ISBN(softcover): 978-3-03785-283-5 ISBN(eBook): 978-3-03813-716-0

Table of Contents

Preface and Organiznig Committees

Chapter 1: Numbers, Intelligence

Reverse Kinemics of Bionic 6-RSS Chewing Robot for Food Mechanical Properties Measuring
J.H. Yu, G. Pei and Y.Z. Zhang 3

A Rotor Time Constant Identification Method with Compensation Algorithm
C.Y. Bian, R.X. Cao, Y.K. Man and C.H. Song 12

A Predictive Dynamic Neural Network Model Based on Principal Component Analysis (PCA) and its Application
Q.Y. Yan and Y.Q. Liu 19

Design of the Real-Time Autofocusing System for Collimator with Long Focus Length and Large Aperture
X. Li and X.H. Zhang 25

The Study of Image Reconstruction Based on Compressed Sensing Theory
M. Fang, Y.M. Liu, W. Liu and H. Chen 32

Study on Design of Intelligent Decision Support System of Engineering Equipment Repair
M. Zhang, J. Yu, M.H. Wang and C.Y. Qi 36

Design and Implementation of Auto Parts Data Management System Based on BOM
Y.B. Zhang, Y.H. Yang, M.L. Jiang, P.T. Xia and B. Li 42

A Design of Pulse-Wave Data Collection System
X.H. Zhang and X.L. Zhao 48

Prediction of Networks Security Situation Based on Wavelet Kernel Function Network
J.Q. Xiao 53

Research on the Repetitive Control Technique in Gird-Side Converter of the Double-Fed Wind Power System
S.Z. Hu and E.R. Zheng 59

A New Numerical Scheme for Linear Scalar Conservation Laws
R.S. Chen, A.P. Liu, S.M. He and X.L. Hu 65

Research on Closed-Loop Control of the Step Response
X.P. Wang, J.J. Dang and Z.C. Zhao 71

Chapter 2: Manufacturing Technology and Machinery Automation

Limit Analysis of Defect-Free Pipe Elbow under Internal Pressure with MY Criterion
S.H. Zhang, D.W. Zhao and C.R. Gao 79

Preparation of Metallic Cobalt Nanoparticles by the Thermal Decomposition of CoC_2O_4. $2H_2O$ Precursor in the Argon Gas
X.M. Fu 85

A Role of Low Energy Grain Boundaries in the Abnormal Grain Growth in Fe-3%Si Alloy
Y.C. Zhu, J.H. Mao, F.T. Tan and X.L. Qiao 89

Effects of Hot Band Annealing on the Precipitation of Copper Sulfide in Fe-3%Si Steel
Y.C. Zhu, J.H. Mao, F.T. Tan, R.P. Wang and X.L. Qiao 95

Ultrafine Tungsten Powder Obtained with Violet Tungsten Oxide Using Circulatory Oxidization-Reduction Method
X.M. Fu 101

Straightness of U75V 100m Heavy Rail under Deferent Straightening Processes
H. Kang, W. Di and X.M. Zhao 105

Material Selection and Application of Abrasive-Liquid Device Sealing Bush
R. Zeng, C.L. Du, J. Zhao and R. Xu 110

A Description Method for MSER with SIFT Descriptor
X.H. Fan, W.T. Lin, J. Cao, B.L. Li and Y. Si 115

Study on the Crack Initiation Criterion in Fretting Fatigue of LZ50 Steel
X.C. Ping, S.J. Yingb and X.Y. Liu 121

Design of Stepping Motor Position Closed Loop Control System Based on PLC
L.H. Wang and Y.L. Zhao 126

Conceptual Design Program of Drilling Fixture to Create and Evaluation Methods
B.Q. Li, Z.T. Hu and C. Liu 130

Design of Induction Motor Direct Torque Control System
Y.G. Zheng and J. Chen 134

Analysis of Accident Safety Risk of Tower Crane Based on Fishbone Diagram and the Analytic Hierarchy Process
C.H. Zhao, J. Zhang, X.Y. Zhong, J. Zeng and S.J. Chen 139

Simulation of Optical Properties of Mn-Doped ZnO Based on Density Functional Theory
T. Li, S.L. Yang, W.K. Wang, Y. Wei and Q. Zhang 144

