2022 IEEE 4th International Conference on Civil Aviation Safety and Information Technology (ICCASIT 2022)

Dali, China
12-14 October 2022

Pages 1-743

IEEE Catalog Number: CFP22WTF-POD
ISBN: 978-1-6654-6767-4

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:	CFP22WTF-POD
ISBN (Print-On-Demand):	978-1-6654-6767-4
ISBN (Online):	978-1-6654-6766-7

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

Table of Contents

CA001 **An Improved YOLOv3 Airplane Target Detection Algorithm Based on Multi-Scale Feature Fusion** 1
Jiaming Li, Ruihao Chen, Hongpeng Cai

CA003 **Research on Image Classification Improvement Based on Convolutional Neural Networks with Mixed Training** 7
Yongyue Zhang, Junhao Zhang, Wenhao Zhou

CA005 **A Single-reader Indoor Localization Method Based on Multi-objective Evolutionary Algorithm Optimization of Deep Model** 11
Jiahui Liu, Lvqing Yang, Minghong Liao

CA008 **Research on detection method of mask wearing based on improved YOLOv5** 15
Jianyang Chen, Xiuling Wang, Renqing Zhang, Ying Chen, Guangzhen Du

CA009 **A Framework for Multi-Variate Time Series Anomaly Detection Based on Behavioral Patterns in Electric Vehicles** 20
Wenli Jia, Chang Yang

CA010 **Research on CCAR Section 25.1431 and EMC Compliance Verification Technology** 25
Yuezhi Huang, Zhihao Liu, Yue Liu

CA012 **Service Restoration Algorithm of Distribution Power System** 30
Xiaoyun Huang

CA013 **Research on Internet of things control system based on EEG signal** 35
Yixin Liu, Shiwen Chu, Pengfei Xie, Yan Zhang

CA014 **A Prediction Method of 5G Base Station Cell Traffic Based on Improved Transformer Model** 40
Shang Yimeng, Liu Jianhua, Ma Jian, Qiu Yaxing, Zhang Zhe, Liu Chunhui

CA016 **Research on trusted sharing and privacy computing technology of energy data in supply chain based on alliance chain** 46
Xinyan Wang, Ying Zhu, Xiaokun Yu, Yong Liu, An Hu, Jingli Jia, Zhiyong Wang

CA017 **Sub-tree Division Based Routing and Spectrum Assignment for Multicast in Fixed/Flex-grid Optical Networks** 51
Feng Wang, Ziluo Liang, Mengxuan Ma, Xiaolong Li, Xiaosong Yu, Yongli Zhao

CA019 **Scheduler Architecture and Key Features in Distributed Computing** 55
Xuemin Wang, Yang Han, Xuyang Yao

CA020 **Joint Task Segmentation and Server Selection for Real-time Stream Data Analytics in Edge-cloud Environments** 60
Fei Xia, Yingcheng Gu, Kai Liu, Yu Song, Ming Tang, Tuo Cao

CA022 **Hyperledger Fabric Consensus Optimization Method Based on Endorsing Nodes** *65*
Zhurong Wang, Min Zhu, Yichuan Wang, Xinhong Hei

CA024 **Resampling algorithm based on sample similarity and variation coefficient** *69*
Zhu Jiafeng, Li Ruifeng, Chen Xia, Chen Gui

CA025 **A hybrid improved LSTM-CNN model for Chinese stock price trend prediction** *76*
Xinyi Xu, Minggang Yang, Heng Liu, Defu Zhang

CA026 **Research on DPOS Consensus Mechanism Improvement** *84*
Meina Liu, Minsheng Tan, Peiliang Lei

CA028 **A Share Service Protection Method for Deterministic Network in Space-Air-Ground Integrated Network** *89*
Shuopeng Li

CA031 **Traffic sign detection research based on G-GhostNet-YOLOx model** *94*
Wang Zhao, Li Danjing

CA033 **Research on Tibetan-Chinese Cross-language Semantic Retrieval Based on Word2Vec** *99*
Yu Xiao, Cuo Yong, Xiaofei Liu

CA034 **Fast DOA Estimation Algorithm Based on Phase Coded MIMO Radar** *103*
Kailun Zhao, Jingping Liu, Lei Wu

CA035 **A Quantum Blind Signature Network Coding Scheme Based on Particle Entanglement** *108*
Xu Guangxian, Ni Jibei, Ma Fei

CA037 **Design and implementation of electromagnetic spectrum monitoring data compression based on JPG algorithm** *113*
Xueqing Zhang

