

2020 5th International Conference on Smart Grid and Electrical Automation (ICSGEA 2020)

**Zhangjiajie, China
13 – 14 June 2020**



**IEEE Catalog Number: CFP20J11-POD
ISBN: 978-1-7281-8279-7**

**Copyright © 2020 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:	CFP20J11-POD
ISBN (Print-On-Demand):	978-1-7281-8279-7
ISBN (Online):	978-1-7281-8278-0

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2020 5th International Conference on Smart Grid and Electrical Automation (ICSGEA) **ICSGEA 2020**

Table of Contents

Preface	xx
Conference Organization	xxi
Reviewers	xxiii
Sponsors	xxiv

Session 1: Power and New Energy

Economic Load Distribution Strategy of Power System Based on Artificial Intelligence	1
<i>Xiaodan Zhuang (Zhejiang Power Exchange Center), Yingyu Guan (Beijing Kedong Power Control System Co., Ltd), Jun Xu (Beijing Kedong Power Control System Co., Ltd), and Shaohui Shen (Beijing Kedong Power Control System Co., Ltd)</i>	
Hierarchical Fault Location Method for Active Distribution Network with High Penetration of Distributed Generation	5
<i>Zhenhua Yan (Power Research Institute of State Grid Ningxia Power Co.), Mingyu Huang (Power Research Institute of State Grid Ningxia Power Co.), Qingping Zhang (Power Research Institute of State Grid Ningxia Power Co.), Bo Gao (Power Research Institute of State Grid Ningxia Power Co.), Xuefeng Li (Power Research Institute of State Grid Ningxia Power Co.), Rui Ma (Power Research Institute of State Grid Ningxia Power Co.), Zhendong Li (State Grid Zhongning County Power Supply Company), and Shenxi Zhang (Shanghai Jiao Tong University)</i>	

Key Technologies for Ultra-Wideband PDs Detection in Transformer under AC/DC Withstand Voltage Tests, Part 1: Application Status of Conventional Pulse Current Method .10.....

Pei Cao (State Grid Shanghai Electric Power Research Institute), Hua Huang (State Grid Shanghai Electric Power Research Institute), Yi-ping Ji (State Grid Shanghai Electric Power Research Institute), Hao-yang Tian (State Grid Shanghai Electric Power Research Institute), Zhi-hao Lu (State Grid Shanghai Municipal Electric Power Company), Xin-ye Wu (State Grid Shanghai Municipal Electric Power Company), Qi-qi Zhang (State Grid Shanghai Municipal Electric Power Company), Nian-ping Yan (State Grid Jiangxi Electric Power Research Institute), Xu-tao Wu (State Grid Ningxia Electric Power Research Institute), Xiu-guang Li (State Grid Ningxia Electric Power Research Institute), Peng Yuan (Xi'an MaoRong Power Equipment Co., Ltd), and Wen-rong Si (State Grid Shanghai Electric Power Research Institute)

Key Technologies for Ultra-Wideband PDs Detection in Transformer under AC/DC Withstand Voltage Tests, Part 2: Overview of On-Site PD Test of Converter Transformer .16.....

Lei-lei Zeng (State Grid Jiangxi Electric Power Research Institute), Nian-ping Yan (State Grid Jiangxi Electric Power Research Institute), Xiao-ming Wang (State Grid Jiangxi Electric Power Co., Ltd), Wen-rong Si (State Grid Shanghai Electric Power Research Institute), Chen-zhao Fu (State Grid Shanghai Electric Power Research Institute), Xiu Zhou (State Grid Ningxia Electric Power Research Institute), Peng Wang (State Grid Jiangxi Electric Power Research Institute), Tang-bing Li (State Grid Jiangxi Electric Power Research Institute), Yu-ting Liu (State Grid Jiangxi Electric Power Research Institute), Hua Wan (State Grid Jiangxi Electric Power Research Institute), Bi-chuan Xu (State Grid Jiangxi Electric Power Research Institute), and Peng Yuan (Xi'an MaoRong Power Equipment Co., Ltd)

Optimal Configuration of Distributed Generation and Energy Storage in Microgrid .21.....

Ke Li (East China Electric Power Dispatching and Control Sub-Center of State Grid), Linlin Liu (East China Electric Power Dispatching and Control Sub-Center of State Grid), Haoyin Ding (East China Electric Power Dispatching and Control Sub-Center of State Grid), Yanqiang Shi (East China Electric Power Dispatching and Control Sub-Center of State Grid), Lifeng Wang (East China Electric Power Dispatching and Control Sub-Center of State Grid), and Shenxi Zhang (Shanghai Jiao Tong University)

Research on Electric Power Business Terminal Classification Technology Based on Unsupervised Algorithms .26.....

