

2nd International Conference on Power, Communication, Computing and Networking Technologies (PCCNT 2024)

IET Conference Publications 897

Wuhan, China and Online
25-26 October 2024

ISBN: 979-8-3313-1778-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
Futures Place, Kings Way
Stevenage, Hertfordshire
U.K. SG1 2UA
United Kingdom

Phone: +44 (0)1438 313311

www.theiet.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

An Improved Direct Digital Synthesis Technique for Railway Application.....	1
<i>Cheng Yuan, Huachao Wang, Guoying Sun, Yi Chen, Guoqiao Ren, Zisheng Li</i>	
Based on Improved Genetic Algorithm for the Assessment of Vocational Skill in Ordnance Equipment Maintenance	5
<i>Yong Wang, Yongliang He</i>	
Power Management and BESS Design in Solar PV DC Microgrids	11
<i>Ziqian Xu, Qing Wang, Jian Yang, Zhen Jing</i>	
Research on Information Analysis Method of Power Engineering Cost Data Based on Affinity Graph.....	20
<i>Yanli Li, Yubao Wang, Huijing Zhai</i>	
TDOA Based on 2-Step Weighting Chan Method.....	26
<i>Weihaio Zhou, Wentao Song, Luxing Feng, Shaohan Zhang</i>	
Current Loop Bandwidth Expansion Strategy of AC Servo Motor Based on Predictive Current Compensation.....	33
<i>Sixian Wu, Yangzhong Zhou</i>	
Junction Temperature Measurement Method for SiC MOSFETs Based on Gate Internal Resistance.....	39
<i>Yang Wen, Chong Zhang, Mao Li</i>	
Design of Junction Temperature Measurement System for SiC MOSFET Based on Gate Peak Current.....	46
<i>Yang Wen, Chong Zhang</i>	
Research and Application on Standard Management Information System.....	52
<i>Zhu Qin</i>	
Research on Power Characteristics of High External Power Ratio Power Grid in Market Environment	58
<i>Yuan Zhang, Shu Xia, Feifei Zhang, Fan Yang</i>	
Research on Unmanned Oxygenating Vessel Based on Feeder Suspension Wave Energy Generation	64
<i>Yuhao Zhang, Chen Zhu, Nenggang Xie</i>	
Optimal Design of Accelerated Test Under Electrical Stress	70
<i>Fang Zhang, Wen-Jie Fan, Yan-Hui Zhu, Zhi Wang, Lin Su</i>	
The DC and Trapping Analysis of Fe-Doping Tail Effects on the GaN-based HEMTs.....	74
<i>Xuan Su, Wen-Ze Gao, Ling Yang, Qing Zhu, Hao Lu, Qian Yu</i>	
A Study on Blockchain-Based Educational Resource Sharing Framework and Acceptability.....	80
<i>Minna Liu, Thelma Palaoag</i>	
An Improved Hilbert-Huang Transform Method for Stochastic Signals	91
<i>Yong Yang</i>	
A Hydro-Power Safety Management Auxiliary Decision-making Platform Design Using Natural Language Processing Technologies	98
<i>Peng Duan, Xiaoyu Zhang, Xianke Liu, Peng Yang, Jiangming Jiao</i>	

