      |
| <b>Improved Algorithm for Discretization of Decision Table</b>                                                                                      | 1649 |
| L.F. Chen and Y. Ma                                                                                                                                 |      |
| <b>Study on Coarse-Grained Parallel Genetic Algorithm</b>                                                                                           | 1654 |
| Y. Chen and X. Wei                                                                                                                                  |      |
| <b>Dual Aircrafts Path Planning for Forest-Fire Rescue by Artificial Immune Algorithm</b>                                                           | 1659 |
| L.F. Liu and S.Q. Zhang                                                                                                                             |      |
| <b>A Particle Swarm Optimization Algorithm Based on the Pattern Search Method</b>                                                                   | 1664 |
| J.L. Zhang and D.W. Dai                                                                                                                             |      |
| <b>A New Algorithm of Video Key Frame Extraction Based on the Block of Frame Image</b>                                                              | 1670 |
| H.C. Feng, Y. Gong and W.G. Hu                                                                                                                      |      |
| <b>Research on Data Mining Based on Apriori Algorithm</b>                                                                                           | 1675 |
| P.J. Wang and Y.L. Zhao                                                                                                                             |      |
| <b>An Algorithms for Super-Resolution Reconstruction of Video Based on Spatio-Temporal Adaptive</b>                                                 | 1680 |
| M.H. Li, C. Lin, J.B. Tian and S.H. Pan                                                                                                             |      |
| <b>An Improved SPRINT Algorithm</b>                                                                                                                 | 1685 |
| Z.K. Luo, H.Y. Sun and D. Wang                                                                                                                      |      |
| <b>Research on Algorithm of Function Set Mining Based on Interests</b>                                                                              | 1691 |
| J.Z. Zhang, Y.X. Wang and R.Z. Zhang                                                                                                                |      |
| <b>Application of Chaotic Encryption Algorithm in RFID Secure Mechanism</b>                                                                         | 1695 |
| A.P. Deng and B. Xiao                                                                                                                               |      |
| <b>Study on Moving Object Detection Algorithm in Outdoor Video Surveillance System</b>                                                              | 1700 |
| X.Y. Xiong, B. Wang and D.X. Wang                                                                                                                   |      |
| <b>A New Hybrid Image Reconstruction Algorithm for Magnetic Induction Tomography</b>                                                                | 1706 |
| Y.Y. Chen, X. Wang, D. Yang and Y. Lv                                                                                                               |      |
| <b>Evolutionary Algorithm Research Based on Neural Network for Fuzzy Cognitive Map</b>                                                              | 1711 |
| P.P. Liu and Y.J. Hao                                                                                                                               |      |
| <b>Short Text Clustering Algorithm with Feature Keyword Expansion</b>                                                                               | 1716 |
| C.X. Jin, H.Y. Zhou and Q.C. Bai                                                                                                                    |      |

|                                                                                                                                                                                   |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>An Improved IPP Planning Algorithm and the Application</b><br>J. Gao                                                                                                           | 1721 |
| <b>An Efficient Algorithm for Computing the k-Error Linear Complexity Spectrum of Periodic Sequences</b><br>L.Y. Ma and H. Cao                                                    | 1726 |
| <b>A Novel Filtering Algorithm Based on Least Square Support Vector</b><br>Y.Q. Li and Y.H. Xu                                                                                    | 1732 |