Xianzhou Gao (Global Energy Interconnection Research Institute), Ruxia Yang (Global Energy Interconnection Research Institute), Peng Gao (Global Energy Interconnection Research Institute), Lei Chen (Global Energy Interconnection Research Institute), and Zhou Fang (Global Energy Interconnection Research Institute)

Research on Novel Power Supply Mode for Elevators Based on Inductively Coupled Power Transfer Technology .30.....	
<i>Xiao Lv (Chongqing Special Equipment Inspection and Research Institute), Tongfeng Zou (Chongqing Special Equipment Inspection and Research Institute), Xuelun Zhang (Chongqing Special Equipment Inspection and Research Institute), Haijun Jia (Chongqing Special Equipment Inspection and Research Institute), and Hang Cheng (Chongqing Special Equipment Inspection and Research Institute)</i>	
Research on the Calibration Influence Factors of UHF Partial Discharge Detector .34.....	
<i>Shuncheng Liu (State Grid Hunan Electric Power Company Limited), Jiajia Xiang (State Grid Hunan Electric Power Company), Jin Cheng (State Grid Hunan Electric Power Company Limited), Jian Chen (State Grid Hunan Electric Power Company Limited), Lin Du (Chongqing University), and Lu Wang (State Grid Hunan Electric Power Company Limited)</i>	
Study on Energy Consumption Calculation Model of Prefabricated Building Envelope System Based on BIM .42.....	
<i>Fang Liu (East University of Heilongjiang), Jianfeng Zhang (East University of Heilongjiang), and Yechao Jiang (East University of Heilongjiang)</i>	
Study on the Power System of Sharing Economy under Complex Environment .46.....	
<i>Aiping Chen (Jinhua Polytechnic) and Haijiang Hua (Jinhua Polytechnic)</i>	
Thermal Simulation of Power Lithium-ion Battery under Low Temperature and Preheating Condition .51.....	
<i>Jin Biao (Guangdong University of Science & Technology), Liu Fangfang (Guangdong University of Science & Technology), An Zhiwen (Guangdong University of Science & Technology), Xu Zhiqiang (Guangdong University of Science & Technology), and Jiang Bin (Dongguan Tafel New Energy Technology Co., Ltd)</i>	
Topology Verification Method of Low-Voltage Distribution Network Based on T-Type Grey Correlation Degree .55.....	
<i>Zhidan Zhang (State Grid Hunan Electric Power Company Limited Research Institute), Haiguo Tang (State Grid Hunan Electric Power Company Limited Research Institute), Jiran Zhu (State Grid Hunan Electric Power Company Limited Research Institute), Di Zhang (State Grid Hunan Electric Power Company Limited Research Institute), and Hua Leng (State Grid Hunan Electric Power Company Limited Research Institute)</i>	

Session 2: Electrical Automation

Analysis of Heat Loss Control Method for Building Heating Transmission and Distribution Based on Big Data Analysis .59.....	
<i>Duo Jing (Heilongjiang Polytechnic), Yanxing Yue (Heilongjiang Polytechnic), and Haibo Fan (Heilongjiang Polytechnic)</i>	

Design of High Power Pulse Laser Driver Based on Soft Switch Technology .63.....	63
<i>Guoxing Chen (Suzhou Nuclear Power Research Institute Co., Ltd.),</i>	
<i>Shaochong Wei (Suzhou Nuclear Power Research Institute Co., Ltd.),</i>	
<i>Haifeng Lu (Suzhou Nuclear Power Research Institute Co., Ltd.),</i>	
<i>Xueying Ma (Suzhou Nuclear Power Research Institute Co., Ltd.),</i>	
<i>ChengWei Liu (Suzhou Nuclear Power Research Institute Co., Ltd.), and</i>	
<i>Shuhui Wu (Suzhou Nuclear Power Research Institute Co., Ltd.)</i>	
Development and Application of Electrical Equipment Intelligent Detection Management System .70.....	70
<i>Tao Liu (Northwestern Polytechnical University)</i>	
High Impedance Grounding Fault Detection in Resonance Grounding System Based on Nonlinear Distortion of Zero-Sequence Current .74.....	74
<i>Jiran Zhu (Tongji University), Haiguo Tang (State Grid Hunan Electric Power Corporation Research Institute), Hua Leng (Hunan University),</i>	
<i>Jiao Sun (Hunan University), and Chun Huang (Hunan University)</i>	
Key Technologies for Ultra-Wideband PDs Detection in Transformer under AC/DC Withstand Voltage Tests, Part 3: Comments on the Anti-Interference Technology .79.....	79
<i>Xiu Zhou (State Grid Ningxia Electric Power Research Institute),</i>	
<i>Qing-ping Zhang (State Grid Ningxia Electric Power Research Institute), Xu-tao Wu (State Grid Ningxia Electric Power Research Institute),</i>	
<i>Wen-rong Si (State Grid Shanghai Electric Power Research Institute), Nian-ping Yan (State Grid Jiangxi Electric Power Research Institute),</i>	
<i>Xiu-guang Li (State Grid Ningxia Electric Power Research Institute), Ning-hui He (State Grid Ningxia Electric Power Research Institute),</i>	
<i>Yun-long Ma (State Grid Ningxia Electric Power Research Institute), Tian Tian (State Grid Ningxia Electric Power Research Institute),</i>	
<i>Bo Niu (State Grid Ningxia Electric Power Research Institute), Yan Luo (State Grid Ningxia Electric Power Research Institute), and</i>	
<i>Wei-feng Liu (State Grid Ningxia Electric Power Research Institute)</i>	
Key Technologies for Ultra-Wideband PDs Detection in Transformer under AC/DC Withstand Voltage Tests, Part 4: Feasibility Analysis of Separation or Grouping Technology Based on Pulse Current Sequence .84.....	84
<i>Chen-zhao Fu (State Grid Shanghai Electric Power Research Institute),</i>	
<i>Wen-rong Si (State Grid Shanghai Electric Power Research Institute),</i>	
<i>Xiao-ming Wang (State Grid Jiangxi Electric Power Co., Ltd), Xu-tao Wu (State Grid Ningxia Electric Power Research Institute),</i>	
<i>Xiu Zhou (State Grid Ningxia Electric Power Research Institute), Nian-ping Yan (State Grid Jiangxi Electric Power Research Institute),</i>	
<i>Lei-lei Zeng (State Grid Jiangxi Electric Power Research Institute), Qi-yu Lu (State Grid Shanghai Municipal Electric Power Company),</i>	
<i>Ping Song (State Grid Shanghai Municipal Electric Power Company), Pei Cao (State Grid Shanghai Electric Power Research Institute),</i>	
<i>Lin He (State Grid Shanghai Electric Power Research Institute), and Peng Yuan (Xi'an MaoRong Power Equipment Co., Ltd)</i>	

