

# **2022 Global Conference on Robotics, Artificial Intelligence and Information Technology (GCRAIT 2022)**

**Chicago, Illinois, USA  
30 – 31 July 2022**



**IEEE Catalog Number: CFP22CC7-POD  
ISBN: 978-1-6654-8193-9**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22CC7-POD
ISBN (Print-On-Demand):	978-1-6654-8193-9
ISBN (Online):	978-1-6654-8192-2

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2022 Global Conference on Robotics, Artificial Intelligence and Information Technology (GCRAIT) **GCRAIT 2022**

## Table of Contents

Message from the General Chair .....	xxvi
Message from the Program Chairs .....	xxvii
Organizing Committee .....	xxviii
Steering Committee .....	xxx
Sponsors .....	xxxi
Reviewers .....	xxxii

### Chapter 1: Robotics

An Outdoor Sheltered Parking Space Detection System Combined with Drone and GNSS-RTK Technology .....	1
<i>Jiabin Chen (Suzhou Wujiang District Zhenze Junior High School, China), Zan Yang (Jiangsu Province Zhenze Senior High School, China), Yingying Cai (Suzhou Wujiang District Zhenze Junior High School, China), Weicheng Wang (Suzhou Wujiang District Zhenze Junior High School, China), and Xin Zhao (Suzhou Wujiang District Zhenze Junior High School, China)</i>	
Vision Localization Algorithm for Unmanned Aerial Vehicle Using Active Landmark .....	7
<i>Liang Zhang (Huzhou University, China) and Jinfa Xu (Nanjing University of Aeronautics &amp; Astronautics, China)</i>	
An Improved Forward Intersection Measurement Strategy based on Structural Parameters for Machine Vision Systems .....	13
<i>Jianlun Wang (China Agricultural University, China), Yiyi Bu (China Agricultural University, China), Jinduo Cao (China Agricultural University, China), Peng Lyo (China Agricultural University, China), Chenglin Zhang (China Agricultural University, China), Wensheng Liu (China Agricultural University, China), Huangtianci Deng (China Agricultural University, China), Husheng Chen (China Agricultural University, China), Xiang Li (China Agricultural University, China), and Xiaopeng Liu (China Agricultural University, China)</i>	

Design of an Underwater Autonomous Inspection Robot .....	27
<i>Jiaping Li (China University of Petroleum (East China), China), Jianmin Ma (China University of Petroleum (East China), China), Zhendong Liu (China University of Petroleum (East China), China), Xiaodong Li (China University of Petroleum (East China), China), Yinglian Ji (China University of Petroleum (East China), China), Siyuan Li (China University of Petroleum (East China), China), Yuxin Tian (China University of Petroleum (East China), China), and Shaohua Ma (China University of Petroleum (East China), China)</i>	
Grid Industry Based Intelligent Ground Monitoring System of UAV Inspection .....	32
<i>Ziqian Zhang (Nanjing NARI Information and Communication Technology, China), Gang Chen (Nanjing NARI Information and Communication Technology, China), Chaozhi Huang (Nanjing NARI Information and Communication Technology, China), and Qiuxiang Hu (Nanjing NARI Information and Communication Technology, China)</i>	
The Study of Intelligent Poetry Writing Robots .....	36
<i>Qingyun Ma (Software Engineering Institute of Guangzhou, China), Haiou Liu (Software Engineering Institute of Guangzhou, China), and QiQiang Liu (Software Engineering Institute of Guangzhou, China)</i>	
A Forward Intersection Strategy on Structural Parameters for Robotic Vision System with 3 or more DOFs .....	40
<i>Jianlun Wang (China Agricultural University, China), Peng Lyu (China Agricultural University, China), Jinduo Cao (China Agricultural University, China), Huangtianci Deng (China Agricultural University, China), Husheng Chen (China Agricultural University, China), Sheng Huang (China Agricultural University, China), Baoyue Hu (China Agricultural University, China), and Xiaopeng Liu (China Agricultural University, China)</i>	
The Application of Machine Learning and IOT in Smart Agriculture .....	50
<i>Feng Liu (Nanyang Normal University, China) and Xiaolu Yan (The First Affiliated Hospital of Nanyang Medical College, China)</i>	
Optimizing Energy Consumption of Rotor UAV by Path Planning .....	54
<i>Shilei Zhang (Yunnan University, China) and Taining Cheng (Yunnan University, China)</i>	
Design and Implementation of Machine Vision Inspection System for Micro Gear .....	59
<i>Fei Zhao (Harbin Cambridge University, China), Fuli Zhang (Harbin Cambridge University, China), and Jie Gong (Harbin Cambridge University, China)</i>	
Yield Loss Estimation of Verticillium Wilt Cotton Field Based on UAV Multi-spectral and Regression Model .....	62
<i>Bing Chen (Xinjiang Academy of Agricultural and Reclamation Science, China), Jing Wang (Xinjiang Shihezi Vocational College, China), Qiong Wang (Xinjiang Academy of Agricultural and Reclamation Science, China), Yu Yu (Xinjiang Academy of Agricultural and Reclamation Science, China), Yong Song (Xinjiang Academy of Agricultural and Reclamation Science, China), Lexin Sun (Xinjiang Academy of Agricultural and Reclamation Science, China), Huanyong Han (Xinjiang Academy of Agricultural and Reclamation Science, China), and Fangyong Wang (Xinjiang Academy of Agricultural and Reclamation Science, China)</i>	

Fat or Thin? A Study on the Influence of Body Type of Service Robots on Human-Robot Interaction Willingness .....	68
<i>Yangjun Tu (Hunan University, China), Ying Hong (Hunan University, China), Dawei Guan (Wuhan University, China), and Zhi Yang (Hunan University, China)</i>	
Vision Localization and Compensation Technology for Clamping Error in Faucet Robotic Grinding .....	72
<i>Hui Wang (Xiamen University of Technology, China), Pingjiang Wang (Quanzhou HUST research institute of intelligent manufacturing, China), Xiayun Shu (Xiamen University of Technology, China), Shanming Luo (Jimei University, China), and Xuefeng Chang (Jimei University, China)</i>	
Swarm Robots Decentralized Control using Reinforcement Learning Stepwise Training Method in the Encircling Task .....	76
<i>Yang Liu (National University of Defence Technology, China), Xu Wang (Xi'an Key Laboratory of Big Data and Intelligent Vision Xidian University, China), Yiming Nie (National Innovation Institute of Defense Technology, China), Bin Dai (National Innovation Institute of Defense Technology, China), Qi Zhu (National Innovation Institute of Defense Technology, China), and Erke Shang (National Innovation Institute of Defense Technology, China)</i>	
Abnormal Behavior Analysis Based on Truth Discovery and Machine Learning .....	83
<i>Qiang Huang (China Southern Power Grid Company Limited, China), Yun He (China Southern Power Grid Company Limited, China), Bin Wu (China Southern Power Grid Company Limited, China), Hanqi Zhao (China Southern Power Grid Company Limited, China), and Weihua Lian (China Southern Power Grid Company Limited, China)</i>	
Research on Multi-Defect Model Recognition Based on Machine Learning .....	89
<i>Yu Peng (Yangtze University, China), Shenghua Yan (Yangtze University, China), Li Gong (Wuhan University, China), Meng Tian (Wuhan University, China), and Xianpei Wang (Wuhan University, China)</i>	
Research Trend in the International Literatures on Machine Translation Based on CiteSpace .....	93
<i>Li Zhou (South China University of Technology, China) and Baoxia Xie (South China University of Technology, China)</i>	
Analysis and Forecast of Influencing Factors on House Prices Based on Machine Learning .....	97
<i>Chenyue Lv (Zhuhai College of Science and Technology, China), Yingxin Liu (Zhuhai College of Science and Technology, China), and Lidong Wang (Zhuhai College of Science and Technology, China)</i>	