Chance Constrained Model Predictive Control Based on Set-Valued Optimal Algorithm
Y. Cao and J. Wu 148

Mechanics Model and Experimental Researches on Hydraulic Expansion Lining of High Pressure Reactor
H.H. Chen and G.J. Yang 156

Study on Machinery Cutting Technology of Ceramic Parts
D.M. Jiang and Q. Wang 163

Effect of Variety and Morphology of Substrate on the Crystal Form of Calcium Carbonate Crystal
W.J. Ma and X.W. Wang 168

Inverse Kinematic and Dynamic Analyses of the 6-UCU Parallel Manipulator
G.J. Liu, S.T. Zheng, P.O. Ogbobe and J.W. Han 172

Research and Application of Assembly-Centered Lifecycle Quality Management System
H. Yin, Y.L. Luo, Y.H. Deng and H.P. Zhu 181

Study on Weld Shaping and Mechanical Properties for Three Movement Types of Arc Welding Robot Torch
J.P. Jia, J.P. Chen, Y.L. Liu and Y.Q. Zhang 187

Application of HYDROX to Torpedo Thermal Power System
X.L. Shan, J. Zhao, R. Zhu and Y.F. Kong 192

Study of CODOG Propulsion System Mission Reliability
H. Shi, J.S. Dou and S.L. Yu 196

Research and Simulation of Working Mechanism of Small Shaper
Y. Wu 202

Application of Conjugate Cam Design Software Platform in Die Cutting Platen Press Mechanism
X.D. Shi, S.H. Shen and C.W. Chai 207

Testing System for Compressed Natural Gas Engine ECU
X.L. Che, C. Zhu and N.D. Wang 214

Based on Atmege 16 Mixed Hybrid Automobile Demonstration System Design
T. He, Y.S. Bai and W.J. Xu 220

The Search on Ethanol Fuelling for Compression Ignition Engine
T. He, Q.F. Zhao and J.S. Zang 224

External Gear Pump Model and Simulation
H. Wang and S.S. Du 228

The Simulation on the Power Train System of the Hybrid Horizontal Directional Driller
T. He, L.X. Meng and Z.Q. Liu 233

Emission Characteristics Comparison of a Common Rail Diesel Engine Fuelled with Diesel and Biodiesel
W.M. Cheng and J. Liu 237

Research on Influence Factors Based on Model of Rotational Ultrasonic Tube Testing
H.M. Zhou and G.W. Liu 242

The Research of Vehicle Handling Stability Based on ADAMS
Q.F. Zhao, T. He, W.J. Xu and Z.Q. Liu 248

Application of Virtual Prototyping Technology in the Design of Drive Axle
Q.F. Zhao, M.D. Jiao and J.Q. Xing 252

All-Wheel Steering Technology and its Development Prospects of Wheeled Vehicles
X.X. Liu, L. Yuan, Y. Jin and D. Wu 257

Research of Thermal Analysis Collaboratively Using ANSYS Workbench and SolidWorks Simulation
Y. Peng 262

Analysis and Improvement of the Diesel High Pressure Oil Pipe Based on ANSYS
Q.F. Zhao, J.Q. Xing, T. He and A. He 267

Adsorption and Dispersion Characteristics of Superplasticizer with Waste Plexiglas (WPS) on the Surface of Gypsum Particles
G. Zheng, R.M. Wang, G.Y. Zhao and X.J. Yu 272

Error Comparison and Analysis of Parallel and Constraint Mechanism for 3-TPS Hybrid Machine Tool
P.F. Dang and L.J. Fang 277

On the Application of Cultural Bionics to the Automobile Styling Design
M.F. Hou and L.M. Fu 283

Research on Non-Man-Made-Control Bus Anti-Overload System
L.X. Meng, X. Zhang and J.F. Li 288

The Repairing of Camshaft Based on Surfacing Welding and Brush Plating
L.X. Meng and X. Zhang 292

Research on the Idler Spacing of Belt Conveyor
Y.C. Guo, G. Cheng, K. Hu and Z.F. Wang 295