Research on Dewatering Design of Pumping Test in Super Large Foundation Pit Engineering
 – Taking the Foundation Pit in J2 Area of Nanjing Qingao Tunnel as an Example .90.....
Xinjie Yuan (Nanjing University of Science and Technology), Na Lv (Xinxiang Vocational and Technical College), Jingchen Shi (Xinxiang Vocational and Technical College), and Shuai Wang (Xinxiang Vocational and Technical College)

Research on Safety Control Strategy of Driving System for the Helicopter Wind Tunnel Test .94.....
Xianmin Peng (China Aerodynamics Research and Development Center), Guichuan Zhang (China Aerodynamics Research and Development Center), Xinfan Yin (China Aerodynamics Research and Development Center), Binghui Che (China Aerodynamics Research and Development Center), Huan Luo (China Aerodynamics Research and Development Center), and Yibo Wei (China Aerodynamics Research and Development Center)

Research on the Construction Method of Textile and Garment Intelligent Factory System and Platform .102.....
Yan-Hong Shi (Inner Mongolia University of Technology Wuhai Vocational and Technical College), Yong-Bai Shang (Inner Mongolia Ordos Cashmere Group), Xue-Fang Zhang (Inner Mongolia University of Technology Wuhai Vocational and Technical College), and Jing Ma (Inner Mongolia University of Technology Wuhai Vocational and Technical College)

Session 3: Manufacturing and Materials

3D Garment Designing Method of Human Body Based on Surface Modeling Technology .107.....
Jielin Liu (Jiangxi Environmental Engineering Vocational College)

Experimental Design of Shear Resistance of Plastic Hinge of 500 MPa Reinforced Concrete Column .111.....
Shuai Wang (Nanjing University of Science and Technology), Jingchen Shi (Xinxiang Vocational and Technical College), Na Lv (Xinxiang Vocational and Technical College), and Xinjie Yuan (Xinxiang Vocational and Technical College)

Experimental Study on Fatigue Damage Performance of U-Beam .115.....
Shan Gao (Chengdu University), Wenyuan Li (Chengdu University), and Xiaoping Jin (Zhe Jiang Scientific Research Institute of Transport)

Identification of Load Dynamics Parameters of Industrial Robots Based on Artificial Neural Network .119.....
Linhui Wang (ChiFeng Industry Vocational Technology College)

Numerical Simulation and Experimental Verification of Cu \ Ni Dissimilar Metal Wire Deep Penetration Brazing .125.....
YanBing Wang (GuiZhou Vocational Technology College of Electronics & Information), Gang Zhan (GuiZhou Vocational Technology College of Electronics & Information), WeiXiu Mao (GuiZhou Vocational Technology College of Electronics & Information), YaLi Lai (GuiZhou Vocational Technology College of Electronics & Information), Yuan Luo (GuiZhou Vocational Technology College of Electronics & Information), PeiXue Liu (GuiZhou Vocational Technology College of Electronics & Information), and ZhengLong Yu (GuiZhou Vocational Technology College of Electronics & Information)