## Chapter 2: Algorithm and Application

A Constrained Multi-Objective Evolutionary Algorithm based on Weak Cooperation Framework and Multi-Chaotic Operators .....	102
<i>Libiao Zhang (Northeast Normal University, China), Ru Yu (Northeast Normal University, China), Jiayu Liu (Northeast Normal University, China), Yao Xu (Northeast Normal University, China), Hui Jiang (Northeast Normal University, China), Peng Xu (Northeast Normal University, China), Peng Lin (Northeast Normal University, China), and Yu Luo (Northeast Normal University, China)</i>	

An Algorithm of Root Extraction is not Applicable .....	107
<i>Hanling Lin (Shenzhen University, China) and Min Li (Shenzhen University, China)</i>	
Target-Before-Detect Algorithm for Passive MIMO Radar Based on Improved Particle Filter .....	110
<i>Yawen Zhou (Technology University, China), Jiawei Zhu (Science and Technology on Communication Information Security Control Laboratory, China), Tingsong Song (Technology University, China), Siyi Yao (Technology University, China), Rui Lai (Technology University, China), and Yuning Guo (Technology University, China)</i>	
An Optimization Algorithm for the Game of NoGo based on MCTS .....	120
<i>Chenghou Jin (Beijing Information Science and Technology University, China), Ming Gao (Beijing Information Science and Technology University, China), Yusen Han (Beijing Information Science and Technology University, China), and Salimu Ma (Beijing Information Science and Technology University, China)</i>	
Resource Virtualization in Edge Computing: A Review .....	123
<i>Hong Zhang (Shenyang University of Chemical Technology, China; Guangzhou Institute of Industrial Intelligence, China), Jinchao Xiao (Guangzhou Institute of Industrial Intelligence, China; Shenyang Institute of Automation, Chinese Academy of Sciences, China), Jian Wang (Shenyang University of Chemical Technology, China), and Hua Yang (Guangzhou Institute of Industrial Intelligence, China)</i>	
A Novel Edge Computing Optimization Method based on Multi-Objective Optimization Theory ..	128
<i>Wubin Ma (National University of Defense Technology, China), Longxin Zheng (Troops 32370 People's Liberation Army of China, China), and Haohao Zhou (National University of Defense Technology, China)</i>	
Multi-Sensor Track Fusion Algorithm Research and Simulation Analysis .....	131
<i>Shouqing Chen (Beijing University of Technology, China), Huijing Dou (Beijing University of Technology, China), Zonghao Liu (Beijing University of Technology, China), and Zheng Mao (Beijing University of Technology, China)</i>	
Trust Recommended Algorithm Based on DDPG and Attention Mechanism .....	136
<i>Yu Li (Yantai University, China) and Xiangrong Tong (Yantai University, China)</i>	
Parallel Collision Detection Algorithms in Complex Scenes .....	141
<i>Sining Cheng (Haikou University of Economics, China) and Huiyan Qu (Jilin Agricultural University, China)</i>	
An Improvement Evolutionary Algorithm Based on Decomposition and Grid-based Pareto Dominance for Many-Objective Optimization .....	145
<i>Xiaoguang He (Engineering University of PAP, China) and Cai Dai (Shaanxi Normal University, China)</i>	

Research on Chinese Word Segmentation Algorithm based on Dictionary and Statistical Method and Its Application in the Field of Power Grid Control .....	150
<i>Chao Shen (NARI Group Corporation (State Grid Electric Power Research Institute), China), Jinxia Dai (NARI Group Corporation (State Grid Electric Power Research Institute), China), Mengge Mao (NARI Group Corporation (State Grid Electric Power Research Institute), China), Kun Zhao (NARI Group Corporation (State Grid Electric Power Research Institute), China), Zhen Yan (NARI Group Corporation (State Grid Electric Power Research Institute), China), and Kun Huang (NARI Group Corporation (State Grid Electric Power Research Institute), China; State Key Laboratory of Smart Grid Protection and Control, China)</i>	
Research of Pedestrian Object Tracking Algorithms .....	155
<i>Hao Zuo (Xi'an Vocational University of Automobile, China), Yuanbo Yang (Xi'an Vocational University of Automobile, China), and Lin Cao (Xi'an Vocational University of Automobile, China)</i>	
Prediction and Evaluation of the SARS-CoV-2 Epidemic using an Improved SEIR Model .....	160
<i>Zhuoyu Li (Yan'an University, China), Bisheng Xia (Yan'an University, China), and Lerong Ma (Yan'an University, China)</i>	
Study on Control Algorithm for A Dual Channel Servo System .....	169
<i>Ying Han (The 20th Research Institute of China Electronics Technology Group Corporation, China), Wei Zhang (The 20th Research Institute of China Electronics Technology Group Corporation, China), and Jiasheng Yan (The 20th Research Institute of China Electronics Technology Group Corporation, China)</i>	
A Pruner-Leaf Coding Genetic Algorithm For Bayesian Network Structure Learning .....	173
<i>Ying Yu (Shanghai University, China), Shili Luo (Shanghai University, China), Yanru He (Shanghai University, China), Hao Huang (Shanghai University, China), and Wei Zhang (HaiyuSoft Corporation, China)</i>	
Existence and Uniqueness of Solutions for a Class of Matrix Eigenvalue Inverse Problems with Proportional Relations .....	177
<i>Shuyi Li (Zhuhai College of Science and Technology, China), Weiyue Zhang (Zhuhai College of Science and Technology, China), Junchen Li (Zhuhai College of Science and Technology, China), Lidong Wang (Zhuhai College of Science and Technology, China), and Zhibin Li (Zhuhai College of Science and Technology, China)</i>	
Research on Intelligent Recognition Algorithm of Hole Array Code Based on Image Processing.....	181
<i>Yangyang Chu (Linyi University, China), Shan Chen (Linyi University, China), and Yinzhe Liu (Linyi University, China)</i>	
The Structure Parameters and Molecular Orbital Energy of Procyanidins were Calculated by Quantum Computing .....	186
<i>Yu Wang (Jiamusi University, China), Yuhang Lan (Jiamusi University, China), Libo Du (Jiamusi University, China; Institute of Chemistry, Chinese Academy of Sciences, China), and Yu-Guang Lv (Jiamusi University, China)</i>	

The State Inspection of Upper Supporting Roller of Conveyor in Service with Structural Pattern Recognition and Cluster Norm Algorithm of Failure .....	191
<i>Ehui Huang (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China), Chunyang Gu (China University of Nottingham, China), Shanping Gao (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China), Jinling Song (Quanzhou Normal University, China), Shuting Li (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China), Junqin Zhou (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China), Zhenjie Chen (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China), and Lizhi Gu (Key Laboratory of Virtual Manufacturing Technology of Fujian Universities, Quanzhou University of Information Engineering, China; Huaqiao University, China)</i>	
Application Research for Real Time Computing .....	197
<i>He Liu (Chongqing Academy of Educational Sciences, China)</i>	

