

Table of Contents

Preface and Committee

Chapter 1: Intelligent Systems and Control Systems

Intelligent Research for Chinese Intelligent Urban Construction Problems and Solutions - Intelligent Traffic Forecast Y.N. Wu and R.H. Xu	3
The Design of Smart Home System Based on Bluetooth S.H. Chen, Z.M. Shu, H. Liu and L.J. Lu	7
Structure and Motion Analysis of Intelligent Tracking Car Based on SolidWorks and Arduino G.Y. Lu and T. Wu	11
Design of a Novel Automatic Access Control System L.J. Zhang	15
Intelligent Control System on Traffic Flow under the Keep-Right-Except-to-Pass Rule Y.H. Zha	19
A Sensor Detection Experiment System Based on Network Virtual Instrument J. Zhang, Y.S. Liu and L. Xue	25
Mechanical Research with PID Parameters Tuning Based on MATLAB/Simulink Q.Q. Huang and T. Wu	30

Chapter 2: Intelligent Technologies and Design in Mechanics and Manufacturing Technological Processes

Mathematical Model for Tension of Textile during the Process of Supercritical Fluids Spray Dyeing M.L. Wang and W.Q. Wang	37
Study on the Strength of Textile during the Process of Supercritical Fluids Spray Dyeing M.L. Wang and W.Q. Wang	41
Structure Improvement of Gear Generating Based on Involute Tooth Profile and Mechanical Properties M. Wang and J. Zhang	45
Analysis of Temperature Field on Ceramic Dry Granulation Machine N.X. Wu, X. Bao, D.H. Liao and Z.F. Xiao	49
Research on the Effect of Moulded Surfaces of Deflectors J. Deng, S.H. Bi and S.Z. Yu	53
Modal Analysis of Crane Girder Based on ANSYS Workbench R. Peng and X.Y. Qin	58
Intermittent Crank Rocker Mechanism Design and Analysis of Motion Characteristics S.Q. Deng, M. Zhang, D.Y. Ma and T.T. Li	62
Modeling and Optimized Design of a New Multi-DOF Deflection Type PM Motor Z. Li, L. Zhang and Q.Q. Lun	67
The Design of New Type Food Mixer S.A. Chen, J.G. Wang and X.Q. Deng	71
Modeling and Simulation of Vector Slip Frequency Control System of Induction Motor M. Cao and P. Yin	76

Chapter 3: Materials Science and Processing

Mechanical Properties of Cu-Ni-Zn/Cu-Cr/Cu-Ni-Zn Composite Plate Processed by Explosive Bonding and Cold Rolling G.T. Kang, J.S. Song and S.I. Hong	83
---	----

The Nature of Intermetallic Compounds and its Effect on Mechanical Properties of Cu/Al/Cu Clad Metals	
W.N. Kim and S.I. Hong	87
Statics Analysis of Rails on CNC Glass Edger	
Z.F. Xiao, J.B. Le and N.X. Wu	92
Preparation and Photocatalytic Properties of ZnO Thin Films	
H.S. Wu and Y.L. Wang	96
Study on Photocatalytic Degradation of Phenol by ZnO Thin Films	
H.S. Wu and Y.L. Wang	100
Structure and Optical Property of Cu₂O:N Thin Film Deposited by Reactive Pulse Magnetron Sputtering	
X.F. Zi, R.M. Liu, Q. Ye and X.Z. Shu	104
Application of Nano Calcium Phosphate Biomaterials and Bone Tissue Engineering on in Exercise-Induced Injury	
H.M. Zhuang, X.L. Miao, Z.Q. Zhao and L. Zhang	109
Distribution of Cotton in Rectangular Pipeline for Horizontal Foreign Fiber Removed Device	
G.L. Gao, G.J. Wang and P.C. Liu	113
An Improved TOPSIS Method for Material Selection Model	
W.F. Huang	120

Chapter 4: Environmental and Chemistry Engineering

Research on Material Properties and Soil Heavy Metal Pollution in Cities with Spread Evolution Model	
Y. Fan, M.X. Xu and W.X. Lin	127
Research on Waste Tubes Recycling with Material Properties in Wuhan	
M. Zhang, J.Y. Wang, L.L. Liang, B. Hu and W.L. Hu	133
The Research of Conductive Polyaniline Doped by Composite Acids (Acetic Acid / Hydrochloric Acid)	
J.H. Li, J.M. Long and R.C. Fu	137
Synthesis of <i>P</i>¹-Stavudine-<i>P</i>²-Zidovudine-5',5'-Diphosphate	
C. Ma, S. Liu, S.S. Gong and Q. Sun	141
Synthesis of β,γ-Bridging Oxygen-Modified Ribavirin 5'-Triphosphates	
Q. Wang, S.S. Gong and Q. Sun	145
Synthesis of Acyclovir β,γ-Methylene/Dihalomethylene Triphosphates	
X.C. Li, S.S. Gong and Q. Sun	149
Engineering Research on the Design Scheme of Foundation Improvement Engineering of ZhongShan Shipbuilding Base	
T.H. Zhang	153