Research on Object Recognition of Intelligent Robot Base on Binocular Vision
J. Wang, T. Mei, B. Kong and X. Dong 300

Parameters Design Platform of Adjustable Gear's Backlash
S.H. Shen and X.D. Shi 305

Manufacturing Knowledge Modeling Based on Artificial Neural Network for Intelligent CAPP
J. Wang, H.L. Zhang and Z.Y. Su 310

An Integration of Military Electronic Equipment and Flexible Test Technology
G. Niu, G.S. Chen and P.Y. Wang 316

Mechanical Product Analogy Design Method Based on Structure Similarity
P.C. Nan and J. Xu 320

Research and Application of Machinery Balance Based on Pro/E Behavioral Modeling
Y.X. Xie and Z.G. Jin 327

Optimize Quenching Process Parameters of 20CrMnTi Steel Based on Response Surface Methodology
C.J. Liu, D.B. Tang and H. He 332

Passenger Volume Estimation Based on the Relational Model of Visual Density for Elevator Group-Controlled System
T.D. Liu, J. Chen and H. Jiang 338

The Fatigue and Degradation Mechanisms of Wire Ropes Bending-over-Sheaves
Z.H. Hu and J.Q. Hu 344

Relation between Actual Mass and Simulation Mass of Far-Field Underwater Explosion
Z.W. Xie, X.Y. Wu and Q. Wan 350

Design of the Control Circuit of C516 Vertical Lathe on PLC
X.M. Cui 355

Trajectory Planning for Concrete Pump Truck Based on Intelligent Hill Climbing and Genetic Algorithm
X.D. Kang, G. Huang, X.L. Cao and X. Zhou 360

Relative Threshold-Based Positioning Adaptive Algorithm for Real-Time Machine Vision
Y.B. Xia and Z.W. Guo 368

New Bulk Conveying Equipment and its Experimental Research
Y. Li, Y.Z. Li and D.F. Chen 374

Research on the Hydrodynamic Forces of the Torsional Wave Propulsion by Extended Large-Amplitude Elongated-Body Theory
D.F. Du and X.Q. Jiang 379

Simulation of Disc Cutter Loads Based on ANSYS/LS-DYNA
X.H. Li, W. Du, Z.L. Huang and W.L. Fu 385

Bond Graph Simulation and Test on the Working Hydraulic System of ZL50 Type Loader
H. Wang and F. Yang 390

Study on Modal Analysis and Dynamic Performance of Electric Wheel Self-Dumping Truck Carriage
X.H. Li, J.W. Cao, S.M. Liu and C. Wang 395

Study of the Effects of Shearer' Kinematic Parameters on on-Way Distribution of Dust on Coal Face
X.H. Li, S.M. Liu, Z.L. Huang and W. Du 400

An Efficient Virtual Cam Design and Manufacturing System for Education
L. Han and P. He 406

Back Analysis of the Elastic Modulus and Horizontal Crustal Stress of Tunnel Surrounding Rock with System Identification Method
H.B. Zhou and R.D. Li 412

Simulation and Analysis for Aerodynamic Characteristics of Flying Object Based on Canard
J. Qin and X.Y. Wang 415

Research on the Meter Coefficient and Simulation Analysis of a New Swirlmeter
H.Z. Li, Q.C. Liang and H.G. Cui 421

A Design Reuse Method for Parts Based on Structure Similarity
J. Xu 428

Fuzzy Auto-Tuning Techniques Applied to Air-Fuel Ratio Control on a Lean Burn Engine
L. Wang, W.Y. Zhang and Y.Q. Pei 434

Electro Hydraulic Control Harmonic Aging Stress Elimination Devices - Modeling and Simulation of the Shock Excitation Part
H. Wang and M. Li 439

Research on Online Monitoring for the Main Drive System of Rolling Mill
Y. Hou, J.Y. Kong and X.D. Wang 444

Application of Ultrasonic Guided Waves Testing Method in Coiled Springs
F.J. Zhou, Y.M. Wang, C.J. Shen, F.R. Sun and H.T. Zhang 449

Processing Research for Unequal Diameter Machining Cylindrical Cam
C. Ma, B. Wang, W.B. Ma, B. Wang and R.L. Li 455

