

2020 IEEE 3rd International Conference on Automation, Electronics and Electrical Engineering (AUTEEE 2020)

**Shenyang, China
20 – 22 November 2020**



**IEEE Catalog Number: CFP20R27-POD
ISBN: 978-1-7281-8158-5**

**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:	CFP20R27-POD
ISBN (Print-On-Demand):	978-1-7281-8158-5
ISBN (Online):	978-1-7281-9827-9

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

Table of Contents

Paper ID	Paper Information	Page
AE301	Research on the Effect of Ramp Waveform with Ripple on Electric Energy Measurement in Subway DC Power Supply Xie Yue, Lin Mengyu, Chen Weimin, Yao Li, Zhang Jiangming, Ni Linna	1
AE303	A photovoltaic (PV) power system data reconstruction method based on subset partial least squares (PLS) Yan Zhou, Bofeng Xu, Xian Jia	6
AE304	Research and Implementation of System of Electric Business Expanding Installation Process Based on Graph Database Junfeng Qiao, Aihua Zhou, Hongbin Qiu	10
AE305	A 32-channel FPGA-based multi-phase sampling TDC for RPC detector Zhengwei Xue, Hao Liang, Fanshui Deng, Jiajin Ge	14
AE306	Predictive Active Disturbance Rejection Control of Pan-tilt Visual Tracking System with Parameter Optimization Shusheng Yang, Chaochen Gu, Guangyu Wei, Kaijie Wu	19
AE310	Privacy-Preserving of Power Consumption Big Data Based on Improved Group Signature and Homomorphic Encryption Rixuan Qiu, Ming Ai, Fuyong Zheng, Liang Liang, Yuancheng Li	25
AE311	Electric IoT Perception Layer Data Privacy-preserving Using Multi-identity-based Fully Homomorphic Encryption Rixuan Qiu, Jiawen Yu, Fuyong Zheng, Liang Liang, Yuancheng Li	30
AE315	Application of Multi-resolution Model in Nonlinear Modeling of Electrical Equipment Zheng Cao, Yuanjun Zhou, Na Wang	35
AE316	Performance Evaluation Index Set of Frequency Control Considering Dynamic Demand Response Zhenxing Li, Yaping Li, Jiantao Liu, Zhetong Ding, Kaifeng Zhang	42
AE317	Finite-time Synchronization Control of the Hyperchaotic Systems with Intersecting Terms Zhou Dawei, Xing Jun, Zhang Xiyong	48
AE319	Knowledge Graph Oriented Anti-ship Combat Command Information Ontology Model Wenxin Lu, Zongzhe Nie, Yiwei Lu, Yi Li	55
AE320	Design and Implementation of Energy Storage Photovoltaic Grid-Connected Power Generation System Zhong Guan, Feng Tian	61
AE322	Cross-provincial Day-ahead to Intra-day Scheduling Method Considering Forecasting Uncertainty of New Energy Zhi Cai, Yuxuan Li, Dan Xu, Guofang Zhang, Lun Tang, Xiaming Guo	67
AE323	Blockchain Based on PoR Consensus Mechanism Wenyu Shen, Xuebing Huang, Yang Yu, Lintian Gu, Jiangluhai Pan, Li Ling	73