### **Chapter 3: Artificial Intelligence**

Medical Imaging Analysis using Computer-Assisted Technologies .....	202
<i>Qamber Abbas (Tianjin University, China), Muhammad Qasim Yasin (Tianjin University, China), Muhammad Asif (Northwestern Polytechnical University, China), and Saddam Hussain (Tianjin University, China)</i>	
Pig Face Recognition Method Based on Sparse Representation, Transfer Learning and Weight Fusionpaper .....	207
<i>Ronghua Gao (Beijing Academy of Agriculture and Forestry Sciences, National Engineering Research Center for Information Technology in Agriculture, China), Qifeng Li (Beijing Academy of Agriculture and Forestry Sciences, National Engineering Research Center for Information Technology in Agriculture, China), and Lili Sun (Wudalianchi Meteorological Bureau, China)</i>	
Research on Pattern Recognition Performance of Control Chart Based on Deep Learning .....	212
<i>Deyin Chen (Beijing University of Technology, China), Tao Zan (Beijing University of Technology, China), Zhiqian Ma (Beijing University of Technology, China), Min Wang (Beijing University of Technology, China), Xiangsheng Gao (Beijing University of Technology, China), and Zhihao Liu (Beijing University of Technology, China)</i>	
A Case Study of Big Data Technology on Chinese Phonology .....	217
<i>Hong Hao (Qingdao Administration for Market Regulation (Intellectual Property Office), China) and Zikun Chen (Qingdao University of Science &amp; Technology, China)</i>	
Simulation of Fringe Order of Photoelastic Samples based on Neural Network .....	221
<i>Jun He (South China University of Technology, China) and Haonan Guo (South China University of Technology, China)</i>	



Review of Wearable Computing Technology: Core Technologies, Typical Systems and Research Trends .....	225
<i>Jing Zhang (Harbin Institute of Technology, China), Ce Zhang (Harbin Institute of Technology, China), Zhan Zhang (Harbin Institute of Technology, China), Ziyang Su (Harbin Institute of Technology, China), Menghan Zou (Harbin Institute of Technology, China), Yudie Luo (Harbin Institute of Technology, China), and Gaofan Zhang (Harbin Institute of Technology, China)</i>	
Artificial Intelligence Hand Spatial Position Predictor Based on Data Gloves and Jetson Xavier NX .....	232
<i>Yueqi Pan (Southeast University, China), Wanzhu Wang (Southeast University, China), Pengxiong Zhang (Southeast University, China), Yuelong Liang (Southeast University, China), Fei Li (Institute of Radio Frequency and Optoelectronic Integrated Circuits, Southeast University, China), and Haipeng Wang (Institute of Radio Frequency and Optoelectronic Integrated Circuits, Southeast University, China)</i>	
Research on the Application of Artificial Intelligence in Medical Imaging Diagnosis .....	237
<i>Yanli Zhao (Ningxia Institute of Science and Technology, China) and Xiaomin Li (Ningxia Institute of Science and Technology, China)</i>	
Hyperspectral Image Classification Based on Fuzzy Nonparallel Support Vector Machine .....	242
<i>Guangxin Liu (Dalian Minzu University, China), Liguang Wang (Dalian Minzu University, China), Lei Fei (Dalian Minzu University, China), Danfeng Liu (Dalian Minzu University, China), and Jinghui Yang (China University of Geosciences, China)</i>	
Substation One-Line Diagram Automatic Generation Based on Image Recognition .....	247
<i>Chao Shen (NARI Group Corporation (State Grid Electric Power Research Institute), China), Peisen Lv (NARI Group Corporation (State Grid Electric Power Research Institute), China), Mengge Mao (NARI Group Corporation (State Grid Electric Power Research Institute), China), Wenbin Li (NARI Group Corporation (State Grid Electric Power Research Institute), China), Kun Zhao (NARI Group Corporation (State Grid Electric Power Research Institute), China), and Zhen Yan (NARI Group Corporation (State Grid Electric Power Research Institute), China)</i>	
Level Set Method by using Local Entropy and Enhanced LoG Operator for Image Segmentation ...	252
<i>Feng Ding (Anhui University of Technology, China) and Bin Ji (Anhui University of Technology, China)</i>	
Task Scheduling Model of Edge Computing for AI Flow Computing in Internet of Things .....	256
<i>Luanqi Liu (Linyi University, China), Haifeng Wang (Linyi University, China), Yinzhe Liu (Linyi University, China), and Ming Zhang (Linyi University, China)</i>	
Prediction of Laser-TIG Weld Profile Based on Neural Network and Intelligent Detection .....	261
<i>Haoyue Huang (University of South China, China), Lianghua Han (University of South China, China), Lie Liu (University of South China, China), and Jiapo Sun (University of South China, China)</i>	
Image Style Transfer based on Decoupled Representation .....	266
<i>Linke Liu (Liaoning Petrochemical University, China), Xiaoming Guo (Liaoning Petrochemical University, China), and Zejun Dai (Liaoning Petrochemical University, China)</i>	

Generative Adversarial Networks Combined with Deep Feature Interpolation for Image Style Transfer .....	271
<i>Yan Li (Xiamen University of Technology, China), Hua Shi (Xiamen University of Technology, China), and Qicong Wang (Xiamen University, China)</i>	
Intelligent Justice Based on Cognitive Science and IT .....	276
<i>Yunqian Lv (University of Finance and Economics, China)</i>	
Analysis of Image Transmission Traffic Based on Queuing Theory .....	281
<i>Huangbin Zeng (Xiamen University of Technology, China), Chenwei Feng (Xiamen University of Technology, China), Guochen Cai (Xiamen University of Technology, China), and Huazhi Ji (Xiamen University of Technology, China)</i>	
The Teaching Methods in the Integration of AI with University Computers in the Context of New Engineering Construction .....	286
<i>Long Chen (Xi'an Jiaotong University, China), Limei Xiang (Guangdong University of Science and Technology, China), and Xin Huang (Xi'an Jiaotong University, China)</i>	
Research on Ultra-High Power Laser Curing based on RBF Neural Network .....	290
<i>Shiwei Yu (University of South China, China), Lie Liu (University of South China, China), Lianghua Han (University of South China, China), and Xiangyang Sun (University of South China, China)</i>	
Intelligent Insole Design and Gait Analysis Based on Neural Network .....	294
<i>Wenduo Yu (Nanjing University of Science and Technology, China), Zijie Qin (Nanjing University of Science and Technology, China), Jiajie Yuan (Nanjing University of Science and Technology, China), Jiale Gao (Nanjing University of Science and Technology, China), and Wenhua Gu (Nanjing University of Science and Technology, China)</i>	
Traffic Sign Recognition based on YOLOX in Extreme Weather .....	299
<i>Li Feng (Liaoning Petrochemical University, China) and Yinshan Jia (Liaoning Petrochemical University, China)</i>	
Underwater Sonar Image Classification with Small Samples Based on Parameter-based Transfer Learning and Deep Learning .....	304
<i>Huiyu Xu (Dalian Maritime University, China), Linzhen Yang (Dalian Maritime University, China), and Xiangyang Long (Dalian Maritime University, China)</i>	
Automatic Measurement Method of Human Body Dimension Based on Frontal Human Image .....	308
<i>Xiaoyuan Huang (Beijing Institute of Fashion Technology, China), Zhengdong Liu (Beijing Institute of Fashion Technology, China), and Shengyun Zhou (Beijing Institute of Fashion Technology, China)</i>	

## Chapter 4: Computer Science

Design and Control Strategy of Cascaded H-Bridge Rectifier for Energy Router .....	313
<i>Xifeng Xie (Guangxi Vocational College of Water Resources and Electric Power, China) and Hongmei Lei (Guangxi Vocational College of Water Resources and Electric Power, China)</i>	