The Fault Location Approach for Grid Network Base on MAS of Rough Set Theory
W.B. Ma, C. Ma, G.X. Zheng and R. Zhao 460

Statistical Analysis of Fatigue Crack Growth Threshold Based on Test Data
W.L. Liu, G.M. Kong, Z.T. Mu, Z.H. Jia and D.Z. Yu 466

Electro Hydraulic Control Harmonic Aging Stress Elimination Devices-Modeling and Simulation of the Hydraulic Vibrator with the Frequency Modulation Rotary Valve
H. Wang and M. Li 471

Finite Strain Analysis of Crack Tip Fields in Yeoh-Model-Based Rubber-Like Materials which Are Loaded in Plane Stress
Z.Y. Wang 477

The Stress Analysis and Safety Assessment of Pressure Vessels with Flaws in Power Plant
B. Wang, C. Ma and B.Q. Wen 484

Sales Forecast for Garment Companies with Cluster Analysis and Modified Neural Networks
L. Yu and Y. Chen 490

The Research of the Power Supply System of Embedded Portable Devices
W. Cheng 496

High-Precision Ultrasonic Ranging System Design and Research
Z.Z. Wen, F.N. Li and Z.B. Xia 501

An Analysis of the Effect of Feedstock on Continuous Extrusion Forming Process
L. Chen, B.Y. Song and Y.W. Liu 506

Special-Shaped Carton Visual CAD Research Based on Components
R.L. Li, Z.J. Duan and C. Ma 511

Study on the Hydrostatic Support of Internal Gear Pumps Based on FLUENT
J. Mao, S. Liu and Z.N. Zu 516

Research on PID Control Model for Error Compensation in Milling Thin-Wall Parts
L. Zhu, J. Lu and Y. Liu 522

A Note on "A Genetic Algorithm for the Preemptive and Non-Preemptive Multi-Mode Resource-Constrained Project Scheduling Problem
Y. Han, J.H. Cai, I. Kaku, H.Z. Lin, X.H. Ye and H.D. Guo 527

Using Ontology and Rule-Based Reasoning for Supporting Automatic Process Plan for Milling Prismatic Parts
T.A. Vang and P.Y. Jiang 531

Investigation on the Rheological Behavior of PA11/POE/OMMT Nanocomposites
Y.F. Zhang, Y.C. Li and G.S. Hu 537

A "Flow" Based Method for Knowledge Mining and Visualization of Patents
Q. Sheng, W.J. Hou and X.M. Wang 543

Study on the Residual Stress Test of Welded Joints for Wind-Driven Generator Base and Numerical Analysis
Y.L. Shen, J.P. Liu, Y.X. Shi, B. Dai, L. Su and W.B. Ma 549

EBZ160 Star Wheel Boring Machine Loading Mechanism Optimization Analysis
J. Mao, S. Chang and M. Xie 555

Experiment Study on Micro-Hardness and Structure of NC Grinding Surface Layer of Spiral Bevel Gears
X.Z. Ming, H.Z. Yan, G.Q. He and J. Zhou 560

A Short-Term Load Forecasting Method of Warship Based on PSO-SVM Method
D.L. Li, X.F. Zhang, M.Z. Qiao and G. Cheng 569

An Improved Short-Term Load Forecasting Method of Warship
D.L. Li, X.F. Zhang, M.Z. Qiao and G. Cheng 575

Dynamics Simulation of Capsule Filling Machine Based Virtual Prototype
G.H. Wang, Y.G. Zhang, T.B. Yu and W.S. Wang 582

Application of LOGO! and Frequency Converter in the Water Supply Equipment of Residential Communities
Y.C. Wang 588

Two Balanced Car LQR Algorithm Achieved Based on LabVIEW
J. Sun and H.Z. Liu 592

A New Adaptive CFAR Detector
C. Xu, T. Jian, Y. He and X.F. Gu 598

The Improved Genetic Algorithm for Balancing Mixed-Model Assembly Line
Q.H. Tang and Y.L. Liang 603

The Optimization of Equipment in Greenhouse for Seedling Production in South Area of Guangxi Province
C.W. Su, D.Y. Mo, C.Y. Wei and X.M. Tang 609