Research on Chemical Production Process Control Strategy Based on Petri Net .129.....	
	<i>Junfeng Chen (Nanjing Institute of Technology)</i>
Research on Intelligent Firefighting Robot in Transformer Substation Based on Water Mist Technology .134.....	
	<i>Yan Jiang (Beijing Zhongdian Feihua Communication Co., Ltd), Xuze Zhang (Beijing Zhongdian Feihua Communication Co., Ltd), and Yue Wang (Beijing Zhongdian Feihua Communication Co., Ltd)</i>
Research on Key Technologies of Biomimetic Underwater Robotic Fish for Water Area Supervision .140.....	
	<i>Mingrui Zhang (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Junhua Zhou (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Minglei Xiong (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Peng Zhao (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), and Zongzong Wang (Boya Gongdao(Beijing)Robot Technology Co., Ltd.)</i>
Research on Polarization Characteristics of a Semiconductor Optical Amplifier Fiber Ring Laser .145.....	
	<i>Zhang Zhie (Wuhan University of Technology), Fu Xuelei (Wuhan University of Technology), Kaiping Wang (Wuhan University of Technology), Honghai Wang (Wuhan University of Technology), and Zhengying Li (Wuhan University of Technology)</i>
Research on the Construction Method of Mechanical Manufacturing System Based on Artificial Intelligence Technology .149.....	
	<i>Ya-Jun Liu (Chifeng Industrial Vocational Technical College)</i>
Research on Vibration Diagnosis Method of Broken Tooth Failure for Marine High-Speed Gearbox .153.....	
	<i>Lei Hu (Wuhan University of Technology), Jianguo Yang (Wuhan University of Technology), and Yonghua Yu (Wuhan University of Technology)</i>
Study on Extraction Techniques Using Hydraulic Fracturing and Hydraulic Slotting in High Stress and Tectonic Stress Zones .158.....	
	<i>Xin Pan (China Coal Technology & Engineering Group Chongqing Research Institute)</i>
Study on Key Technology of Construction Control of Concrete Filled Steel Tube Arch Bridge .161...	
	<i>Ziqi Li (Civil Engineering College of Lanzhou Jiaotong University), Yanyan Fan (Civil Engineering College of Lanzhou Jiaotong University), and Yaowan Zhang (Lanzhou Railway Survey and Design Institute CO., LTD)</i>
Study on Prediction of Hole Shaft Fit Accuracy and Tolerance Design Based on Joint Surface Error Modeling .166.....	
	<i>Ping Wang (Xiamen University of Technology) and Yi Zhang (Xiamen University of Technology)</i>

Session 4: Signal Processing and Simulation

A Face Recognition Approach Based on Computer Vision .171.....	
	<i>Xuhang Lian (Tianjin University)</i>

A Novel Coarse-to-Fine Segmentation Method for Pancreatic Cancer .176.....	
<i>Zhisheng Wang (Shanghai University), Qing Li (Shanghai University), and Xuehai Ding (Shanghai University)</i>	
Application of Attention-Based GRU Combined with CNN Classification on P300 Signals .182.....	
<i>Lei Sheng (Wuhan University of Technology)</i>	
Cartoon Image Design System Based on Genetic Optimization Algorithm .186.....	
<i>Yan Wu (Henan University)</i>	
Dietary Sequence Recommendations Based on TransFM .191.....	
<i>Jie Wu (Shanghai University)</i>	
Image Detail Enhancement Method of Advertisement Logo Based on Visual Communication .195..	
<i>Chen Ying (ChiFeng Industry Vocational Technology College)</i>	
Multimodal Taste Classification of Chinese Recipe Based on Image and Text Fusion .203.....	
<i>Yawei Chen (Shanghai University), Min Cao (Shanghai University), and Wenjing Gao (Shanghai University)</i>	
Object Detection Method Based on Improved One-Stage Detector .209.....	
<i>Hongtao Wei (Wuhan University of Technology) and Xi Yang (Wuhan University of Technology)</i>	
Pattern Classification Based on Radial Basis Function Neural Network .213.....	
<i>Zhongwei Zhang (Chinese Academy of Sciences)</i>	
Recognition Method of Non-Stationary Mechanical Vibration Signal Based on Convolution Neural Network .217.....	
<i>Meixuan Li (Chifeng Industrial Vocational Technical College)</i>	
Research on Application of Image Recognition and Tracking Technology Based on Moving Objects .222.....	
<i>Lin Lin (Urban Vocational College of Sichuan)</i>	
Speech Endpoint Recognition Algorithm Based on Wavelet Coefficient Variance .226.....	
<i>Gang Zheng (Henan Vocational College of Art)</i>	
Stone Carving Art Image Recognition Approach Based on Artificial Neural Network .231.....	
<i>Jiang Ling (Shandong Women's University)</i>	
The Threshold Optimization of Track Image under Strong Sunlight .236.....	
<i>Wentao Hu (Shandong University) and Yongjian Zhao (Shandong University)</i>	

Session 5: Artificial Intelligence and Its Application

A Strategy for the Stability of Flight Control System Using Nonlinear Differential Equation .240.....	
<i>Zhanrong Guan (Guangdong Polytechnic of Water Resources and Electric Engineering)</i>	
An Art Design Approach Based on Point Cloud Model Technology .245.....	
<i>Xiangqun Wang (Zheng Zhou College)</i>	
Application Research of Virtual Reality Technology in Green Building Design .249.....	
<i>Ling Chen (Southwest Jiaotong University) and Jiawei Wang (Chengdu Foreign Languages School)</i>	