CA038 **Vehicle detection method based on improved YOLOv3** *117*
Cheng Qi, Xizhong Shen

CA040 **Design of continuity services for 5G vehicle-road collaboration in cross-border scenarios** *122*
Chenqing Zhang, Shiduo Ning, Liangjie Yu, Jinlong Chu

CA041 **Design of Advanced Driving Test Cases in 5G Cross-border Roaming Scenarios** *127*
Yuchen Wang, Chaozhe Han, Yu Yang, Yuanfei Fang

CA042 **Case design of overtaking test in 5G vehicle-road collaborative system** *131*
Longfei Ma, Jiajian Li, Zihui Zhang, Xinran Qu

CA044 **The case design of testing vehicle platooning in a vehicle-road cooperation system for a 5G cross-border scenario** *135*
Peng Zhao, Wenhao Wang, Chao Ji, Jiajian Li

CA045 **Power Communication Information Network Coverage Optimization Based on Improved ABC Algorithm** *140*
Xinyao Feng, Yingwei Liang, Taipeng Zhu

CA046 **DCGAN-Based Power Trading Market Dispatch Model Design** *144*
Zewu Peng, Yingwei Liang, Yanning Shao

CA049 **Malicious Node Detection Based on Self Encoder and Adaptive Kernel Density Estimation** *149*
He Zhifan, Li Weihua, Jiang Hefang, Liu Tao, Ma Yue

CA050 **Optimization Algorithm of Logistics Distribution Path Based on Deep Learning** *154*
Luyi Jiang

CA053 **Research on Dynamic Q-value Anti-collision Algorithm Based on Tag Grouping** *159*
Renqing Zhang, Xiuling Wang, Jianyang Chen, Ying Chen

CA054 **Experimental Comparison of Collaborative Filtering Algorithm Based on Federal Recommendation** *164*
Zijia Xu, Jiashi Sun, Jiang Zhang, Yupeng Liu

CA056 **Design and implementation of FPGA online experiment platform** *169*
Xu He, Jianliang Lu, Wei Xu

CA057 **Design of an unmanned aerial vehicle monitoring system for transmission line inspection with no fly zone warning** *175*
Xinghua Zhang, Heyan Huang, Cheng Jiang, Wangchun Luo, Fu Zhang

CA058 **A Novel Two-Stage Directed Graph Similarity Determination Algorithm** *180*
Zhou Hongwei, Huang Xiaojie, Ke Zhipeng, Zhang Yuchen, Yuan Jinhui

CA060 **Design of Intelligent Epidemic Prevention Vehicle Control System Based on Single-Chip Microcomputer** *185*
Xiaolin Li

CA061 **Attention-based Deep Residual U Neural Network on Brain Tumor Segmentation Algorithms** *191*
Shi Yan, Weixing Yang, Junfei Zhao

CA064 **An Anti-jamming Algorithm for GNSS Receiver with Null Phase Shift and Delay** *197*
Yu Baoguo, Hao Fang, Xu Shaobo

CA065 **Study of cooperative adaptive cruise control system based on model predictive control** *201*
Huijie Duan, Xiujing Gao, Jinwen Wang, Xin Liu, Guibin Sun

CA066 **Research on Detection Technology of Tiny Leak Signal Based on Empirical Mode Decomposition** *208*
Rong Yan, Ziqiang Zhang, Yunlong Wu, Xiumei Lyu, Jingyu Zhang, Chong Hou, Xuewei Zhang, Yuefeng Li, Qiangqiang Huang, Jianying Wang

CA068 **License Plate Recognition Based on Three Different Neural Networks** *215*
Handong He, Songcheng He, Tianhao Huang

CA070 **Research on the Application of Time Series Forecasting Model Based on Encoder-Decoder LSTM Model** *221*
Runlin Huang, Xuzheng Ren

CA071 **Correction of Gamma Distortion in Fringe Projection by Compensation Image** *225*
Zhou Zhang, Tianyun Chen, Zhanhao Liu

CA072 **4D Recurrent Neural Network Based on Time-Space-Frequency Domain Fusion for EEG Emotion Recognition** *230*
Hongyang Yang, Meixia Wang

CA075 **Research on application of mask wearing based on YOLOv4 model** *237*
Ruijie Peng

CA077 **YOLOX-based dynamic vehicle target detection** *244*
Mingshen Wang, Xufei Zhuang, Haitong Zhao

CA078 **Analysis of Pipeline Leakage Monitoring Based on Inter-Frame Difference Method** *252*
Xinyu Yang, Suhui Liu, Lulu Zhang