Experimental and Numerical Investigation of Wind Loads on the Offshore Wind Power Hydrogen Production Container Modules.....	104
<i>Yue Liu, Xiang Yuan Zheng, Sheng Zhang</i>	
Optimization of Renewable Energy Integration in Smart Grids Using AI and Data Analytics	111
<i>Jiashang Chen, Lan Li</i>	
Three-Point Bending Fatigue Life Prediction of TC4 Titanium Weld Joints Based on Tungsten Inclusion Defects.....	117
<i>Ning Li, Qin Du, Jingpeng Du, Jie Tang, Jianzhi Chen</i>	
Performance Evaluation of Brain Tumor Segmentation Based on U-Net Hybrid Model.....	125
<i>Yun Zhang, Ziqi Zhou, Yuguang Yang</i>	
Wheat Ears Detection Study Based on YOLOv7	131
<i>Xiangna Li, Sen Chen, Jun Li, Weifeng Xu</i>	
A Fast Recovery Diode with Local Defects in the Anode	137
<i>Haifeng Qin, Wei Li, Li Wan, Xiandong Ma, Weizhong Chen</i>	
Modeling of Planetary Gear Mechanism Based on Simulink and Its Application in Vehicle Dynamics Modeling	140
<i>Zhenchuan Song, Jing Zhang, Yangjun Zheng, Yanqiu Yu</i>	
Research on Engine Modeling and Application in Vehicle Dynamics Model Based on Simulink	145
<i>Zhenchuan Song, Ziyin Gao, Mingcheng Wang, Jin Li</i>	
Design of a Small Precision Seeder for Vegetables.....	149
<i>Guo Yi, Wu Xiaoyun, Liu Jiwei</i>	
Design of a Device for Improving the Root Environment of Fruit Trees	155
<i>Wu Xiaoyun, Guo Yi, Liu Jiwei</i>	
Research on the Performance of New Assembled Box Ribbed Floor Structure Based on BIM Technology in Smart City Management Platform.....	159
<i>Yiping Wang, Bo Wang</i>	
Research on Automatic Fitting and Refined Reconstruction Method of Three-Span Section Split Conductor	163
<i>Yanfeng Li, Chao Yang, Jiangtao Liang, Haitao Chen, Shuhong Yang</i>	
Research on Speech Denoising Methods Based on Deep Learning	167
<i>Sen Wang, Qingrui Li, Xiaoqiao Luo, Le Hong, Haixia Li, Dandan Chen</i>	
Analysis of Mathematical Modeling Method of "two-Degree-of-freedom Dynamics" for Electric Vehicles	173
<i>Xuejun Wang, Yiran Wang</i>	
Design and Implementation of a Cloud-Based Energy Monitoring System for 5G Base Stations.....	179
<i>Na Xu</i>	
Study on the Change of Cultivated Land Resources and Driving Forces in Huizhou City Based on Urbanization	188
<i>Yaohong Yang, Tingting Wang, Qinfei Yu</i>	

Research and Application of Key Techniques for Identification of Mainstream Line of the Yellow River Mainstream	194
<i>Yaning Xu, Pingping Yu, Tongyuan Duan, Wenjun Bi</i>	
Research and Application of Key Technologies for Large-Scale Time-Series Data Collection and Sharing in Power Grid WAMS	200
<i>Yingjie Shi, Xiang Wang, Chun Zhou, Jinwei Shi, Shijia Chen</i>	
Digital Deduction Methods for ^{252}Cf Production by High-Throughput Fast Reactor Irradiation	207
<i>Zhenyu Zhang, Hongyi Yang, Mingyu Wu</i>	
Research on Key Technologies for ^{252}Cf Production in the United States	213
<i>Zhenyu Zhang, Hongyi Yang, Mingyu Wu</i>	
A Study on Model Predictive Control of Wave Energy Converters	219
<i>Weilu Tao, Yuhao Zhang</i>	
Research on Distributed Power Quality Monitoring Device with 25.6k Sampling Rate	225
<i>Wenting Wu, Sen Gao, Ziwei Wei, Jindong Deng</i>	
Study on Cooling Effect of Large Gap Asphalt Pavement	231
<i>Chuang He, Shi-Rui Shi, Hai-Yang Jia, Xian-Dong Meng</i>	
Modal Analysis of the Transamerica Pyramid Based on Ansys	240
<i>Yuxuan Li, Xuankai Xu, Yitong Liu, Szetin Li</i>	
Research on Slope Support Control Technology for Deep Foundation Pit Excavation in Clay Soil	246
<i>Wenlong Ye, Jiawei Wang, Yunliang Cui</i>	
Study and Evaluation of Drilling Fluid System for Tight Sandstone Reservoir Protection	251
<i>Xiong Yan, Jianhua Hei, Feng Ren, Shixiong Wang</i>	
Study on the Quantity Change and Driving Force of Cultivated Land Resources in Sichuan Province Based on Urbanization	257
<i>Yongfeng Wang, Chen Yu, Xiangke Yu, Min Yang, Nan Mu, Yulin Chen</i>	
Research on Medium and Long Term Optimal Operation of Cascade Hydropower Stations on Tibet's Lhasa River-Yarlung Zangbo River	263
<i>Haiguo Tao, Jiang Guo, Wei Liu, Ci Chen, Lianjie Li, Yanli Chen, Wei Zong</i>	
Research on the Fault Monitoring Method of the Old Elevator Door System Based on Video	274
<i>Bo Wang</i>	
Compliance Analysis of a Typical Debris Elevator Door Lock Device	278
<i>Bo Wang, Huiqing Ouyang, Wenhua Shu</i>	
Remote Sensing Image Scene Classification Based on Residual Dense Network	283
<i>Genwei Wang, Wan Tang, Zhipeng Su</i>	
Research on Operational Application and Development Trend of Loitering Munitions	288
<i>Shang Jiang, Yan Liu, Lin Zhang, Shang Wu, Yanchao Zhang, Zhishuo Zhang</i>	
Current Status and Development Trends of Research on Collaborative Control Methods for Unmanned Cluster	296
<i>Shang Jiang, Peng Yu, Lin Zhang, Zhonghe Wei, Jiangrun Lin, Ruilai Song</i>	