AE324	Research on Green Suppliers Selection Based on Hesitant Fuzzy Linguistic PROMETHEE Method Tongtong Nie, Huiqing Yu	77
AE328	Construction of RMS Parameters Basic Set of Weapon Equipment System Based on AHP Zang Yanhua, Hou Yanan, Yu Zhouji	82
AE329	Design and Research of The Multifunctional Mobile Manipulator Based on ROS Chen Ling, Xiaoyue Xing, Liwu Liu, Long Zhang, Xueqiang Bai, Chaofeng Liu	86
AE330	Health Management Control Strategy of Tank Storage Based on Artificial Intelligence Shengli Lv, Haizheng Zhang, Feihu Bao	91
AE332	Modeling and Analysis of a Non-linear Electret Electrostatic Energy Harvester Shaohua Niu, Chunhui Gao, Jian Chen	96
AE336	Automatic Portraiture Drawing System Based on Robotic Arm Ma Mingxin, Wang Kexin	101
AE339	Fake account detection with attention-based graph convolution networks Peipei Yang, Zhuoyuan Zheng	106
AE340	A Fault Location Method Based on Improved Wavelet Denoising for Open-line Fault in the Low-voltage Distribution Network Peng Fu, Lihui Yang, Jinzhu Shi	111
AE343	Event-driven Fast Frequency Response Based on Fuzzy Logic Controller Yongji Cao, Hengxu Zhang, Changgang Li, Chen Li, Qi Guo, Yihua Zhu	116
AE345	Simulation of Temperature in 40 Alpha World Cities for 20th Century Using Random Walk Shaomin Yan, Guang Wu	121
AE349	Design and Implementation of an Android-based Broiler Production Environment Monitoring System Wanchao Zhang, Changxi Chen	125
AE350	A Scalable Low-power Accelerator for Sparse Recurrent Neural Networks Jingdian Wang, Youyu Wu, Jinjiang Yang	129
AE351	Photovoltaic infrared meter reading system based on Internet of things Jia Han, Gao Wenjun, Zhou Zhangliao	133
AE354	The Experimental Technique and Practical Scheme of Intelligent Switch in Power Distribution IoT Zhi Li, Haihong Li, Shaofeng Yu, Gang Wu, Yibo Gao, Yifang Su	138
AE355	Risk Assessment of High-voltage Cable System Based on Cable Failure Probability and Failure Loss Yanqun Liao, Baojun Hui, Yilong Wei	143
AE357	Blind Image Quality Assessment Based on Active Learning Lihao Zheng, Genyuan Zhang, Yaping Cai	147
AE358	Application of Deep Learning Algorithm in Generator Fault Prediction Xia Yun, Haiwei Wu	152
AE359	Fault Detection and Identification Method of Power System Based on Deep Residual Network with Spectral Normalization Xiaohua Li, Qibing Zhang	156

AE363	Dynamic Detection of Infants' Video Based on All-Programmable SoC in NICU Mingxin Zhao, Zhenyu Dai, Wei Huang, Kai Sun	161
AE365	Drug-protein Interaction Prediction Based on Improved AdaBoost Algorithm Wanrong Gu, Xianfen Xie, Ziyue Zhang, Yijun Mao, Zaoqing Liang, Yichen He	166
AE368	Adaptive neural network control of hypersonic flight vehicle with actuator constraints Aixue Wang, Shuquan Wang	171
AE369	An Approach for Determining Frequency Deviation Coefficient Considering Different Operating Conditions in AGC System Yaqing Zhao, Xiaoqing Chang, Xiaopeng Li, Zhixian Wang, Kaifeng Zhang	176
AE370	Dynamic Demand Response against Predictable Sudden Load Changes Zhidong Ding, Yaping Li, Kaifeng Zhang	183
AE371	A Novel Design of Monolithic Voltage-Controlled Attenuator Based on E-PHEMT FET Wang Erchao, Wang Qiaonan, Kong Weidong, Zhang Jie	189
AE372	Low Power Consumption Data Transmission Module Based on WOR Technology Zhenxuan Wang	194
AE375	The Motion Planning of Hexapod Robot in the Non-Structural Condition Yanan Miao	200
AE376	Malware Detection Based on Feature Library and Machine Learning Dongfang Hu, Bin Xu, Jun Wang, Linfeng Han, Jiayi Liu	205
AE377	Research on the Temporal and Spatial Law of Respiratory Dust Concentration in Fully-Mechanized Mine Zheng Zhao	214
AE379	Research on Power Quality Monitoring System Based on Smart Grid Information Processing Meiming Fu, Kang Wang, Bo Xu, Shuming Xu	219
AE380	Research on Key Technologies of Smart Grid Signal Processing Sensors Lin Pang, Zhidan Lan, Xingpei Wu, Pei Wang	223
AE381	A New Scheme of Level Difference Protection of Distribution Network Yanxia Chen, Jun Gu, Xijuan Yu, Tao Lin, Zhiyong Wang, Liping Lv	227
AE383	Optimal Planning of Battery Storage for Flexible HVDC Network with Pumped Storage Hydropower Plants Minjian Cao, Huan Xie, Yifan Song, Fulin Cai, Shanying Li, Xue Xia, Zechun Hu	233
AE385	The epoxy packaging materials modified by flexible monohydroxy polyether chain for high frequency power transformer Kun Wang, Wei Yang, Yun Chen, Chong Zhang, Li Yin, Xin Chen, Yushun Zhao, Yu He	239
AE386	Resolving defects in bistable smectic-A liquid crystal displays Matiss Maltisovs, Dmitrijs Pikulins, Kristians Krumins, Ainars Ozols	243
AE388	Coordinated Frequency Control of Generation and Demand Side Considering Demand Side Resource Callback Characteristic Zhenxing Li, Xin Shan, Zhixian Wang, Kun Yuan, Ying Wang, Kaifeng Zhang	248
AE390	Output characteristics simulation analysis of PEMFC Chen Xi, Wang Qian, Peng Peipei, Chen Junhui, Yan Yajie	253