CA079 **A Study of Signal Modulation Recognition Based on Wavelet Analysis and Random Forest** *257*
Yuanmeng Song, Jiarui Mao, Jiaxi Liu

CA081 **Substation Point-to-Point Closed-Loop Intelligent Debugging Scheme Using Substation Telecontrol Automation Technology** *263*
Yu Wang, Changbao Xu, Mingyong Xin, Jianyang Zhu, Qiji Dai, Dunhui Chen, Yumin He

CA082 **Intelligent Forecast Model of Octane Number Loss Using BP Neural Network and Random Forests** *268*
Jun Ma, Jinwei Lin

CA083 **Research on engine intelligent control system of a series hybrid electric vehicle** *272*
Guorui Jia, Chuan Chen, Hongwei Li, Bocheng Feng

CA086 **Application of kinematic constraints for smart INS/DVL integrated navigation** *277*
Wanli Li, Mingjian Chen, Zhuo Chen, Quancai Zhang, Junzheng Li, Honglei An

CA087 **Research on Application of GIS UHF Intelligent Sensor** *282*
Dongming Jia, Weiquan Liang

CA088 **Application of Wavelet Analysis and Intelligent Computing in Bearing Fault Diagnosis** *288*
Guangdong Chen, Zhihao Jin

CA090 **Path planning of intelligent bionic wall climbing robot based on GPL model** *293*
Bo Jiang, Dan Gu

CA092 **Design of Accurate Intelligent Positioning System through UWB Technology** *300*
Qian Xu

CA093 **Research on Intelligent Deformation Monitoring Data Prediction through Particle Swarm Optimization and Support Vector Regression Model** *305*
Xiaohong Yan, Jingwen Zhou, Yanxiang Rong, Xumin Li

CA095 **Study on intelligent control system of transmission conductor galloping considering the influence of multi-degree-of-freedom coupling** *311*
Ying Lan, Xinpeng Liu, Lei Zhou, Junrong Wen

CA096 **High-Resolution Stereo Matching Network Based on Attention Mechanism and Intelligent Computing** *316*
Heng Yue, Xiaoming Huang, Minghui Lin, Ming Gao, Yang Li, Ling Chen

CA097 **The combination of transformer and CNN in computer vision** *321*
Yibo Gao, Shengbin Shi, Ziwen Sun, Chong Ling

CA099 **Research on Intelligent Power Electronic Control System of New Energy Vehicles Based on Computer Big Data** *326*
Qi Fang, Yang Heng

CA100 **Research on Intelligent Automatic Charging Control System of Electric Vehicle Trip Computer** *331*
Yinquan Hu

CA101 **Design of a Terrain and Power line Warning System for General Aviation** *338*
Qi Chen, Wencai Wu, Yanfeng Mao, Jian Wan, Yongye Gao, Zemiao Zhang, Tao Wu

CA103 **An Multi-Data Fusion Investigation Method Research for Civil Aviation Turbulence Events** *342*
Lin Wang, Qi Chen, Junjie Wu

CA104 **An Algorithm for Aircraft Tailstrike Screening Based on Geometric Constraint Model** *346*
Chunxiang Li, Minzhu Zhong, Xiuting Zhou

CA106 **Risk Assessment and Prediction of Aircraft Fleet Hard Landing Based on QAR Exceedance Events** *352*
Wang Xiangzhang, Wang He, Xu Bohao

CA108 **Safety Assessment of Air Traffic Control Support for Night Operation of Plateau Airport** *358*
Li Yu, Yang Le, Zhang Rui, Dong Zhe

CA110 **Knowledge Graph of Civil Aircraft Approach and Landing Flight Safety Research Based on Citespace Sustainability Analysis** *363*
Nongtian Chen, Yongzheng Man, Weifeng Ning

CA113 **A Study on Civil Aviation Pilots Sleep Status Change on Ultra-Long-Range Routes** *370*
Min Luo, Yu Li, Xingyu Liu, Xuhui Wang, Chunyang Zhang

CA114 **Design of Keyword Extraction System for Aviation Safety Information Based on ArcGIS Technology** *374*
Ting Ma, Nongtian Chen

CA116 **Analytic hierarchy clustering research of all cargo airlines based on safety information** *379*
Nan Liu, Chuanqi Sun, Haofeng Wang, Xiang Li, Xiuting Zhou, Ying’er Zheng

CA118 **Evaluation of dangerous goods sources in air transportation by chromatography** *384*
Yan Zhang, Zhijun Lin

CA120 **Research and Validation on Evaluation Requirements for Flight Simulator Full Stall Model at High Angle of Attack** *388*
Shidong Ma, Yajing Wang, Tao Yu

