2022 World Automation Congress (WAC 2022)

San Antonio, Texas, USA 11-15 October 2022



IEEE Catalog Number: CFP22518-POD ISBN: 979-8-3503-0986-7

Copyright © 2022, Technology Software & Information Enterprises (TSI Enterprises)
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:
 CFP22518-POD

 ISBN (Print-On-Demand):
 979-8-3503-0986-7

 ISBN (Online):
 979-8-88831-444-9

ISSN: 2154-4824

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



A 3D Design of Small Hybrid Farm for Microgrids, pp 1-6

by K. Tehrani, Mo Jamshidi, Jourdain Fozing and Marie Diane Simde

A Development of Wiping Rehabilitation System Using Leap Motion for Patients With Upper Limb Paralysis, pp 7-11

by Kouki Nagamune, Masafumi Kubota, Hideaki Matsuo and Yuta Mifuku

A Machine Learning Approach for Wind Speed Forecasting in Microgrids, pp 12-17

by K. Tehrani, Mo Jamshidi and Yunus Yetis

A Novel Piece-wise Non-singular Fast Terminal Sliding Mode Control for Second-order Nonlinear System, pp 18-22

by Yijun Zhao

A Novel System for Asset Discovery and Identification in Cyberspace, pp 23-27

by Jingi Lu, Xin Qiu, Rui Guo, Lincheng Li and Jiawei Zeng

A Review of Cyber-Resilient Smart Grid, pp 28-35

by Fazel Mohammadi, Mehrdad Saif, Majid Ahmadi and Bahram Shafai

A Statistical Model for the Report of Online Public Opinion Data, pp 36-40

by Qiuming Shang

A fuzzy decision tree reasoning method for network forensics analysis, pp 41-45

by Jiao Ye

A robust epilepsy diagnosis method based on SDAE and CatBoost, pp 46-51

 $by\ Houchi\ Li$

AI Art and Design Creation Industry: The Transformation from Individual Production to Human-Machine Symbiosis, pp 52-56

by Ze Gao, Sihuang Man and Angi Wang

Accurate prediction system for maritime navigation route of rescue ship, pp 57-61

by Xiujun Lu

Algorithm modeling technology of computer aided fractal art pattern design, pp 62-65

by Huang Xiong and Zimin Yao

An Advanced PD Controller for Robot Manipulators with Time-Delay Estimation, pp 66-71

by Tu T. C. Duong, Charles C. Nguyen and Tran Duc Thien

An Analysis of Influential Factors of Information Dissemination among Network Circle Groups and a Study on Countermeasures, pp 72-76

by Qingze Yang and Jingui Jiang

An Examination for Impression Word Extraction of Clothing, pp 77-81

by Noboru Takagi, Hiroyuki Masuta, Tatsuo Motoyoshi and Shodai Ito

An Improved Faster R-CNN Transmission Line Bolt Defect Detection Method, pp 82-85

by Zhenyu Chen, Lutao Wang, Bo Li, Siyu Chen, Jingchen Bian, Fei Zheng and Yanhong Deng

An image denoising method based on depth learning, pp 86-89

by Huijin Wang, Hongxia Liu and Yechun Zeng

Analysis and application of interface design elements for mobile platform, pp 90-94 by Shuxiang Yuan and Aijun Bao

Analysis and decision of cloud vehicle engineering based on genetic algorithm, pp 95-98 by Hanbing Liu, Zhaofan Duan, Zishuai Zu, Jinbin Wang and Mingrui Han

Analysis of Industrial Structure Evolution and Economic Growth Based on VAR Model under Big Data Technology, pp 99-102 by Yipei Cao

Analysis of Laboratory Data Management Based on LIMS System Technology, pp 103-107 by Qingyun Ye and Bo Zhao

Analysis of Online Shopping Time Series Model Based on Data Analysis, pp 108-112 by Linqli Yanq

Analysis of the Clinical Value of MRI Imaging in the Diagnosis of Brain Tumors, pp 113-117 by Yonghui Liang