Attention-Concatenation Dense Convolutional Neural Network for Silkworm Disease Recognition .254.....	254
<i>Yu Zhen (Wuhan University of Technology), Xia Dingyuan (Wuhan University of Technology), Tang Liang (Wuhan University of Technology), and Shi Meining (Wuhan University of Technology)</i>	
BatNet++: A Robust Deep Learning-Based Predicting Models for Calls Recognition .260.....	260
<i>Jian Hu (Yunnan Power Grid Company Limited), Wenzai Huang (Yunnan Power Grid Company Limited), Yongdong Su (Yunnan Power Grid Company Limited), Yuting Liu (Yunnan Power Grid Company Limited), and Peng Xiao (Yunnan Power Grid Company Limited)</i>	
Bus Arrival Time Estimation Based on GPS Data by the Artificial Bee Colony Optimization BP Neural Network .264.....	264
<i>Xuemei Wu (Research Institute of Highway Ministry of Transport), Shiyin Huang (Research Institute of Highway Ministry of Transport), Jie Zou (Research Institute of Highway Ministry of Transport), Jin Shen (Beijing Jiaotong University), Wen Cai (Beijing Public Transport Corporation), and Jiandong Zhao (Beijing Jiaotong University)</i>	
Calculation of Chinese-Thai Cross-Language Similarity Based on Sentence Embedding .268.....	268
<i>Yinhan Feng (Guizhou Vocational Technology College of Electronics & Information), Gang Zhan (Guizhou Vocational Technology College of Electronics & Information), Weixiu Mao (Guizhou Vocational Technology College of Electronics & Information), Shunbao Lin (Guizhou Vocational Technology College of Electronics & Information), Shijie Yu (Guizhou Vocational Technology College of Electronics & Information), and Kui Zhang (Guizhou Vocational Technology College of Electronics & Information)</i>	
Constrained Layout Optimization Combining Human-Computer Interactive Genetic Algorithm .272	272
<i>Qin Liu (Shandong Institute of Commerce & Technology)</i>	
Construction of Intelligent Building Design System Based on BIM and AI .277.....	277
<i>Jianfeng Zhang (East University of Heilongjiang), Yechao Jiang (East University of Heilongjiang), and Fang Liu (East University of Heilongjiang)</i>	
Development and Design of Hospital Labor Union Information Management System under the Background of Big Data .281.....	281
<i>Xiuli Han (The Second Affiliated Hospital of Qiqihar Medical University)</i>	
Game Strategy of Environmental Regulation and Export Trade Based on Blockchain Algorithm .286	286
<i>Yang Wang (Shanghai Dianji University) and Qiwen Wang (Shanghai Dianji University)</i>	
"Office Automation" Teaching Practice Combining Constructivist Teaching Model .291.....	291
<i>Juan Ye (Guangzhou College, Guangdong Polytechnic of Science and Technology)</i>	
Palm Vein Recognition Using Convolution Neural Network Based on Feature Fusion with HOG Feature .295.....	295
<i>Hailan Kuang (Wuhan University of Technology), Zhenhua Zhong (Wuhan University of Technology), Xinhua Liu (Wuhan University of Technology), and Xiaolin Ma (Wuhan University of Technology)</i>	

Research on Intrusion Detection System Based on Integrated Transfer Learning .300.....	300
<i>Jian Hu (Yunnan Power Grid Company Limited), Jing Zhou (Yunnan Power Grid Company Limited), Yongdong Su (Yunnan Power Grid Company Limited), Peng Xiao (Yunnan Power Grid Company Limited), and Hailin Wang (Yunnan Power Grid Company Limited)</i>	
Research on the Application of BP Neural Network in Vocal Music Teaching Quality Evaluation .306.....	306
<i>Wanyin Jia (Huzhou University)</i>	
Research on the Innovation Mechanism Model of Education Management under the Background of Artificial Intelligence Technology .310.....	310
<i>Fengchao Cao (Peking University) and Xuewen Peng (Hunan University of Technology and Business)</i>	
Research on the Method of Combining Educational Resources under the Background of Internet+ .318.....	318
<i>Shuqiao Zhao (Lanzhou Vocational Technical College) and Kezhu Zhang (Lanzhou Vocational Technical College)</i>	
Road Traffic Congestion Prediction Based on Random Forest and DBSCAN Combined Model .323	323
<i>Shenghua Huang (Shanghai University), Zhihua Niu (Shanghai University), and Jiaxin Huang (Shanghai University)</i>	
Selection Method of Linear Thinking Path of Chinese Piano Music Based on Artificial Intelligence .327.....	327
<i>Zhichao Yu (Music and Dance College of Fuyang Normal University)</i>	
Self-Driving Route Design Using Improved Circle Algorithm .334.....	334
<i>Yuhua Jiang (Hulunbuir University) and Guodong Sun (Chongqing University of Education)</i>	
Study on the Application of Robotic Fish in the Underwater Supervision of Yunnan Waters .338....	338
<i>Mingrui Zhang (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Junhua Zhou (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Minglei Xiong (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), Peng Zhao (Boya Gongdao(Beijing)Robot Technology Co., Ltd.), and Zongzong Wang (Boya Gongdao(Beijing)Robot Technology Co., Ltd.)</i>	
Traffic-DesNet: A Robust Deep Learning-Based Flow Prediction Model by the Using of DesNet .342	342
<i>Jian Hu (Yunnan Power Grid Company Limited), Benfu Yang (Yunnan Power Grid Company Limited), Yongdong Su (Yunnan Power Grid Company Limited), and Peng Xiao (Yunnan Power Grid Company Limited)</i>	