CA122 **Study on the Differences of Civil Flight Regularity Indicators under Different Statistical Standards** *394*
Qian Li, Xinyue Zhang, Jiahe Miao

CA124 **Research on Air Transportation Accident Symptoms Based on Polynomial Discrete Grey Model** *400*
Wang Yuanying, Liu Jue

CA126 **Application of GoAhead in MLAT Receiver** *404*
Yuhao Fan

CA128 **Digital Twin Civil Aviation Research Airport for Aircraft Security and Environment Protection** *408*
Jia Liu, Hao Yang, Hongchuang Niu, Mingjie Guan, Weishi Chen, Qingbin Wang, Dacong Zheng, Ping He

CA129 **Design of Hazard Management Method Based on Blockchain** *413*
Mingjie Guan, Jun Liu, Zhengning Yu, Jia Liu, Dacong Zheng, Ping He

CA131 **Numerical Simulation of Civil Aircraft Ditching Floating Performance Based on STAR-CCM+ and Archimedes' Principle** *418*
Chen Zhou, Huaiyuan Wang

CA132 **Visual SLAM Based on Lightweight SuperPoint Network** *422*
Yunhong Liu, Zhibin Li

CA134 **Fast Localization and Tracking of Visual Target** *428*
Hui Yao, Donglin He, Yunfeng Sui, Shixuan Zhao

CA136 **A Short-term Aircraft Trajectory Prediction Framework Using Conditional Generative Adversarial Network** *433*
Qinzhi Hu, Guoxin Huang, Han Shi, Yi Lin, Dongyue Guo

CA137 **Design of approach airspeed monitoring program based on minimum ground speed function** *440*
Chen Zhang, Jiahe Miao, Liang Zhu, Yuxin Zhang, Jingru Han

CA139 **Three-dimensional Monocular Image Reconstruction of Indoor Scene Based on Neural Network** *445*
Chunxiu Shi, Jie Chen, Ruihan Luo

CA141 **The Integrated Evaluation of Airport Ground Movement Performance Based on GA-BP Network** *450*
Bo Wang, Xiaofei Peng, Gang Su, Qingyuan Yang, Zhongjin Zhang

CA142 **Improved Binary Space Partition Method of Airspace Sectorization Considering Multiple Scenarios** *456*
Liwei Wang, Xiaofei Peng, Feifei Xu, Jianxiang Xing, Zhuang Zhou, Xiaoqiang Tian

CA144 **Research on Dynamic Obstacle Avoidance Path Planning Strategy of UAV** *461*
Yafei Li, Minghuan Liu, Xiaoyue Zhang

CA146 **Civil Aircraft Hard Landing Prediction Based on PSO-ARIMA Model** *466*
Xiangxin Wu, Hui Yu, Yanli Ren

CA147 **Real-time object tracking system using PTZ camera** *471*
Hongchuang Niu, Jia Liu, Zhengning Yu, Dacong Zheng, Ping He, Feifei Wang

CA150 **A Study on Vestibular Illusion of Flying Cadets Based on CSA-ELM Method** *479*
Ting Pan, Haibo Wang, Haiqing Si, Haibo Liu, Gen Li, Mengyue Xu

CA152 **Design of TACAN airborne test device for UAV flight inspection based on SDR** *486*
Hang Xiao, Xiaofeng Shi, Xinru Liu

CA153 **Exploring Spatio-temporal patterns of power faults in Guangzhou** *490*
Guoping Feng, Yubin Xu, Yilin Shi

CA156 **Data-driven traffic dynamic understanding and safety monitoring applications** *496*
Shizhong Zhou, Yi Hu, Dongyue Guo, Yi Lin, Bo Yang

CA157 **Numerical Simulation and Analysis Method of Civil Aircraft Ditching Based on MSC.Dytran** *501*
Huaiyuan Wang

CA159 **Low-altitude Aircraft Surveillance Approach Based on ADS-B and Photoelectric Turntable** *504*
Jing Guo, Yubin Xu, Ershen Wang, He He, Shanbin Ji, Song Xu

CA161 **Research on Route Flow Prediction Method Integrating Ontological Properties of Airspace Resources** *509*
Hongfang Shi, Ying’er Zheng

CA162 **Short-term Trajectory Prediction for Small Scale Drones at Low-attitude Airspace** *514*
Renwei Zhu, Zhao Yang, Jun Chen, Na Li, Zhijie Zhang, Yilu Song