Application Automation Test Based on Image Processing, pp 118-122 by Zongxing Xie, Yufa Chen and Zuyuan Long

Application and Development of BIM Technology in Construction Engineering, pp 123-127 by $Xu\ Zhang$

Application of Artificial Intelligence Technology in the Electronic Information Age, pp 128-132 by Xiaogang Gong, Qing Cheng, Xingyu Wu, Jiayi Wang and Zhuming Feng

Application of Big Data Technology in Information Security, pp 133-137 by Qiuyan Tian and Huayan Jiang

Application of Computer 3D Printing Technology in Clothing Design, pp 138-141 by Zekai Zhang

Application of Intelligent Analysis Technology in the Design of Substation Condition Monitoring System, pp 142-147

by Ninghui He, Pei Ding, Weiyan Sha, Xiuguang Li, Wen Li and Penggang Li

Application of Intelligent Information Technology in Elderly Care Service, pp 148-152 by Danyang Wang

Application of Silicon Colloid in Garment Printing based on 3D Simulation Technology, pp 153-157 by Shuona Wang

Application of an K-means Improved Clustering Analysis Algorithm in the Design of Resource Management Information System, pp 158-162 by $Meijiao\ Lv$

Automatic Estimation of Neonatal Sleep/Wake States in the NICU Using 3D CNN, pp 163-168 by Yuki Ito, Kento Morita, Tetsushi Wakabayashi, Harumi Shinkoda, Asami Matsumoto and Masako Shiramizu

Automatic Osteomyelitis Area Estimation in Head CT Using Contrastive Learning, pp 169-173 by Hideaki Hoshino, Kento Morita, Daisuke Takeda, Takumi Hasegawa and Tetsushi Wakabayashi

Behavior Analysis of Constrained Multiobjective Evolutionary Algorithms using Scalable Constrained Multi-Modal Distance Minimization Problems, pp 174-179 by Maaya Yano, Naoki Masuyama and Yusuke Nojima

Biochemical Sensing Technology Based on Deep Neural Network Algorithm, pp 180-184 by $Ying\ Zhou$

Causes Analysis of Bridge Disease Based on Machine Learning Method, pp 185-190 by Qiang Xu, Lixin Liu, An Zhao and Jianyong Song

Characteristics of Professional Sharp-Lookout Skills towards Maritime Autonomous Surface Ships, pp 191-196

by Koji Murai, Hitoi Tamaru, Ruri Shoji, Makiko Minami, Kentaroh Kokubun and Eiko Saito

Clinical Study of Cervical Spine Motion Trajectory Based on Computer Motion Capture Technology, pp 197-201

by Huaijing Wang and Ping Wang

Comparative study on the application of 3D printing and digital printing technology in fashion design, pp 202-206

by Fu Cheng

Computer Network Routing Algorithm Based on Genetic Algorithm, pp 207-211 by $Jie\ Ju$

Computer Network Security Encryption Technology Based on Neural Network, pp 212-216 by Zejian Dong

Construction Duration Prediction Model of Power Transmission and Transformation Project Based on BP Neural Network, pp 217-221

by Bo Yu, Xiaomin Liu, Xin Ju, Ye Wan and Yuanyuan Liu

Construction of Big Data Ming System Based on Artificial Intelligence, pp 222-226 by Zilong Xu and Yong Zhu

Construction of E-commerce Service Platform under Hybrid Genetic Algorithm, pp 227-231 by Shaohua Zhao

Construction of Human Geographical Data Statistics and Historical and Cultural Heritage Protection System Based on Data Mining, pp 232-236 by Yuqing Chen

Construction of Intelligent Evaluation System for Video Content Based on Big Data in the Context of 5G, pp 237-241

by Dianyi Wu, Siwei Long, Yan Zhou and Sucheng Chen

Control Mechanism and Evaluation of Network Information Security in the Web-based Big Data Era, pp 242-246 by Haijun Huang