Development of Complete Set of Layout System for Temporary Standardized Modules .....	318
<i>Xiaogang Dong (China Construction Third Bureau First Engineering Co. Ltd., China), Lidong Cai (China Construction Third Bureau First Engineering Co. Ltd., China), Biao Wu (China Construction Third Bureau First Engineering Co. Ltd., China), Jiahang Yu (China Construction Third Bureau First Engineering Co. Ltd., China), and Lingling Cai (Putian University, China)</i>	
A Preliminary Study on the Development and Application of Digital Twin Landscape Architectures in the Context of Smart City .....	322
<i>Shuzhen Zou (Jiangxi Science and Technology Normal University, China), Xiaoxiao Tao (Jiangxi Science and Technology Normal University, China), Biaohong Tao (Jiangxi Science and Technology Normal University, China), and Guoxu Wu (Jiangxi Science and Technology Normal University, China)</i>	
Design of Augmented Reality-based Visualization System for Server Room Operation and Maintenance .....	328
<i>Jianlu Li (CSG Power Generation Co., Ltd., China), Zhenqian Wang (CSG Power Generation Co., Ltd., China), Xinxin Lu (CSG Power Generation Co., Ltd., China), Yan Chang (CSG Power Generation Co., Ltd., China), and Ke Li (CSG Power Generation Co., Ltd., China)</i>	
Progress on Geographic Cellular Automata Model .....	333
<i>Wei Yang (Changchun Normal University, China), Liping Mu (Changchun Normal University, China), and Kun Hou (Northeast Normal University, China)</i>	
A Blockchain Sharing Model of Seafarers Electronic Medical Certificate .....	337
<i>Cheng Li (Dalian Maritime University, China), Zhaohui Li (Dalian Maritime University, China), and Fan Yang (Dalian Maritime University, China)</i>	
Research on Credit Score Model of Suppliers of Power Grid Enterprises .....	342
<i>Xingda Sun (Beijing Guodiantong Network Technology Co., Ltd., China), Caixia Lu (Beijing Guodiantong Network Technology Co., Ltd., China), Dongsheng An (Beijing Guodiantong Network Technology Co., Ltd., China), Zhitao Tang (Beijing Guodiantong Network Technology Co., Ltd., China), Jia He (Beijing Guodiantong Network Technology Co., Ltd., China), Yuanyuan Zhao (Beijing Guodiantong Network Technology Co., Ltd., China), and Ye Du (Beijing Guodiantong Network Technology Co., Ltd., China)</i>	
A Structurally Constrained Informer for UWB Positioning Distance Filtering Used in Speed-Skating Training .....	347
<i>Yuanbo Yang (Beijing Forestry University, China), Feimo Li (Institute of Automation Chinese Academy of Sciences, China), Yanyan Xu (Beijing Forestry University, China), and Hongxing Chang (Institute of Automation Chinese Academy of Sciences, China)</i>	
Power Control Research for Device-to-Device Wireless Network Underlying Reinforcement Learning .....	351
<i>Kang Han (LiaoNing Petrochemical University, China) and Chengyin Ye (LiaoNing Petrochemical University, China)</i>	

Strong Stability for LTI System with Multi-Delays .....	355
<i>Zhifei Zhang (Foshan University of Science and Technology, China), Rukai Su (Foshan University of Science and Technology, China), and Cai Zhao (Foshan University of Science and Technology, China)</i>	
Research on the Method of Constructing Tree Branch Skeleton based on Point Cloud Data .....	361
<i>Zhilei Zhu (Yangquan Vocational and Technical College, China)</i>	
Multi-Scale Attribute-Based Attention For Fine-Grained Zero-Shot Learning .....	365
<i>Tong Wu (University of Electronic Science and Technology of China, China), Dayong Zhu (University of Electronic Science and Technology of China, China), Shenjian Cao (University of Electronic Science and Technology of China, China), and Hao Huang (University of Illinois at Urbana-Champaign, USA)</i>	
Research on Remote Guidance of Hardware Operation and Maintenance of Computer Room based on AR .....	373
<i>Zhu Zhu (CSG Power Generation Co., Ltd, China), Jianlu Li (CSG Power Generation Co., Ltd, China), Weiming He (CSG Power Generation Co., Ltd, China), Shaofeng Yu (CSG Power Generation Co., Ltd, China), and Yuxi Ma (CSG Power Generation Co., Ltd, China)</i>	
Two-Factor Lightweight Mutual Authentication Protocol For Multiple Servers .....	377
<i>Yue Zhu (University of Jinan, China) and Fengtong Wen (University of Jinan, China)</i>	
Research on the Teaching Reform Method of Sensor Principle and Application under the Background of "Internet+" .....	381
<i>Hong Zhang (Anhui Polytechnic University, China) and Fan Zhang (Anhui Xinhua University, China)</i>	
Automatic Generation Method of Multi-Bays Graph In Power System based on Real-Time Topological Model .....	384
<i>Yuan Gao (NARI Technology Co., Ltd., China), LianJie Chen (NARI Technology Co., Ltd., China), Peng Si (NARI Technology Co., Ltd., China), YunGuang Su (NARI Technology Co., Ltd., China), CaiShen Fang (NARI Technology Co., Ltd., China), Hua Xu (NARI Technology Co., Ltd., China), and Kun Huang (NARI Technology Co., Ltd., China)</i>	
MDNet: Multi-Scale Densely Connected Segmentation Architecture with Channel Attention for Automatic Hippocampal Segmentation .....	390
<i>Yansong Liu (Dalian Minzu University, China), Xiufeng Zhang (Dalian Minzu University, China), and Shengjin Guo (Dalian Minzu University, China)</i>	
Effect of Nonlinear Creep on Long-Term Deflection of Externally Prestressed Concrete Beams.....	395
<i>Wei Feng (Highway Research Institute Co., Ltd, China), Henan Shi (Beijing Jiaotong University, China), Jianbao Miao (Xi'an Highway Research Institute Co., Ltd, China), and Jinsheng Du (Beijing Jiaotong University, China)</i>	

An Improved Term Frequency-Inverse Document Frequency Method Solving Multi-Text Label Problem .....	400
<i>Chi Zhao (Liaoning Petrochemical University, China), Siyuan Wang (Liaoning Petrochemical University, China), Xiwei Feng (Liaoning Petrochemical University, China), Xiangli Qu (Liaoning Petrochemical University, China), Yujie Wang (Liaoning Petrochemical University, China), Pengcheng Hua (Liaoning Petrochemical University, China), Lei Sun (Liaoning Petrochemical University, China), and Yue Zhang (Liaoning Petrochemical University, China)</i>	
Design and Implementation of a Reverse Cross Region File Transmission Method between Systems .....	405
<i>Baoshan Gao (NARI Group Corporation (State Grid Electric Power Research Institute Co., Ltd), China; NARI Technology Co., Ltd, China), Yiyong Ge (NARI Group Corporation (State Grid Electric Power Research Institute Co., Ltd), China; NARI Technology Co., Ltd, China), Weihua He (State Grid Shanxi Electric Power Company, China), Qiang Yi (NARI Group Corporation (State Grid Electric Power Research Institute Co., Ltd), China; NARI Technology Co., Ltd, China), Limei Xu (State Grid Shanxi Electric Power Company, China), and Hailong Guo (NARI Group Corporation (State Grid Electric Power Research Institute Co., Ltd), China; NARI Technology Co., Ltd, China)</i>	
Study on Load Shedding of Active Distribution Network Considering the Failure of the Cyber System .....	410
<i>Yu Peng (Yangtze University, China), Shenghua Yan (Yangtze University, China), Li Gong (Wuhan University, China), Meng Tian (Wuhan University, China), and Xianpei Wang (Wuhan University, China)</i>	
Visual Analysis and Frontier Predictions of Industrial Big Data .....	414
<i>Xin Dou (Ocean University of China, China), Jiajing Wu (Ocean University of China, China), Jiali Xu (Pilot National Laboratory for Marine Science and Technology, China), and Dongning Jia (Ocean University of China, China)</i>	
Design and Implementation of an Extensible Intelligent Problem Generation System for College Students' Programming Courses .....	421
<i>Xi Wang (Beijing Electronic Science and Technology Institute, China), Zhiwei Cui (Beijing Electronic Science and Technology Institute, China), Xiaodong Li (Beijing Electronic Science and Technology Institute, China), Yuan Zhu (Beijing Electronic Science and Technology Institute, China), and Haoyang Yu (Beijing University of Posts and Telecommunications, China)</i>	
Multi-Agent Simulation of Indirect Reciprocal Game Model .....	426
<i>Ying Yu (Shanghai University, China), Feng Yu (Shanghai University, China), Yanquan Liao (Shanghai University, China), Shili Luo (Shanghai University, China), and Wei Zhang (HaiyuSoft Corporation, China)</i>	