Session 6: Information Management and System Science

An Intelligent Control Strategy for Large Inertia Servo System .346.....	346
<i>Yu Lei (Northwest Institute of Mechanical & Electrical Engineering), Xiaojun Jin (Northwest Institute of Mechanical & Electrical Engineering), and Yang Zhou (Northwest Institute of Mechanical & Electrical Engineering)</i>	
Analysis on the Demand Evolution of Cloud Accounting Information System in the Era of Big Data .350.....	350
<i>Yu Liu (Henan Institute of Economics and Trade)</i>	

Design and Implementation of Financial Information Management System for Mobile Terminal .354 <i>Zirui Gu (Chongqing Chemical Industry Vocational College)</i>	
Design and Implementation of Human Resources Simulation Teaching System for Universities .358 <i>Bu Lyu (Bengbu University), Jianhui Chen (Bengbu University), and Na Wang (Bengbu University)</i>	
Design System Construction of Intelligent Enterprise Management System Based on Big Data Technology .363..... <i>Yan Xu (Shandong Institute of Commerce & Technology)</i>	
Development and Application of an Automatic Question Answering System for Silkworm Disease Knowledge .367..... <i>Anjun Cheng (Wuhan University of Technology), Dingyuan Xia (Wuhan University of Technology), Liang Tang (Wuhan University of Technology), and Meining Shi (Wuhan University of Technology)</i>	
Research and Realization of Train Axle Counting System Based on Fbg .371..... <i>Xiaomei Zhang (Wuhan University of Technology), Biao Geng (Wuhan University of Technology), Jianjun Pan (Wuhan University of Technology), Yong Hu (Wuhan University of Technology), and Ning Jiang (Wuhan University of Technology)</i>	
Research on the Construction and Optimization of Marketing System of Smart Home Products .375 <i>Xinyue Liang (ChiFeng Industry Vocational Technology College)</i>	
Research on the Quality Evaluation of Higher Education Information Management Based on Weighted Topsis .380..... <i>Jing Liang (Xi'An Medical University, Xi'An Shaanxi, china)</i>	
Research on the Sharing Mode of Digital Party School Information and Data Resources .388..... <i>Liping Zhi (Party School of Yun Cheng Municipal Party Committee)</i>	
Satisfaction Index Mining Model and Evaluation System Construction for Graduate Student Employers .392..... <i>Bu Lyu (Bengbu University), Jianhui Chen (Bengbu University), and Na Wang (Bengbu University)</i>	
The Construction Method of English Writing Teaching System Based on English Composition Intelligent Evaluation System .397..... <i>Yamei Zhang (Shandong Institute of Commerce and Technology)</i>	
The Construction Method of Optimizing System of Urban Planning Decision Making System Based on a New Generation of Artificial Intelligence Technology .401..... <i>Tingting He (Liaoning Jianzhu Vocational College)</i>	

Session 7: Network and Communication

An Intelligent Fault Diagnosis Model of WSN Based on Artificial Immune System .405..... <i>Lin Lin (Urban Vocational College of Sichuan)</i>	
Analysis of Computer Network Information Security under the Background of Big Data .409..... <i>Peng Xie (Equipment Management and UAN Engineering College), Hongmei Zhang (Equipment Management and UAN Engineering College), Lijie Cui (Equipment Management and UAN Engineering College), and Ying Hu (Xi'an Railway Technician Institute)</i>	

Application of a Combined Model Based on K-Means++ and XGBoost in Traffic Congestion Prediction .413.....	
	<i>Duan Ran (Shanghai University of Computer Engineering and Science), Jiaxin Huang (Shanghai University of Computer Engineering and Science), and Yuzhe Huang (Shanghai University of Computer Engineering and Science)</i>
Data Protection Mechanism of Wireless Sensor Networks Considering Load Balancing .419.....	
	<i>Wanjun Chen (Jiangxi Environmental Engineering Vocational College)</i>
Development and Implementation of Art Teaching Resource Base on Mobile Platform .423.....	
	<i>Wang Yuan (College of Art Shenzhen University)</i>
Evaluation Strategy for Regional Ecological Security Based on GIS .428.....	
	<i>YongXiang Ai (Chengdu University of Technology) and Sangjie Lu (Chengdu University of Technology)</i>
IoT Experimental Classroom Project under the Mode of Industry-University-Research Collaboration .433.....	
	<i>Ruijin Lin (Xiamen University of Technology)</i>
Learning Emotion Analysis System under Remote Teaching Environment .437.....	
	<i>Yifeng Wang (The Shandong Institute Commerce & Technology College of Shandong Province)</i>
MMNET: A Multi-Method Network for Multi-Label Classification .441.....	
	<i>Cheng Zhi (Wuhan University of Technology)</i>
Quality-Centered Mobile Terminal Teaching Assessment System under the Background of Big Data .446.....	
	<i>Wei Xiao (Changchun Normal University)</i>
Research on the Design of Japanese Mobile Learning System Based on WAP .450.....	
	<i>Zhang Ya (Chifeng University)</i>
Research on the Implementation of Network Cooperative Learning in Students Management of Private Colleges .454.....	
	<i>Fei Li (Yinxing Hospitality Management College of CUIT)</i>