Data Analytics Enabled Power Marketing Analysis and Decision-Making Supporting System, pp 247-251

by Qingjuan Wang, Gang Sun, Fei Lou, Liangfeng Jin and Peng Lu

Design and Finite Element Analysis of the Three Rings Gear Reducer, pp 252-256 by Liang Yu, Jonathan M. Caballero, Ronaldo Juanatas, Yuan Wei, Bo Zhang and Wang Jin

Design and Realization of Composition System Based on Computer Information Technology, pp 257-261

by Hongqiong Duan

Design and implementation of billboard recognition system based on deep learning neural network, pp 262-266

by Bingyue Li

Design of Assembled Wall Panels Module with or without Pipelines for Assembly Decoration Based on BIM Technology, pp 267-271

by Juan Zou, Yongyi Zhang, Yu Lei and Guangqian He

Design of Communication Simulation System Based on High-Level Architecture, pp 272-276 by $Xiaojun\ Liu$

Design of English Online Learning Platform Based on Deep Learning Technology, pp 277-281 by Bing Liu

Design of Online Education Big Data Platform Based on Data Mining and Data Collection Technology, pp 282-286

by Xueyun Zhou, Yongjun Qi, Hailin Tang and Shukun Zhang

Difference between Artificial Intelligence of the Internet of Things and the Traditional Internet, $pp\ 287\text{-}291$

by Yong Zhu and Lang Liu

Digital Signal Processing Technology in the Communication Field under the Background of the Internet of Things, pp 292-296

by Hu Sheng and Weizhi Sun

Discrimination between cynomolgus monkey (Macaca fascicularis) and humans using machine learning and heart rate variability indices, pp 297-300

by Emi Yuda, Itaru Kaneko, Daisuke Hirahara, Junichiro Hayano and Oscar Mozos

Dynamic Group Purchase Model and Group Algorithm in E-commerce Environment, pp 301-305 by Xiaoxiao Wang

Effect of Electrical Stimulation to Vibration-induced Kinesthetic Illusion, pp 306-311 by Koki Honda, Shouta Okunami, Hua Chen, Yasutaka Nakashima and Motoji Yamamoto

Error-Reject Tradeoff Analysis on Two-Stage Classifier Design with a Reject Option, pp 312-317 by Eric M Vernon, Naoki Masuyama and Yusuke Nojima

Evaluation on Brain Activity of Skilled Ship Operators by Near Infra-Red Spectroscopy: Experiment using ship maneuvering simulator, pp 318-323

by Koji Murai, Hitoi Tamaru, Ruri Shoji, Makiko Minami, Kentaroh Kokubun and Eiko Saito

Generation of Two-Dimensional Kinesthetic Illusion in Ankle Joint with Vibration Stimulation, pp 324-329

by Taiki Yamasaki, Satoshi Nishikawa and Kazuo Kiguchi

Image Classification Based on a Weighted CNN Model , pp 330-335

by Hao Peng, Jian Zhou and Shenglan Liu

Indoor and outdoor integrated path planning algorithm for multi-storey buildings, pp 336-340 by Jupu Yuan, Bing Jiao and Lei Wang

Intelligent Analysis Method of Meteorological Data Based on Artificial Intelligence Algorithm, pp 341-345

by Jian Huang, Jianye Cui, Yingwei Zhu and Zhenhua Li

Intelligent Analysis of Substation Images Based on Deep Machine Learning Technology, pp 346-350 by Zhitao Luo and Hongbin Hu

Intelligent Dining Cabinet Based on Internet of Things, pp 351-355

by Qiushi Xiong, Danhong Chen and Ying Zhang

Internet-based New Media in Information Visualization, pp 356-361 by Haixia Yang

Key technologies of physical layer of radio and television wireless network based on 5g wireless communication network, pp 362-365

by Yang Min and Jiaji Zhang

Mining and Analysis of Power Data Models Based on Neural Network Prediction, pp 366-370 by Shaodong Zhao