Indoor Location Method Based on RSSI Probability Distribution and CSI Modified Model .....	429
<i>Libiao Zhang (Northeast Normal University, China), Bo Wang (Northeast Normal University, China), Yao Xu (Northeast Normal University, China), Jiayu Liu (Northeast Normal University, China), Hui Jiang (Northeast Normal University, China), Yu Luo (Northeast Normal University, China), Peng Lin (Northeast Normal University, China), Peng Xu (Northeast Normal University, China), and Dongsheng Li (Northeast Normal University, China)</i>	
Intelligent Virtual Wardrobe System Based on Android .....	434
<i>Yiwei Wang (Shandong Normal University, China), Qiang Wang (School of Laiwu Vocational &amp; Technical College, China), Liancheng Xu (Shandong Normal University, China), Yongsheng Zhang (Shandong Normal University, China), and Shaojun Fan (Shandong Normal University, China)</i>	
Design and Implementation of Perfect Secure Block Cipher and its Security Research .....	439
<i>Shengfa Gao (Shandong University, China)</i>	
High Precision Description of Superconvergence Points for Spectral Interpolation .....	446
<i>Xiuxiu Xu (Anhui University, China)</i>	
A Review on Cloud Data Assured Deletion .....	451
<i>Bin Li (Naval University of Engineering, China), Yu Fu (Naval University of Engineering, China), and Kun Wang (Naval University of Engineering, China)</i>	
Research on the Augmented Reality (AR) Technology to Optimize Humanized Design of Carbon-Neutral Urban Landscapes .....	458
<i>Shuzhen Zou (Jiangxi Science and Technology Normal University, China), Yan Zhang (Jiangxi Science and Technology Normal University, China), Biaohong Tao (Jiangxi Science and Technology Normal University, China), and Xinyue Yang (Jiangxi Science and Technology Normal University, China)</i>	

## Chapter 5: Computer Application

A Novel Visual Assisted Technique for Video Summarization Using Attention-Based Key-Frames Selection .....	463
<i>Saddam Hussain (Tianjin University, China), Zongxia Xie (Tianjin University, China), Muhammad Fayyaz (University of Engineering and Technology Peshawar, Pakistan), and Qamber Abbas (Tianjin University, China)</i>	
End-to-End Speaker Diarization of Tibetan based on BLSTM .....	474
<i>Zhenye Gan (Northwest Normal University, China), Hanwen Guo (Northwest Normal University, China), Tingting Li (Northwest Normal University, China), Xu Ding (Northwest Normal University, China), Jincheng Li (Northwest Normal University, China), and Ziqian Qu (Northwest Normal University, China)</i>	

Underwater Image Enhancement Based on Light Attenuation Prior and Dual-Image Multi-Scale Fusion .....	478
<i>Liushanchuan He (Harbin Engineering University, China; State Key Laboratory of Air Traffic Management System and Technology, China), Yongjie Yan (State Key Laboratory of Air Traffic Management System and Technology, China), and Chengtao Cai (Harbin Engineering University, China)</i>	
Research on a Mechanical Model of Subsea Christmas Tree During Lowering Stage in Deepwater based on Sea Trial .....	483
<i>Wenbo Meng (Hainan Branch of CNOOC Co. Ltd, China), Shujie Liu (Hainan Branch of CNOOC Co. Ltd, China), Yi Huang (Hainan Branch of CNOOC Co. Ltd, China), Liang Huang (Hainan Branch of CNOOC Co. Ltd, China), Haixiang Zhang (Hainan Deep &amp; Shallow Sea Energy Co. LTD, China; Northeast Petroleum University, China), Dianju Wang (Northeast Petroleum University, China), and Bicheng Gan (Northeast Petroleum University, China)</i>	
A Novel Teaching Model based on Web Mining and Data Mining .....	488
<i>Feng Liu (Nanyang Normal University, China) and Jinjiang Liu (Nanyang Normal University, China)</i>	
NTP Security Threats and Countermeasures of Power System .....	492
<i>Yan Song (Lishui Power Supply Company, State Grid Zhejiang Electric Power Co., Ltd, China), Binjie Ying (Lishui Power Supply Company, State Grid Zhejiang Electric Power Co., Ltd, China), Chenggang Yang (Lishui Power Supply Company, State Grid Zhejiang Electric Power Co., Ltd, China), and Jinxiu Chen (Hangzhou Quantum Sensing Technology Co., Ltd, China)</i>	
The Birth of a New Theoretical System of Physics in the 21st Century Will Usher in a New Era of Interstellar Space Flying Saucer Research .....	497
<i>Jianghua Zhou (Box 2-3-2403, haibitai, Qinhuangdao City, Hebei Province, China)</i>	
Research on Testing Method of Automobile Engine Performance Parameters Based on LabVIEW ..	504
<i>Fan Zhang (Anhui Xinhua University, China) and Hong Zhang (Anhui Polytechnic University, China)</i>	
Position Sensorless Technology Considering Inductance Saturation Effects of SRMs .....	513
<i>Xun Shen (Bengbu University, China), Shijun Liu (Bengbu University, China), Xuan Tang (Bengbu University, China), and Wenbing Sun (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China)</i>	
Design and Study of Plasma-Activated Water Mist Disinfection Equipment based on DBD .....	517
<i>Jinmao Li (Heilongjiang University of Technology, China), Chunlian Song (Heilongjiang University of Technology, China), Dandan Lu (Heilongjiang University of Technology, China), Rui Huang (Heilongjiang University of Technology, China), and Haobo Zhang (Heilongjiang University of Technology, China)</i>	