Study on the Bearing Characteristics of Rapid Curing Pile Formation on Beach Foundation	303
<i>Chun Li, Jiayu Qian, Bing Zhang, Jingwei Liu</i>	
Application of Numerical Simulation of Composite Pile Foundation in Settlement and Reinforcement Analysis of Buildings.....	309
<i>Dianjun Liang, Zhao Li, Xunhai Sun, Shiwei Du, Haichao Liu, Yanhui Zhang</i>	
Experimental Study on Alkaline Pressure Leaching of Tungsten from Tungsten-Tin Ore.....	315
<i>Juan Wang, Yiyu Zhu, Yishan Xu, Xuepeng Li</i>	
Case Analysis of Integral Installation Technique for Offshore Wind Turbines	321
<i>Rui Lou, Wei Zhang, Weiguo Ran, Yingjie Li</i>	
Effect of Curing Conditions on Mechanical and Shrinkage Properties of UHPC	327
<i>Lin Xie, Jiangen Yang, Wei Shu, Ke Chen, Binjian Wang, Liye Zhang</i>	
Characteristic Analysis of Freezing Temperature Field in the Connected Aisle of the Metro Tunnel.....	331
<i>Peiyun Qiu, Yunlei Zheng, Jiacheng Chen</i>	
Research on Temperature Control and Crack Prevention Measures in Strong Confinement Area of Overflow Dam Section of Gravity Dam Poured in High Temperature Season	338
<i>Qi Liu, Gehong Chai, Yu Jiang, Sheng Qiang</i>	
A Simplified Prediction Method for the Ground Vibration Induced by a Pulse Sequence Load.....	345
<i>Futian Zhao, Jun Liu, Yue Wang, Yingkang Yao</i>	
DetCrack: Concrete Crack Detection Algorithm Based on Single-Stage Object Detection Model.....	348
<i>Zi Shi, Jingming Xiao, Sheng Qiang</i>	
Design and Load Deflection Analysis of Large Capacity Load Ball Screws.....	352
<i>Shuai Li, Guimei Lv</i>	
Research on Wind Field Feature Extraction and Prediction Model of Yakou Terrain Transmission Line Driven by Deep Learning.....	358
<i>Shenbing Hua, Jun Lu, Shuanglong Jin, Song Zongpeng, Xiaoqia Ma</i>	
A Research on the Influence of Antivibration Hammer Displacement on the Vibration Characteristics of Transmission Lines Based on SSI-COV	363
<i>Xuanyu Liu, Chunyu Liu, Xinru Zhang, Jiayi Zhang, Tao Guo, Yuming He, Yijing Tian</i>	
Research on Landscape Protection and Restoration Strategy of Xie Village in Cenxi City Based on Landscape Weaving Theory.....	371
<i>Baofeng Liang, Wei Liu, Qin Lai, Chunyin Zheng, Minghui Pan</i>	
Integrated Simulation Architecture and Key Technologies for Ship Air Defense and Anti-Missile Defense.....	379
<i>Lin Zhang, Zhao Jin, Jihua Dou, Bo Wang</i>	

Author Index