| <b>Complex Relationship Mining Algorithm and its Application</b><br>T. He                                                                                                         | 1736 |
| <b>Fast Multilevel Thresholding Method for Image Segmentation Based on Improved Particle Swarm Optimization and Maximal Variance</b><br>Z.T. Peng, K.L. Fang, Z.Q. Su and S.H. Li | 1741 |
| <b>A Robust Star Acquisition Algorithm Based on Facet Model</b><br>G.R. Li                                                                                                        | 1747 |
| <b>Near-Replicas of Web Pages Eliminating Repetitive Algorithms Based on MD5</b><br>J.Y. Yan, X.H. Ma and W.J. Zhao                                                               | 1752 |
| <b>BP Network Optimization Based on Improved Genetic Algorithm</b><br>W.W. Sun, Y.F. Yao, C.S. Wang and Y.G. Hu                                                                   | 1757 |
| <b>An Audio Watermarking Algorithm Based on Chaos</b><br>H.B. Tang and B.B. Liang                                                                                                 | 1764 |
| <b>An Interactive Video Foreground Segmentation System Based on Modeling and Dynamic Graph Cut Algorithm</b><br>X.Y. Wu, L. Yang, S.B. Li and P. Xu                               | 1770 |
| <b>An Efficient K-Shortest Paths Based Routing Algorithm</b><br>J. Lian, Y. Zhang and C.J. Li                                                                                     | 1775 |
| <b>Study of Improving Support Vector Machine Algorithm Based on Medical Data Mining</b><br>W. Wu                                                                                  | 1780 |
| <b>Research on the Genetic Algorithm Simulating Human Reproduction Mode and its Blending Application with Neural Network</b><br>T.S. Yan                                          | 1785 |
| <b>A General Algorithm Framework Design for Ship-Radiated Noise Target Recognition</b><br>Y.N. Li                                                                                 | 1790 |
| <b>New Algorithm for Predicting RNA Secondary Structure with Pseudoknots</b><br>Z.D. Liu and D.M. Zhu                                                                             | 1796 |
| <b>An Energy Efficient Wireless Sensor Network QOS Multicast Routing Algorithms Based on Ant Colony Algorithm</b><br>Q. Zhang and H.J. Xiong                                      | 1800 |
| <b>Watermarking Algorithm Based on Video Features</b><br>C.Z. Yang, X.S. Zheng and Y.Y. Ding                                                                                      | 1805 |
| <b>Schedulability Analysis Algorithm of Timing Constraint Petri Nets</b><br>H.F. Li and F.J. Feng                                                                                 | 1810 |
| <b>The Research of Web Image Recognition Algorithms Based on Knowledge Base</b><br>L. Shi and Z.X. Chi                                                                            | 1815 |
| <b>Research on Unknown Static Parameter Estimation Problem of State Space Models Based on Particle Filter Algorithm</b><br>S.B. Jiao, F.C. Qian and J. Yang                       | 1820 |
| <b>An Improved Apriori Algorithm Based on Similarity</b><br>A.P. Zeng, D. Liu and H.M. Chen                                                                                       | 1825 |
| <b>Super-High Dimension Complex Functions Optimization Using Adaptive Particle Swarm Optimizer</b><br>Y. Zhang, B.Q. Liu and H.R. Chen                                            | 1830 |
| <b>An Improved Genetic Algorithm of Web Services Composition with QOS</b><br>Y.Y. Zhang, H.L. Xiong and Y.C. Zhang                                                                | 1836 |
| <b>The Research and Improvement of APFFT Algorithm</b><br>J.T. Diao, J. Guo, N. Li, W. Yi, S. Liu, Q. Li and H. Xu                                                                | 1841 |
| <b>Multiple Blind Watermark Algorithm Based on Wavelet Packet Transform and Two-Dimensional Chaos Scramble</b><br>T.Z. Zhao, T. Chen, J. Xu, T. Wang and W.Y. Shi                 | 1846 |

|                                                                                                                                           |      |
|-------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Application of Thiessen Polygon Algorithm in Cellular Network Simulation System</b><br>L. Wei, H.Y. Chen, L. Li, H.M. Fu and L. Wei    | 1851 |
| <b>Polynomial Convergence of Primal-Dual Algorithms for SDLCP Based on the Monteiro-Zhang Family of Directions</b><br>G.Z. Li             | 1857 |
| <b>Application of Improved Artificial Fish Swarm Algorithm to Slope Stability Analysis</b><br>J. Liu, J. Li, J.Y. Huo and L.N. Liu        | 1861 |
| <b>A New Path Planning Algorithm Based on the Virtual Ridges for an Agro-Machinery</b><br>X.P. Bai, J.T. Hu, T.C. Li, X.G. Liu and L. Gao | 1867 |
| <b>A Novel Color Face Segmentation Algorithm Using Multi-Feature</b><br>D.M. Wei and W.D. Zhou                                            | 1872 |