Session 8: Big Data and Web Application

An Evaluation and Analysis System of English Teachers' Educational Ability Based on MVC in MOOC .458.....	
	<i>Shijun Zhang (Liaoning Jianzhu Vocational College)</i>
An Evaluation Approach of Financial Performance of University Based on Big Data .462.....	
	<i>Zirui Gu (Chongqing Chemical Industry Vocational College)</i>
An Optimization Scheme of Network Marketing Based on Big Data .466.....	
	<i>Bi Xue (Liaoning Jianzhu Vocational College)</i>
Analysis and Platform Construction of Micro Propagation Mode of Ideological and Political Education Based on Big Data .470.....	
	<i>Weidong Guo (Qiqihar Medical University)</i>
Construction and Application of Accounting Information Platform Based on Big Data Environment .475.....	
	<i>Liu Yu (Henan Institute of Economics and Trade)</i>

Design of App Ui Based on Gustatory Visualization-Focus on Delivery App	480
<i>Yueyang Zhao (Dankook University)</i>	
Design of Teaching Model of Ideological and Political Education Network Course Based on Educational Cloud Platform	485
<i>Fangguo Wang (China West Normal University)</i>	
Development and Application of Computer Experiment Course APP for College Students	489
<i>Ruijin Lin (Xiamen University of Technology)</i>	
Implementation of Improved SVM Algorithm in Tourism Economic Data Analysis	493
<i>Yuanfen Tu (Nanchang Institute of Technology)</i>	
Information Integration Method of Garden Plant Specimen Based on Data Mining	497
<i>Xiaoqing Wu (Lianyungang Technical College) and Xiang Sun (Beijing Academy of Agriculture and Forestry Sciences)</i>	
Live Teaching Platform for Human Resource Development and Management Based on Big Data Recommendation Technology	505
<i>Bu Lyu (Bengbu University), Jianhui Chen (Bengbu University), and Na Wang (Bengbu University)</i>	
Research on E-Commerce Credit Information Evaluation Based on Social Big Data	510
<i>Huang Shuang (Liaoning Jianzhu Vocational College)</i>	
Research on Personalized Service Strategy of University Library Based on Big Data Mining System	515
<i>Yanjun Sun (Tianjin Tianshi College), Jianwei Sun (Tianjin Tianshi College), Wenshuang Wu (Tianjin Tianshi College), Qiang Du (Tianjin Tianshi College), Haiyan Zhao (Tianjin Tianshi College), and Juanjuan Liu (Tianjin Tianshi College)</i>	
Research on the Construction of Mixed Teaching Resources in Higher Vocational Colleges Based on MOOC	519
<i>Yusheng Xie (Zhalantun Vocational College)</i>	
Simulation Analysis of E-Commerce Supply Chain System in Business and Trade Circulation	524
<i>Chunyuan Ke (Maoming Polytechnic)</i>	
Teaching Quality Evaluation Model for Human Resource Development and Management Major under the Background of Big Data	529
<i>Bu Lyu (Bengbu University), Jianhui Chen (Bengbu University), and Na Wang (Bengbu University)</i>	
The Development of Financial Industry Agglomeration under Chinese Green Financial Background	534
<i>Ying Shi (Management Department, Changchun Institute of Technology)</i>	
The Practical Study on the Teaching Reform of "Ideological and Political Education" in Western Economics Courses	538
<i>Miao Sun (Changchun University of Architecture & Civil Engineering) and Shuaizhou Wang (Nanjing University)</i>	