Natural Disaster Analytics using High Resolution Satellite Images, pp 371-378 by Neda Zand, Nihar Bendre, Sujan Bhattarai, Mo Jamshidi, Paul Rad and Isaac Corley

Navigation System of Coal Mine Rescue Robot Based on Virtual Reality Technology, pp 379-383 by Zenghui Liu

New Energy Charging Pile Computing System Based on BlockChain Technology and Raft Algorithm, pp 384-388

by Xiumin Ran, Chaoshan Xin, Wengang Li, Cheng Chen and Zhongping Yu

News Production and Business Communication Model of Internet Media Based on Big Data Technology, pp 389-393

by Yanxue Guo, Juan Wang and Xiang Zhang

Object Detection-Based Reinforcement Learning for Autonomous Point-to-Point Navigation, pp 394-399

by Tyrell C Lewis, Mo Jamshidi and Alexander Ibarra

Optimal Tracking for Nonlinear Interconnected Dynamic Systems using State Dependent Riccati Equation, pp 400-407

by Anahita Moradmand, Bahram Shafai and Mehrdad Saif

Pediatric Brain CT Image Segmentation Methods for Effective Age Prediction Models, pp 408-412 by Ren Morita, Saya Ando, Daisuke Fujita, Sho Ishikawa, Koji Onoue, Kumiko Ando, Reiichi Ishikura and Syoji Kobashi

Posture Estimation System for Excavator Manipulator Using Deep Learning and Inverse Kinematics, pp 413-418

by Yuki Kurisu, Tomio Shigaki, Nozomu Araki and Yasuo Konishi

Posture Recognition for Human-robot Interaction Based on High Speed Camera, pp 419-423 by Qingwei Song, Naoyuki Kubota and Yuqi Zhang

Practice on the Data Service of University Scientific Research Management Based on Cloud Computing, pp 424-428

by Di Chen

Precision of human workout-time detection using Random Forests and Wearable Sensor Data, pp 429-432

by Emi Yuda, Yutaka Yoshida and Hiroaki Sakamoto

Privacy security protection based on data life cycle, pp 433-436

by Hongjun Zhang, Shuyuan Cheng, Qingyuan Cai and Xiao Jiang

Real Estate Query Algorithm Based on User Preference, pp 437-441

by Keyan Cao, Gongjie Meng, Yukuan Dong and Qiushi Wang

Realization of Optimization of Integrated Operation and Management Mode of Power Grid Regulation and Control Based on Web and App, pp 442-447

by Jingmin Zhou, Yongjie Shi, Jian Shen, Zhiliang Chen and Shenlin Yang

Relationship between Radial Fluid Diffusion and Time Scale Based on Computer Analytical Method, pp 448-452

by Deyu Zhang

Relevance Research of Artificial Intelligence Technology in the Field of Mechanical Engineering, pp 453-457

by Yuelin Chen

Research and Practice on the construction of deep learning algorithm experimental platform, pp 458-461

by He Yu

Research and analysis of intelligent accounting algorithm under the background of big data, $pp\ 462\text{-}466$

by Chao Li and Yong Li

Research and analysis of sensor synergy based on Artificial Intelligence, pp 467-470 by Wenying Qiu and Weixi Gu

Research on Algorithm and controller implementation of EHB system for new energy vehicles, pp 471-474

by Jue Sun and Yi Zhang

Research on Algorithm of big data sensor anomaly diagnosis, pp 475-479

by Wenying Qiu and Weixi Gu

Research on Bridge Health Management Prediction System Based on deep learning, pp 480-483 by Zhichao Liu

Research on Design and Construction of Prefabricated Buildings Based on BIM Technology, pp 484-488

by Yufu Li

Research on Intelligent collar animal husbandry health diagnosis service platform based on Cloud Computing, pp 489-493

by Chaowei Jia and Fei Dong

Research on Video Keyframe Extraction Method Based on Action Analysis, pp 494-498 by Xin Wang, Shuang Feng and Shuiyuan Yu

Research on anomaly detection algorithm of time series data in cloud environment, pp 499-503 by Weibin Guo, Lin Shi and Zhuoru Wu