Study on Heat Effect Mechanism and Rules of Crankshaft Bearing of Internal Combustion Engine .....	522
<i>Decheng Wang (Weichai Power Co., Ltd, China), Jianhua Xiang (Beijing Institute of Technology, China), Jian Liu (Beijing Institute of Technology, China), Xuehui An (Weichai Power Co., Ltd, China), Jialin Wang (Weichai Power Co., Ltd, China), and Kuan Liu (Weichai Power Co., Ltd, China)</i>	
Construction and Analysis of Higher Vocational College Teaching Evaluation System Resources Based on Data Mining Function .....	529
<i>Jiangyi Lv (Beijing Polytechnic, China), Cherry Jiang (Stony Brook University, U.S.A.), and Xiaolong Ren (Beijing Polytechnic, China)</i>	
Research on Intelligent Detection Based on Dynamic Truck Scale .....	532
<i>Hongzhen Xie (Shanghai Institute of Measurement and Testing Technology, China), Zhisong Ge (Shanghai Institute of Measurement and Testing Technology, China), Junlong Xu (Shanghai Institute of Measurement and Testing Technology, China), Yonghe Jin (Shanghai Institute of Measurement and Testing Technology, China), and Lili Zhang (Shanghai Institute of Measurement and Testing Technology, China)</i>	
Evaluation Design and Improvement on Higher Vocational College Teaching Evaluation System ..	536
<i>Guanli Huang (Beijing Polytechnic, China), Minjie Liu (Beijing Polytechnic, China), and Hongli Zhou (Beijing Polytechnic, China)</i>	
A New Association Rule Mining Method and its Application in Mental Health Data Analysis .....	540
<i>Xitang Zhang (Shandong Sports Lottery Management Center, China), Lei Zhang (Shandong Sports Lottery Management Center, China), Quanzheng Yu (Shandong Sports Lottery Management Center, China), and Zhe Zhang (Shandong Sports Lottery Management Center, China)</i>	
The Role of Image Analysis Technique in Fire Cause Investigation .....	544
<i>Liantie Wang (Key Laboratory of Fire Scene Investigation and evidence Identification Ministry of Public Security, China), Yunfei Mo (Shenyang Yuhong District fire rescue brigade, China), Chen Guo (Key Laboratory of Fire Scene Investigation and evidence Identification Ministry of Public Security, China), and Qingshan Meng (Key Laboratory of Fire Scene Investigation and evidence Identification Ministry of Public Security, China)</i>	
Practice And Exploration Of Auricular Therapy Teaching Based On VR Platform .....	548
<i>Mengting Shen (Hangzhou Normal University, China), Jiajun Zhang (Hangzhou Normal University, China), Yiyang Wei (Hangzhou Normal University, China), Yufeng Bu (Hangzhou Normal University, China), Zhenming Yuan (Hangzhou Normal University, China), and Xiaoyan Sun (Hangzhou Normal University, China)</i>	
Application of 3D Scanning Technique in the Grottoes Protection .....	553
<i>Jing Zhang (Xi'an University of Technology, China) and Wei Luo (Xi'an University of Technology, China)</i>	



Application of Matlab Robust Control Toolbox for Wind Power Generation System .....	556
<i>Wenbing Sun (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), Wei Wu (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), Jiawei Du (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), Shiyi Xiao (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), Dandan Zheng (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), Hui Yu (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China), and Ming Hu (Anqing Power Supply Company of State Grid Anhui Electric Power Co., Ltd, China)</i>	
Research on the Application of Virtual Reality Technology in Healthy Landscape Design .....	560
<i>Shuzhen Zou (Jiangxi Science and Technology Normal University, China), Xinyue Yang (Jiangxi Science and Technology Normal University, China), Biaohong Tao (Jiangxi Science and Technology Normal University, China), and Yan Zhang (Jiangxi Science and Technology Normal University, China)</i>	
Analysis and Suggestion of Double-Blind Review Comments based on NLP Technology .....	564
<i>Kunli Zhang (Zhengzhou University, China), Yutuan Ma (Zhengzhou University, China), and Hongying Zan (Zhengzhou University, China)</i>	
Application of Improved BP Neural Network in Blog Post Heat Prediction .....	569
<i>Guojun Sheng (Dalian Neusoft University of Information, China), Di Shang (Dalian Neusoft University of Information, China), and Yimin Zhang (Dalian Neusoft University of Information, China)</i>	
A Class of Generalized Jacobi Matrix Eigenvalue Inverse Problems with Added Edges .....	574
<i>Yingshi Chen (Zhuhai College of Science and Technology, China), Le'ang Li (Zhuhai College of Science and Technology, China), Meiling Lv (Zhuhai College of Science and Technology, China), Zhibin Li (Zhuhai College of Science and Technology, China), and Lidong Wang (Zhuhai College of Science and Technology, China)</i>	
A Method for Evaluating Reliability and Failure Rate of DC Circuit Breakers .....	578
<i>Shengsheng Li (Nanjing NARI Information and Communication Technology, China), Yunbo She (Nanjing NARI Information and Communication Technology, China), Kang Shi (Nanjing NARI Information and Communication Technology, China), and Zhongyao Chen (Nanjing NARI Information and Communication Technology, China)</i>	
Design of Water Treatment Units based on Plasma Technology .....	582
<i>Lianshun Zhang (Heilongjiang Institute of Technology University, China), Haobo Zhang (Heilongjiang Institute of Technology University, China), and Yuqi Tang (Heilongjiang Institute of Technology University, China)</i>	
Acoustic Detection of Concrete Compactness of Multi Cavity Steel Box Concrete Composite Structures .....	586
<i>Chunyan Wu (China MCC20 Group. LTD. Guangdong Branch, China), Dongsheng Chen (China MCC20 Group. LTD. Guangdong Branch, China), Ji Zhang (China MCC20 Group Corp. LTD, China), Hangyu Chen (China MCC20 Group Corp. LTD, China), and Hang Wang (China MCC20 Group. LTD. Guangdong Branch, China)</i>	

Application of Improved Shapley Value in Benefit Distribution of Industry-University-Research Institute .....	590
<i>Meirong Wu (Army Logistics University, China) and Chen Jie (Changzhou Institute of Information Technolo, China)</i>	
Analysis of Enterprise Technological Innovation Research Based on Multiple Regression Model .....	594
<i>Fan Yang (Xi'an University of Technology, China), Changzheng Zhang (Xi'an University of Technology, China), and Qianying Wang (Xi'an University of Technology, China)</i>	
Based on BIM Technology in the Construction Phase of the Application of Traffic Evacuation.....	598
<i>Lidong Cai (China Construction Third Bureau First Engineering Co. Ltd., China), Xiaogang Dong (China Construction Third Bureau First Engineering Co. Ltd., China), and Jiahang Yu (China Construction Third Bureau First Engineering Co. Ltd., China)</i>	
A Class of Inverse Eigenvalue Problems for Bifurcation Matrices .....	602
<i>Shiqi Liu (Zhuhai College of Science and Technology, China), Jiongman Huang (Zhuhai College of Science and Technology, China), Yingxin Liu (Zhuhai College of Science and Technology, China), Zhibin Li (Zhuhai College of Science and Technology, China), and Lidong Wang (Zhuhai College of Science and Technology, China)</i>	
Modeling and Analysis of Interconnected Hydro-Pneumatic Suspension System .....	607
<i>Yifei Zhang (Beijing Institute of Technology, China), Jifu Guan (Beijing Institute of Technology, China), Bo Xu (Beijing Jindong High-Tech Technology Co., Ltd, China), and Hongmin Gao (Beijing Institute of Technology, China)</i>	
The Inverse Eigenvalue Problem for a Class of (1+2) X-Like Matrix .....	613
<i>Yingxin Liu (Zhuhai College of Science and Technology, China), Shiqi Liu (Zhuhai College of Science and Technology, China), Jiongman Huang (Zhuhai College of Science and Technology, China), Zhibin Li (Zhuhai College of Science and Technology, China), and Lidong Wang (Zhuhai College of Science and Technology, China)</i>	
Screenless Aerial 3D Display .....	618
<i>Masayuki Momiuchi (Tokyo Science University, Japan), Akira Asano (Burton Co., Ltd., Japan), and Hideki Kimura (Burton Co., Ltd., Japan)</i>	
A Smart Cuckoo Filter with Disjoint-Set to Detect the Endless Loop .....	622
<i>Wendi Hua (Qinghai Normal University, China) and Ping Xie (Qinghai Normal University, China)</i>	
BIM Lightweight Computer Data Processing and Information Sharing Platform Application .....	627
<i>Xiaogang Dong (China Construction Third Bureau First Engineering Co. Ltd, China), Lidong Cai (China Construction Third Bureau First Engineering Co. Ltd., China), Biao Wu (China Construction Third Bureau First Engineering Co. Ltd., China), and Lingling Cai (Putian University, China)</i>	
Locating the Source of Voltage Sags based on CNN-Disturbance Power Method .....	632
<i>Yuan Jing (Gas transmission management division of Petro China, Southwest Oil &amp; Gasfield Company, China) and Qing Ma (Gas transmission management division of Petro China, Southwest Oil &amp; Gasfield Company, China)</i>	