Session 9: Modeling and Optimization

- A Large-Capacity Micro-Cavity Array Fiber with Randomly Distributed Characteristic Parameters .542.....
Rongzhen Huang (Wuhan University of Technology), Honghai Wang (Wuhan University of Technology), Changjia Wang (Wuhan University of Technology), Bo Wu (Wuhan University of Technology), Xin Gui (Wuhan University of Technology), and Zhengying Li (Wuhan University of Technology)
- A Case Study on Landscape Design of Campus in University of Technology .547.....
Zheng Li (South China University of Technology) and Wang Jing (South China University of Technology)
- A Spline-Profile Smooth-Walled Horn with Low Cross-Polarization and Low Sidelobe .551.....
Zijing Wu (Nanjing University of Posts and Telecommunications), Yaming Bo (Nanjing University of Posts and Telecommunications), and Shaohua Wu (Jiangsu Food and Pharmaceutical Science College)
- Algorithm Design of Irrigation Water Price Accounting for Seasonal Water Shortage Area .554.....
Lihuan Liu (Hunan Polytechnic of Water Resources and Electric Power), Ceng Jiang (Hunan Polytechnic of Water Resources and Electric Power), and Chunhui Gu (Hunan Polytechnic of Water Resources and Electric Power)
- An Evaluation Approach for Higher Education Informatization Based on Grey Model .558.....
Hou Feng (Henan Finance University)
- Analysis on the Coupling Experimental Environment of Rain and Snow Disaster .562.....
Chen Tao (Tsinghua University), Ma Na (Tsinghua University), Zheng Huijie (Tsinghua University), Wang Guanning (Tsinghua University), and Chang Zhenxing (Tsinghua University)
- Application of Genetic Algorithm in PD Source Location in Transformer Oil .567.....
Ren-Ping Du (State Grid Shanghai Jiading Electric Power Supply Company), Li-Ming Jiang (State Grid Shanghai Jiading Electric Power Supply Company), Sheng-Qi Liu (State Grid Shanghai Jiading Electric Power Supply Company), Wei-Bin Li (State Grid Shanghai Chongming Electric Power Supply Company), Xiao-Liang Bian (State Grid Shanghai Chongming Electric Power Supply Company), Lu Chen (State Grid Shanghai Electric Power Research Institute), and Wen-Rong Si (State Grid Shanghai Electric Power Research Institute)
- ARP Spoofing Analysis and Prevention .572.....
Yongjian Zhao (Shandong University), Rui Guo (Shandong University), and Peixin Lv (Shandong University)
- Building Cost Control Model of Assembly Construction Project Using Analytic Hierarchy Process .576.....
Min Jiang (College of Civil Engineering)
- Comprehensive Evaluation Model of College Physical Education Efficiency Combining Multivariate Decision-Making Mathematical Model .581.....
Wenwen Wang (Jingzhou Institute of Technology)
- Integrated Strategy of Green Building Model Optimization Based on BIM Technology .585.....
Yechao Jiang (East University of Heilongjiang), Fang Liu (East University of Heilongjiang), and Jianfeng Zhang (East University of Heilongjiang)

Nonlinear Analysis for a New Macro Traffic Flow Model under the Lagrange Coordinate System.589	
	<i>WenHuan Ai (Northwest Normal University), Tao Xing (Northwest Normal University), YuHang Su (Northwest Normal University), and DaWei Liu (Lanzhou Institute of Technology)</i>
Numerical Simulation of Wetland Ecological Vegetation Restoration and Succession Based on Gis Grid .592.....	
	<i>Shuling He (Guangxi Normal University for Nationalities), Dejiang Kong (Tibet Agriculture and Husbandry University), Jingjun Yang (Guangxi Normal University for Nationalities), Lingfa Ma (Guangxi Normal University for Nationalities), and Yuwei Chang (Guangxi Normal University for Nationalities)</i>
Optimization Analysis Model of Halbach Array Permanent Magnet Motor .601.....	
	<i>Jie Luo (Chongqing Vocational College of Transportation) and Heshan Zhang (Chongqing Jiaotong University)</i>
Research on Ecological Water Level of Open Lakes: A Case Study of Poyang Lake .606.....	
	<i>Liang Wang (China Institute of Water Resources and Hydropower Research), Zhong Li (China Institute of Water Resources and Hydropower Research), Chang Liu (China Institute of Water Resources and Hydropower Research), Shiyan Wang (China Institute of Water Resources and Hydropower Research), Budong Li (China Institute of Water Resources and Hydropower Research), Xiaobo Liu (China Institute of Water Resources and Hydropower Research), and Zhen Han (China Institute of Water Resources and Hydropower Research)</i>
Research on the Prediction of the Arbitration Effect of Intellectual Property Disputes Concerning Foreign Affairs Based on Logistic Regression .611.....	
	<i>Dongmei Yang (Harbin Finance University, Harbin, 150030, China)</i>
Several Important Discourses on Air-Entraining Agent .616.....	
	<i>Lijuan Ma (Nanjing University of Science and Technology)</i>
Simulation Research of Sketch Simulation Technology Based on Non Photorealistic Rendering .619	
	<i>Qiang Wang (Hohhot Vocational College)</i>
Study on Reviving on Village though Renovation of Building—Base on the Project about Xiaoshan Village .623.....	
	<i>Zheng Li (South China University of Technology) and Zhang Xinlu (South China University of Technology)</i>
Study on Scheme Optimization of Urban Water Diversion Project Based on Fuzzy AHP-TOPSIS .627	
	<i>Yanyan Fan (Civil Engineering College of Lanzhou Jiaotong University), Ziqi Li (Civil Engineering College of Lanzhou Jiaotong University), and Haibei Yang (Civil Engineering College of Lanzhou Jiaotong University)</i>
The Application of Process Mineralogy Research in the Reasonable Utilization of Mineral Resources .631.....	
	<i>Fengrui Gan (Yunnan Vocational Institute of Energy Technology), Yuanxing Zhang (Yunnan Vocational Institute of Energy Technology), Dingbin Ruan (Yunnan Vocational Institute of Energy Technology), and Xinghua Peng (Yunnan Vocational Institute of Energy Technology)</i>
Word Alignment Model Based on Maximum Entropy in Foreign Language Translation .635.....	
	<i>Jun Chen (Qiannan Normal University for Nationalities)</i>

Author Index 639.....