AE391	The Holographic Management System based on KKS Code and 3D Digital Model for Equipment in Smart Hydropower Stations Yuechao Wu, Liwei Liu, Yuanlin Luo, Bo Zheng, Zhenqiu Feng, Dongdong Zhang, Xinyu Wang	259
AE392	Design of embedded optical cable anti external damage early warning system based on lonely forest statistical algorithm Xue Yang, Shilun Zeng, Xiaofang Wang, Lipeng Zhu, Jianbing Li, Liang Chen	264
AE394	Improve Mandarin Speech Recognition Using Simple Recurrent Units and SpecAugment Qingyuan Zhang, Xuanjie Liu	268
AE395	Chinese Text Error Correction Method Based on Prefix Tree Merging Zongyu Yang, Hao Zeng, Hongyan Li	272
AE396	Multi-Scale Hybrid Attention Cascade Network for Pancreas Segmentation Xirui Zhang, Jun Wu, Shangyong Fan, Ming Li, Gang Yuan, Yin Zhang, Zhaobang Liu	277
AE397	A Shilling Attack Model Based on TextCNN Dongfang Hu, Bin Xu, Jun Wang, Linfeng Han, Jiayi Liu	282
AE399	Design and Simulation of Remote Monitoring System of 3D Printer Based on Cloud Platform Xiuxia Zhang, Jinqun Chu, Shuyi Wei	290
AE400	The hybridized equilibrium and particle swarm optimization algorithms Juan Zhao, Zhengming Gao, Yuan Tian	294
AE401	A Local Spatial Information and Lp-norm based Fuzzy C-means Clustering for Image Segmentation Yongchen Zhou, Xiangyu Zou, Geng Lan, Xinru Dai, Ying Wen	299
AE402	The hybridized slime mould and particle swarm optimization algorithms Zhengming Gao, Juan Zhao, Suruo Li	304
AE403	Detection of Abnormal Data Flow at Network Boundary of Renewable Energy Power System Zhang Linggang, Liu Yuwei, Jiang Xue	309
AE405	Sparse KELM Online Prediction Model Based on Forgetting Factor Jinling Dai, Aiqiang Xu, Xing Liu, Ruifeng Li	313
AE407	Pollution Source Information Recommendation Based on Collaborative Filtering Algorithm Lina Wang, Xiuying Sun	319
AE408	Algorithms for Basis Sparsity Non-negative Matrix Factorization Dan Zhou, Qiaochan Yu, Jie Wen	323
AE410	A method for specific emitter identification based on surrounding-line bispectrum and convolutional neural network Hao Ji, Tao Wan, Wanan Xiong, Jingyi Liao	328
AE411	Automatic Scoring System for CET-4 Compositions based on Seq2Seq+Bi-LSTM Model Jun Zhao, Jiulong Chen	333
AE412	Comparison Survey of Mobility Models in Vehicular Ad-Hoc Network (VANET) Jin Tian, Fudong Meng	337

AE413	A Multi-Loop Control for Software Defined Control System Xiaoxiang Ji, Jianghong Li, Jiao Ren, Yafeng Wu	343
AE416	Research on Vision-based Autonomous Landing of Unmanned Aerial Vehicle Run Ye, Chao Tao, Bin Yan, Ting Yang	348
AE417	An IO device recompose algorithm supporting virtual machine migration on multiple hosts Jinyong Yin, Jian Yang, Hongbin Yang	355
AE419	Geometric Match Filter and It's Response to Dense Fake Signal Liang Pu, Wang Min, Fan Hongqi	359
AE420	Sentiment Infomation based Model For Chinese text Sentiment Analysis Gen Li, Qiusheng Zheng, Long Zhang, Suzhou Guo, Liyue Niu	366
AE421	Forward and Inverse Kinematics Modeling and Simulation of Six-axis Joint Robot Arm Based on Exponential Product Method Yunhao Pan, Jingdi Tang, Qingyuan Zhao, Shengyi Zhu	372
AE423	Generating Reasoning Plan of SWRL Rule with Spark Wan Li, Dongbo Ma, Xiuhua Geng, Li Zhu, Zhong Wan, Hong Li	376
AE424	Research on air training evaluation model based on improved KNN algorithm Fengqin Wang, Tingxue Xu, Jing Yu	380
AE425	Traffic Flow Prediction Based on Stack Auto-Encoder and Long Short-Term Memory Network Yin Tian, Chenchen Wei, Dongwei Xu	385
AE427	An Improved ORB Algorithm Based on Optimized Feature Point Extraction Hao Sun, Peng Wang, Dong Zhang, Cui Ni, Hongbo Zhang	389
AE430	A Task Allocation Scheme for Protecting Location Privacy in Vehicle Ad Hoc Networks Yiou Zhao, Xinyu Meng, Burong Kang	395
AE432	Language Chatbot – The Design and Implementation of English Language Transfer Learning Agent Apps Nuobei Shi, Qin Zeng, Raymond Lee	403
AE433	Paraphrase Identification Based on ResNeXt Yongan Li, Danyang Liu, Gongshen Liu	408
AE435	Analysis of PoisonIvy Virus and Research on Anti-anti-virus Methods Zhang Long, Li Baixue	413
AE436	Generative Adversarial Network combined with multitasking to X-ray cardiac segmentation Wei-Liang Huo, Xiao-Lin Tian, Yu Lyu	418
AE438	Research on RFID technology security Hongqi He, Hui Lin, Ruimin Wang, Huanwei Wang	423
AE439	Analysis, Application and Research of the Index of Urban Resumption of Work and Production Based on Energy Big Data Wang Wei, Zhang Xie, Li Duanchao, Chen Shuo, Xiao Jiakai, Xu Zhongping	428
AE440	Research on RFID attack methods Yisen Wang, Jianjing Shen, Xiaofeng Guo, Weiyu Dong	433
AE444	Application of Lightweight Multi-pooling Convolutional Neural Network in Satellite Cloud Image Recognition Xiang Wei, Feng Wang, Xi Chen	438