Research on color enhancement method of planar image in interactive interface of mobile intelligent device, pp 504-507

by Dawei Wang and Xiaomeng Meng

Research on control system design and energy management strategy of hybrid electric vehicle, pp 508-512

by Zhimin Jing and Yan Li

Research on encryption of accounting data using DES algorithm, pp 513-516 by Zehao Wang, Chen Yu, Yi He and Jiang Hao

Research on green building optimization design of smart city based on deep learning, pp 517-521 by Xufeng Liu, Fei Meng and Li Chen

Research on music information retrieval algorithm based on deep learning, pp 522-526 by Xiaoxia Yuan

Research on natural image classification method based on deep learning, pp 527-530 by Zhixiang Lu

Research on power technology and application architecture based on 5g message operation platform, pp 531-535

by Xiaoming Li, Xiaokun Liu, Yibin Xu, Zhiguo Wang and Min Zhang

Review and Assessment of Carbon Nanotube based Actuating Textiles, pp 536-541 by Justin Dalrymple, Marc Doumit and David Green

Ribbon guided AGV vision detection system development, pp 542-547 by Mengnan Liu and Hongbin Li

Risk Assessment of Smart Coal Mine Safety Mining Based on BIM, pp 548-552 by $Xiao\ Wanq$

Risk Decision Evaluation of Mine Gas Explosion Emergency Rescue Based on Vague Set, pp 553-557 by Bo Fang

SOC Prediction of Pure Electric Vehicle Battery Based on Cnn-lstm, pp 558-562 by LingzhiLi

Simulation Research on direct torque control of permanent magnet synchronous motor based on $\mathbf{SVPWM},\,\mathrm{pp}\ 563\text{-}568$

by Qiao Wu

Speed-regulating Magnetic Coupling Based on PLC Control, pp 569-574 by Jing Chen

Stability analysis of high slope based on MIDAS GTS digital simulation, pp 575-580 by $Yang\ Shen$

Status and Issues in Development of MASS, pp 581-585 by Kentaroh Kokubun

Stress and Gaze Point Analysis for Assessment of Skilled Ship Operators' Lookout and Avoidance Maneuvering Skills, pp 586-591

by Koji Murai, Hitoi Tamaru, Ruri Shoji, Makiko Minami, Kentaroh Kokubun and Eiko Saito

Structure design and motion control of manipulator, pp 592-595 by Xuanming Ma, Ziyang Lu and Yunfei Ma

Study of Hip Exoskeleton Technology for Elderly Stability During Walking, pp 596-601 by Thomas Burton, Marc Doumit and Emelie Seguin

Study on optimization of wind load shape coefficient of typical solar greenhouse, pp 602-607 by Kun Wu, Chuanfeng Yao, Ruimin Huang and Suqin Han

The Design of the Operational Monitoring System of the State Grid on the Internet Based on the Computer Architecture, pp 608-613 by Guoping Yao, Wei Yang and Hu Liu

The Influence of Network Culture on New Media Platform under Information Technology, pp 614-617 by Qinghai Wu and Zhiheng Zhang

The Innovation Strategy of State Grid APP Based on Internet+, pp 618-622 by Wei Ou, Jiajia Wang, Guanghai Ren, Lin Bai, Bo Zhang and Wei Zhang

The Research of Regional Agricultural Products E-commerce Based on Complex Adaptive System, pp 623-627 by $Haiying\ Ma$

The Usability of Visual Design Tool Based on Html5, pp 628-632 by Xiao Hu

Three Dimensional Human Condition Model During Walking Based on Emotion Estimation and Muscle Fatigue Evaluation, pp 633-637

by Eiichiro Tanaka, Yu Kai Gong, Yun Fan Li, Jun Yan Yang, Jyun Rong Zhuang and Keisuke Osawa

Urban road quality design supported by multi-source data and deep learning, pp 638-643 by Lianquo Kanq, Jihui Zhanq and Xinwu Jiao