Study of Situation Assessment Model and Perceptual Prediction of Smart Grid Network Using Situation Awareness Technology .....	636
<i>Li Li (Nanjing NARI Information and Communication Technology, China), Jinjin Tu (Nanjing NARI Information and Communication Technology, China), Zhi Xie (Nanjing NARI Information and Communication Technology, China), and Gaofeng Chen (Nanjing NARI Information and Communication Technology, China)</i>	
Study on Control Strategy of Vanadium based Catalyst Ammonia Storage Capacity based on Dspace/Simulink .....	640
<i>Xiaobin Wang (Shandong Vocational College of Science and Technology, China)</i>	
Research on Reverse Pulsating Hydrodynamic Deep Drawing Based on Numerical Simulation .....	644
<i>Xiaoting Xiao (Guangdong University of Technology, China), Chunxiao Qi (Guangdong University of Technology, China), Mingtao Chen (Shaoguan University, China), Fei Wu (Guangdong University of Technology, China), Zhengrong Zhang (Guangdong University of Technology, China), and Fuqiang Zhou (Guangdong Sihao hydroforming technology co., LTD, China)</i>	
Numerical Analysis on Nonlinear Creep Effect of Reinforced Concrete Beams .....	650
<i>Jianming Wu (Shenzhen Express Company Limited, China), Henan Shi (Beijing Jiaotong University, China), Wei Feng (Xi'an Highway Research Institute Co., Ltd, China), and Jinsheng Du (Beijing Jiaotong University, China)</i>	
The Exploration of Teaching Reform of Virtual Reality Technology in Applied Linguistics Courses .....	656
<i>Jiyan Liu (Bohai University, China) and Wenyu Xue (Bohai University, China)</i>	
Research on Accurate Direction Finding Method of Vortex Electromagnetic Wave Radio Proximity Sensor .....	661
<i>Yu Bi (The No.93110th Troop of PLA, China), Jian Dai (Beijing Institute of Technology, China), Xiumei Chen (Beijing Institute of Technology, China), and Ningzhe Zhang (Beijing Institute of Technology, China)</i>	
Noise Reduction Method Based on Wavelet Analysis for RF Side-Channel Signals .....	668
<i>Hao Xie (National University of Defense Technology, China), Xi Tian (National University of Defense Technology, China), and Keju Zhang (National University of Defense Technology, China)</i>	
Applied Research on Construction of Real-Time Data Platform .....	673
<i>He Liu (Chongqing Academy of Educational Sciences, China)</i>	
Big-Data-based Research on Forecast and Early Warning Against Mass Incidents .....	680
<i>Lingling Zhang (Aerospace ShenZhou Smart System Technology Co.Ltd, China) and Bing Zong (Aerospace ShenZhou Smart System Technology Co.Ltd, China)</i>	
Research on the Construction of NQI One-Stop Service Effectiveness Evaluation Index System.....	684
<i>Jingxing Liao (China National Institute of Standardization, China), Lei Feng (China National Institute of Standardization, China), and Jingna Yang (China National Institute of Standardization, China)</i>	

Research on the Role of Pronunciation Laws in Chinese Named Entity Recognition(NER) .....	688
<i>Wei Hu (Naval University of Engineering, China), Wenlong Zhao (Naval University of Engineering, China), and Zhimin Yuan (Naval University of Engineering, China)</i>	
Application Analysis of Computer-Aided Technology in the Field of Tube Cold Rolling .....	697
<i>Feifei Yan (Xi'an Jiaotong University, China), Jixuan Liu (Xi'an Jiaotong University, China), Xuefeng Yan (China National Heavy Machinery Research Institute Co., Ltd., China), and Guoping Wang (Xi'an Jiaotong University, China)</i>	
Effect of Polymer Application on Reservoir Physical Properties in Oil and Gas Field Production .....	704
<i>Peng Wang (Exploitation and Development Research Institute of Daqing Oilfield, China), Xiaodang Tan (The Seventh Operation Area of the Sixth Oil Production Plant of Daqing Oilfield, China), Ruibo Cao (Exploitation and Development Research Institute of Daqing Oilfield, China), and Lihui Wang (Exploitation and Development Research Institute of Daqing Oilfield, China; Postdoctoral Research Workstation of Daqing Oilfield, China; Postdoctoral Research Mobile Station of Northeast Petroleum University, China)</i>	
Numerical Simulation Analysis of Jet Flow Field Characteristics of PDC Bits with Three Holes .....	708
<i>Changhao Tang (Shandong University of Science and Technology, China) and Weizhang Wang (Weifang University, China)</i>	
Analysis of the Influence of Associating Polymer ASP Flooding Performance on Enhancing Oil Recovery .....	712
<i>Yu Fan (Exploitation and Development Research Institute of Daqing Oilfield Daqing, China.), Peihui Han (Exploitation and Development Research Institute of Daqing Oilfield Daqing, China.), Guoliang Liang (Exploitation and Development Research Institute of Daqing Oilfield Daqing, China.), and Congxin Zhong (The No.2 Oil Production Sub-Company of Daqing Oil Field Corporation, Ltd. Daqing, China)</i>	
Study on Geological Structure Characteristics of Lamadian Oilfield Test Area based on Gptmap Software .....	716
<i>Dan Li (Exploitation and Development Research Institute of Daqing Oilfield, China), Ya Li (Exploitation and Development Research Institute of Daqing Oilfield, China), Chunguang Fei (Exploitation and Development Research Institute of Daqing Oilfield, China), Yu Fan (Exploitation and Development Research Institute of Daqing Oilfield, China), Congcong Zhou (Exploitation and Development Research Institute of Daqing Oilfield, China), and Kun Gao (Exploitation and Development Research Institute of Daqing Oilfield, China)</i>	