AE445	Research on Feature Extraction Method of Fundus Image Based on Deep Learning Xiaohui Cheng, Xianfeng Feng, Wei Li	443
AE447	Design of mobile garbage collection robot based on visual recognition Zhoulin Chang, Linzhao Hao, Hanhong Tan, Wenjing Li	448
AE450	Design and Implementation of Scalable DBF Multi Beam Receiving Module Based on Multi-level FPGA Zhihuang Lin, Weiling Guo, Shangyu Xie, Zhaojian Jin	452
AE451	Research on Lamb wave resonator and its applications Leyi Wang	456
AE452	Design of Intelligent Car Door Control System Qi Liu, Shaocheng Qu	460
AE453	Automatic Algorithmically Generated Domain Detection with Deep Learning Methods Yihang Zhang	463
AE455	Automatic Chinese Proofreading Based on Deep Learning Haozhe Chen	470
AE457	Research on Optimal Selection of FSC Racing Muffler Liang Yi, Changri Li, Shudao Wang, Tianyi Song, Jierong Huang	474
AE458	Face Attribute Recognition with Multimodal Fusion Ming Zhao, Chang Liu, Zeyu Zheng, Qingfeng Yao, Nan Yang, Yuanye Xu	478
AE459	Study on the Parameters of Cavity System-generate Electromagnetic Pulse (SGEMP) Calculation Model Base on Maxwell-Valsov Equation Wei Wu, Mo Zhao, Jinxi Li, Hui Zhou	484
AE462	Research on Enterprise Computer Network Security Protection Technology Based on Information Technology Yue Guo, Jie Xu, Hui Yuan, Yan Zhuang, Guowei Zhu, Yintie Zhang	488
AE465	Image Noise Estimation with Using Pre-trained Conventional Neural Network Lianming Hu	492
AE466	Design of DTMF signal experiment system based on MATLAB Jiahui Long	496
AE468	Short-time and Spectrum Features of Noises Made by Vehicles for Recognition Ding Kai, Zhang Shigong, Zhang Kesheng, Lei Zhen	501
AE470	Basic Methodologies Used in NLP Area Yanzhe Wang	505
AE473	Transform: Complicating Control Flow by Inserting Confusion Instructions Zhou Hongwei, Zhang Yuchen, Qie Guanlin, Wu Dangyang, Yuan Jinhui, Cao Xuyang	512
AE477	Research on Resilience Optimization of LTE-M Train-wayside Communication System Based on SMDP Guo Bodi, Wang Ruifeng	517
AE480	Design of intelligent micro network group intelligent operation and maintenance management platform based on Cloud Architecture Zewei Pu, Li Wan, Min Wu, Qimiciren, Wenya Wang	523

AE485	Research on Neutral Point Potential Balance of Three-phase Three-level Vienna Based on Improved Fuzzy Control Peng Hu, Yang Zhao, Junzhe Liu, and Tingting Chen	527
AE486	A weighted positioning method for high-frequency ground wave bistatic radar Yang Bai, Weibo Deng, Xin Zhang	534