Table of Contents

Comprehensive Integration Methods for Automatic Security in the Software Development Lifecycle	1
Jingyu Yang, Enzhe Li, Yu Wang, Dongmei Zhai	
A Multi-functional Safety Helmet for Electric Bikes Based on Arduino	5
Qiyun Wang	
Application of comprehensive geophysical exploration technology in mine hydrogeological exploration	13
Weiwei Song	
Study on long-term monitoring and influence of pesticide and fertilizer residues on soil and groundwater environment	19
Wenxian Gao	
The Application of AIGC Technology Based on Information Visualization in Visual Communication Design	24
Xuenai Wang, Wan Qi, Wen Xu	
The key role of antenna interference and isolation techniques in wireless communications	29
Wei Miao, Zhenyu Yang	
Discussion on coal mine safety production monitoring and communication technology	35
Zhenchun Ren	
A Capacity Enhancement Strategy for Wireless Communication Networks Based on Network Encoding	41
Xiaoming Tu	
The application of PLC technology in electrical automation control	47
Liang Xue	
Prediction of Electric Load Neural Network Prediction Model for Big Data	53
Chen Siyu, Yuan Ruirui, Lin Xinyuan	
Study on the in-situ algae removal mechanism based on nitrogen-doped nanodiamond and cationic modified starch	61
Cui Hongwei, Li Weiliang, Yu Xin, Niu Zixi, Li Zhaolu, Zhang Yiyan	

Research on the Application of Binary Search in Finding Faults in Railway Signal Lighting Circuits	68
Yang Mingjing	
Can the Digital Economy Promote Green Household Consumption? —Evidence Based on Empirical Data from the China Household Finance Survey	78
Nanting Wang	
Innovative Fuzzy PID Algorithm: Advancing Quadcopter Control with Adaptive Precision	90
Zhenghang Guo	
Research on Machine Vision-Based Intelligent Robot Nondestructive Testing System	101
Cai Kai, Zhang Youjin, Chang Qionglin, Zhang Yunfei, Ma Fanlin	
Research on Multi-beam Lateral Line Deep-sea Exploration	108
Pengcheng Zhu, Cheng Zhou, Wenyong Fu, Lingbo Kong	
The Prediction Model of Plant Population Dynamics in Semi-arid Regions: A Case Study in Inner Mongolia	115
Anna Xie, Xi Hu, Yu Huang	
Research on Process Management Optimization of Downhole Pressure Monitoring in Drilling	124
Runze Jiao, Guangye Chen	
Simulation study on heat transfer characteristics of spray cooled serpentine coil	129
Zhaoyi Chen, Zhi Liu, Kaiyong Hu	
Optimized Design of Three-Dimensional Thermal Domes: A Comprehensive Approach	136
Junhao Gong	
Analysis of the Comprehensive Utilization Efficiency of Secondary Resources of New Rare Earth Materials Based on Regeneration Technology	145
Xiyao Wang	
Research on Decentralized Task Allocation and Collaboration Based on Multiple AUVs	152
Minjie Xia	
Construction and Solution of Multi-category Joint Replenishment and Pricing Optimization Model of Vegetable Products Based on Multi-objective Genetic Algorithms	164
Zixuan Dang, Rui Deng, Ding Zhang	
Research and Development of An Intelligent Beer Brewing Monitoring Based on Video Analysis	171
Lin Zihan	

Calculation of Coating Area of AM Hull Structure Based on Distributed Method Xue Cao	178
Diagnosis and Prediction of Typical Faults of Computer Numerical Control Machine Tools Based on Genetic Algorithm	184
Yutao Lin	
Fault Diagnosis and Predictive Maintenance Technology of Ship Power System	190
Wenfei Ning, Huajian Li, Zhiqiang Zhao, Yingjie Xie, Baozhu Jia	
Mathematical Modeling of Data Similarity Recognition Based on Ordered Clustering Equations	196
Yajing Pan	
Problems and Countermeasures in Environmental Impact Assessment of Hazardous Waste Treatment Projects	201
Feng Sun, Liming Zhou	
Dynamic Trust Evaluation Model for Zero-trust Network of Power Monitoring System	206
Zhuo Lv, Cen Chen, Nuannuan Li, Zheng Zhang, Jianhui Zhang	
Research on Search Algorithm in Computer Security Monitoring System	213
Yutao Ou, Jing Huang	
Advanced Technology Based VOCs Management Plan for Oil Terminal	219
Huan Peng, Zhiyao Huang	
A Method for Constructing Region Sensitive Models Based on Deep Reinforcement Learning Networks	225
Kaili Shao, Jifeng Qin	
A Risk Identification and Early Warning System for Major Engineering Projects Based on Artificial Intelligence	231
Zhenyao Yin, Xing Ren	
Design of Longitudinal Nonlinear Control Circuit System for Small Disturbance Robot	237
Zhenlong Qin	
Research on Software Engineering Project Development Methods Based on Big Data Analysis	242
Chuanqiang Sun	
Structural Strength Check Analysis of Core Moving Parts of Semi-submersible Floating Wind Turbine Based on Finite Element Calculation	249
Han Sun	

Collision position prediction of end-effector for multi-degree-of-freedom industrial robots	255
Lei Wu, Fu Liu	
Exploration of the Application of Surveying and Mapping Geographic Information Technology in Geological Surveying and Mapping Engineering	261
Zhang Tinghao	
Application of information technology in hydrological survey	267
Jianfang Sun	
Preliminary study on breeding and tissue culture technology of excellent varieties of	273
Leonurus japonicus	
Chen Xiaoru	
Influence of ammonia escape and aerosol from ammonia desulfurization on CEMS and its countermeasures	280
Ying Chi, Gang Zhou	
Research on the innovative application of prefabricated wood structure in the architectural design of northern Guangxi	287
Yuan Chang, Toby Liu, Yufei Guo	