Chapter 5: Applied Technologies, Networks and Information Engineering

Research on Applied Technology in Assessing the Application Effectiveness of CIS Based on Digital Command of CIS	
Z.Y. Chen, Z.L. Zou and Y.J. Peng	161
Applied-Information Technology in Safety Throughput Analysis for Crude Oil Pipeline System	
Y. Wang, Y. Liu, P.P. Qi and X.N. Xiong	165
Research on Applied-Information Technology in Hierarchical Network Security Protocols Designing Based on Public Key	
Y.L. Wang and J.Y. Ye	169
Application of an Improved Recurrent Neural Network in Network Security Situation Prediction	
J.P. Cai, L. Qu, G. Chen and J. Yang	173

Applied Technology with Electronic Materials and Information in Autonomous Learning of Learners C.M. Wu	177
Application of Information Technology and Printing Materials in Ideological and Political Learning S.L. Chen	181
Applied-Information Technology in Fusion SVM Partial Least Squares Analysis of Experimental Data in the Body of PET X. Zhou, Y. Xiong, W.P. Xiong and L.Z. Xiong	185
Applied-Information Technology and Data Processing for Multi-Objective Interval Job Shop Scheduling Problem with Flexible Preventive Maintenance X.Q. Xu and D.M. Lei	189
Applied Technology in Supervision Model of Government Investment Projects Based on Deterrence Game Model Y.N. Wu, Y. Peng, K.F. Chen and R.H. Xu	197
Applied Technology in Adapting the Number of Particles while Maintaining the Diversity in the Particle Filter R.R. Zhi, T.C. Li, M.F. Siyau and S.D. Sun	202
Embedded Computer Performance Evaluation Model Based on Weight Contact Coefficient Y.B. You, S.S. Zhao, R.J. Jing and L.Y. Liu	208
Application of Intelligent System in Interpretation with Applied Technology X.Z. Tian	214
Applied Technology in Optimized Design of Battery Laying for Solar Cabin M.X. Xu, Y. Fan and W.J. Zheng	218

Chapter 6: Computation Methods and Algorithms for Modeling, Simulation and Optimization, Data Mining and Data Processing

Automatic Method for Determining Cluster Number Based on Silhouette Coefficient H.B. Zhou and J.T. Gao	227
Automatic Optimization Algorithm of Clusters Number Based on Maximum Distance H.B. Zhou and J.T. Gao	231
Applied Research with Two Modified Three-Step Algorithms Based on Double Newton Method for Solving Nonlinear Equations L. Fang	235
Research on Swarm Intelligence Algorithm with an Artificial Bee Colony Algorithm for Lot Streaming Problem in Job Shop X.Q. Xu and D.M. Lei	239
Research on Applied Technology and Data Processing with Inversion Method Based on Bayesian Formula R.F. Zeng and H.W. Gong	245
Data Processing and Technology Application in Bayes and Empirical Bayes Reliability Analysis of Parameter of Ailamujia Distribution H. Zhou	249
Applied-Information Technology with Method of Digital Image Noise Processing G.Q. Yu, C.M. Sui and B.D. Sui	253
The Numerical Simulation of behind Armor Debris by Shaped Charge Jet Penetration B. Liu, Z.M. Yao and G.Q. Liu	257
Research of USB OTG Technology in Image High-Speed Data Transfer M. Cao and P. Yin	261
Illumination Uniformity Measurement Technology Research Based on Quasi-Sine Particle Swarm Optimization Q.H. Yao and M. Cao	265
An Integrated Architecture for Satellite Control Center System H.P. Shang, Y. Jia and J.X. Wang	269
Optimization Design of Structure and Parameters for RBF Neural Network Using Hybrid Hierarchy Genetic Algorithm X.S. Gan, C. Yang and H.L. Gao	274

Information Technology in Human Physiological Signal Monitor System Based on Atmega328

Q.H. Yao and M. Cao

278

Numerical Simulation of Dynamics in the Zero-Range Process Based on Applied Technology

R.F. Zeng and D.Q. Guo

282