Research on the Application of SD-WAN Technology in Power Communication Scenarios .....	720
<i>Wanyi Wang (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China), Hao Wang (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China), Gang Wu (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China), Xuyi Liang (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China), Wentwen Chen (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China), and Yawen Feng (Communication Center of Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China)</i>	
Analyses of Laser Action Distance and Echo Influence Factors .....	724
<i>Zonghao Liu (Beijing University of Technology, China), Yuxin Mao (Northern Vehicle Research Institute, China), Shouqing Chen (Beijing University of Technology, China), and Zheng Mao (Beijing University of Technology, China)</i>	
Design of Graphite Purification Device based on DBD Plasma Technology .....	729
<i>Leqiang Wang (Heilongjiang Institute of Technology University, China), Rui Huang (Heilongjiang Institute of Technology University, China), and Hao Yang (Heilongjiang Institute of Technology University, China)</i>	
Recognition Method of Two Types of Insulation Joints Based on Wavelet Transform and SVM .....	736
<i>Fang Li (North China Electric Power University, China), Zhongyan Li (North China Electric Power University, China), Jinzhao Liu (China Academy of Railway Sciences Corporation Limited, China), and Xiaodi Xu (China Academy of Railway Sciences Corporation Limited, China)</i>	
Research on Energy Allocation Strategy Based on Fault-Tolerant Control Theory .....	742
<i>Yue Yang (Dalian Naval Academy, China), Xiaolong Wu (Dalian Naval Academy, China), and Zengyang Wang (Dalian Naval Academy, China)</i>	
Lateral Stability Control of Four-Wheel-Drive Vehicle Based on Coordinated Control of Torque Distribution and Vehicle Dynamics .....	746
<i>Yuan Qin (Southwest Jiaotong University, China), Cheng Li (China Automotive Technology &amp; Research Center Co., Ltd., China), Hao Jing (Southwest Jiaotong University, China), Rantao Cui (Southwest Jiaotong University Chendu, China), and Yu Lei (Southwest Jiaotong University, China)</i>	
Simulation Study of Short-Time Interruption Traffic Conditions for Bridge Widening Project.....	753
<i>Meng Du (Shenzhen Expressway Group Co., Ltd, China), Minhao Shi (Beijing Jiaotong University, China), Chang Liu (Beijing Jiaotong University, China), Bo Lai (CCCC First Highway Consultants Co. Ltd, China), and Licun Yu (CCCC First Highway Consultants Co. Ltd, China)</i>	
Building and Application of Calculation Model for Determination of Cut Tobacco Content of Individual Cigarettes .....	757
<i>Gang He (Technology Center of China Tobacco Guangdong Industrial Co., Ltd., China), Guizhou Wu (Technology Center of China Tobacco Guangdong Industrial Co., Ltd., China), and Pingzhang Yao (Technology Center of China Tobacco Guangdong Industrial Co., Ltd., China)</i>	
Application of EV_SCMW V2.0 of Easymoo in College Classroom .....	761
<i>Lingxia Hou (Guangzhou City University of Technology, China) and Yulian Peng (Guangzhou City University of Technology, China)</i>	

Radiation Emission Test and Rectification Analysis of the Three-Dimensional Electronic Laparoscopy System .....	765
<i>Wanru Chen (Shanghai Institute of Measurement and Testing Technology, China), Gang Wang (Shanghai MicroPort MedBot(Group) Co., Ltd., China), Heqing Tian (Shanghai Institute of Measurement and Testing Technology, China), Zhedi Chen (Servotronix Motion Technology Development (Shenzhen) Ltd. Shanghai Branch, China), Daming Lin (Shanghai MicroPort MedBot(Group) Co., Ltd., China), and Yuchen Liu (Shanghai Institute of Measurement and Testing Technology, China)</i>	
Promoting Students' Programming Skills in Constructions for Teaching Materials and Curriculums: Experiments for Comprehensive Application of Programming Methods .....	770
<i>Yonghui Wu (Fudan University, China)</i>	
Research on the Impact of Digitalization on Technological Innovation and Its Spatial Spillover Effect .....	774
<i>Yi Wang (Shanghai Maritime University, China)</i>	
ScaleChem Scaling Prediction Software used in Oil well Scaling and Protection in Heyangshan Oil Area .....	778
<i>Chunmin Qi (Water injection project area Management Headquarter, Yanchang Oilfield Co., LTD, China) and Zhihai Xie (Northwest University, China)</i>	
Evolutionary Game Analysis of Collaborative Emergency Response among Government Departments under Accident and Disaster .....	782
<i>Qian Yi (Business University, China) and Guofeng Wen (Business University, China)</i>	
Study on Energy Supplement Strategy of Carbon Dioxide Huff and Puff in Horizontal well of Tight Oil Sandstone Reservoir .....	787
<i>Yu Qian (Daqing oilfield exploration and Development Research Institute, China), Yan Li (Daqing oilfield exploration and Development Research Institute, China), Xin Wang (Daqing oilfield exploration and Development Research Institute, China), Haixia Zhang (Daqing oilfield exploration and Development Research Institute, China), Tao Wang (Daqing oilfield exploration and Development Research Institute, China), Shun Zhu (Daqing oilfield exploration and Development Research Institute, China), Hao Zhou (Daqing oilfield exploration and Development Research Institute, China), Hong Zhang (Daqing oilfield exploration and Development Research Institute, China), and Zhen Liu (Daqing oilfield exploration and Development Research Institute, China)</i>	
Design of Blockchain Application Framework for Claims Platform of Flight Delay Insurance .....	790
<i>Wei Zhou (Beijing University of Post and Telecommunications, China) and Qi Wei (Beijing Jiaotong University, China)</i>	
Application of Mask R-CNN in Defect Detection of Industrial Filter Cloth .....	794
<i>Guangchi Liu (Liaoning Petrochemical University, China), FuWei Wang (Liaoning Petrochemical University, China), and HanShuo Hui (Liaoning Petrochemical University, China)</i>	

Establishment of Teaching Diagnosis and Improvement System Based on Big Data .....	799
<i>Chunmei Pei (Beijing Polytechnic, China), Honglin Ma (Beijing Polytechnic, China), Haixia Yu (Beijing Polytechnic, China), Gongsheng Zhu (Beijing Polytechnic, China), and Shuo Wang (Beijing Polytechnic, China)</i>	
Research on the Differences of Chinese Rural Family Cultural Consumption based on Panel Regression Model .....	806
<i>Chunxia Cai (Beijing Institute Of Graphic Communication, China) and Haoran Zhang (Beijing Institute Of Graphic Communication, China)</i>	
Natural Neighbor Galerkin Method for Electromagnetic Field Analysis .....	811
<i>Qianyue Nie (Shandong University of Science and Technology, China) and Zhifeng Nie (Shandong University of Science and Technology, China)</i>	
Identification of Point Spread Function based on Turbulent Blur Model .....	815
<i>Xingyuan Gao (Beijing HANHAIZHONGJIA Hydraulic Machinery Co., Ltd, China), Yunhua Zong (Beijing Institute of Space Mechanics &amp; Electricity, China), and Qiuying Yang (Capital Medical University, China)</i>	
An Improved Fog Concentration Detection Method for Waterway Based on FADE .....	820
<i>Han Gao (Anhui University of Technology, China) and Bin Ji (Anhui University of Technology, China)</i>	
Edible Fungi Quality and Safety Traceability Management System .....	825
<i>Yueyue Yin (Zhenjiang Vocational Technical College, China) and BaoHeng Wang (Zhenjiang Chengyi Environmental Technology Co., China)</i>	
Feature Recognition and Forming Measurement of Weld Surface Based on Laser Vision .....	829
<i>Junjie Shen (Xiamen University of Technology, China), Jiming Yi (Xiamen University of Technology, China), and Dan Liu (Xiamen University of Technology, China)</i>	
Integration and Research of the Multifunctional Geological Survey Information Acquisition System .....	834
<i>Dejun Tan (Chongqing Institute of Geology and Mineral Resources, China), Manqian Liu (Chongqing Institute of Geology and Mineral Resources, China), and Yanhui Wang (Chongqing Institute of Geology and Mineral Resources, China)</i>	
<b>Author Index .....</b>	<b>839</b>