CA167 **Design and Implementation of a Secure Peer-to-Peer File Transfer System Based on IP Multicast and Diffie-Hellman Algorithm** *520*
Jun Liu, Yuying Zhu, Hao Wang, Jia Guo, Mingjie Guan

CA168 **Towards Safer Flights: A Multi-modality Fusion Technology-based Cognitive Load Recognition Framework** *525*
Yuhan Li, Ke Li, Shaofan Wang, Yuangan Li, Jia’ao Chen, Dongsheng Wen

CA170 **Animation and Decoding of EAFR Data Downloaded of C919 in Development** *531*
Chunxiang Li, Yuxin Zhang, Minzhu Zhong

CA172 **Detecting Anomalies in Quick Access Recorder Data** *537*
Binwen Wu, Xiaoyue Zhang, Ming Xiao, Huabo Sun, Binbin Lu

CA173 **Application of Virtual Reality Technology to Assist Civil Aviation Safety** *542*
Lei Yang, Pu Chen, Ming Xiao

CA175 **Motion Detection of Bird Based on Optical Radar** *550*
Kaizhen Wei, Weiqian Liu, Yunfeng Sui, Wenke Guo, Guoling Yu

CA176 **Establishment of Flight Operation Risk Model Based on Entropy Method and FAHP** *555*
Lingling Tian, Bin Liu, Hao Cheng

CA178 **An improved robust filtering for GPS/IMU integration navigation** *560*
Zhengwu Liu, Rui Sun, Jizhi Mao

CA179 **Automatic Level Research on UAS Distributed Operation Based on Machine Learning** *564*
Hao Cheng, Lingling Tian, Bin Liu

CA181 **Gaze tracking technology for flight simulator** *569*
Jiming Liu, Renshu Gu

CA182 **Design of Real-Time Flight Data Analysis System Based on the ATG Network** *574*
Siming Liu, Ming Xiao, Liang Li, Zhao Li, Chuanyang Zhang

CA184 **Data Evidence-Based Aircraft Continuing Airworthiness Management Assistant System and Applications** *579*
Jiahe Miao, Chen Zhang, Yang Jiao, Xinyue Zhang, Qian Li

CA186 **Surprise Emotion Recognition of Pilots inside the Simulator Based on Multi-view Learning** *587*
Jinwei Zhang, Dongsu Wu, Dawei Chen, Yiquan Shang, Weiwei Zhang, Fangping Wei

CA187 **Research on flight arrival delay prediction based on support vector machine** *593*
Peng Hu, Jia Hou, Jianping Zhang, Qingyuan Yang, Lei Cao, Liwei Wang

CA188 **Correlation and binding technology of passenger security check information based on video target detection and tracking** *599*
Hangting Zhang, Yijie Niu, Haitao Qin, Shenghui Zhang, Xi Chen, Wei Wu, Kaihui Li, Shulong Zhang, Xin Deng, Xin Jin

CA190 **A multi-modal feature fusion method for pilot expression recognition** *605*
Jingjing Xiao, Renshu Gu, Hongbin Gu

CA192 **SDP Security Control Technology Based on Zero Trust** *611*
Weipeng Xu, Yi Xie, Ming Lv, Han Sun, Anran Li, Haimeng Zhao

CA193 **Design of image transmission system based on TCP/IP protocol** *617*
Huimin Zhang, Guixia Guan, Haimeng Zhao, Xintao Liu, Letang Xue, Chuan Xiong

CA195 **The Capacity Analysis of Vehicle ADS-B Transmitter on Airport Surface** *623*
Pengfei Zhong, Le Zhang, Xuan Zheng

CA196 **Analysis of the Key Precursor Indicator Parameters of Runway Excursion Incidents Based on Density Clustering Algorithm** *627*
Jingru Han, Yang Jiao, Chen Zhang, Chun Wang, Binnan Shen

CA198 **Establishment and Verification of a Linear Regression Model for QAR Radio Altitude Correction** *631*
Yang Jiao, Yuxin Zhang, Jingru Han, Chen Zhang, Binnan Shen, Rongshun Huang

CA200 **Power big data mining with local technique: a survey on power faults** *635*
Youfei Lu, Guoping Feng, Hongyu Yao, Xuhui Wang, Binbin Lu

CA201 **Fault handling Analysis of Doppler Omnidirectional Rado Range Equipment** 639
Ren Hongrun, Zhao Qingtian, Xia Tianqi, Dong Liyao

CA203 **Fault Diagnosis of Landing Gear Extension and Retraction System Based on Fuzzy Fault Tree and Bayesian Network** 644
Yuan Jing

CA204 **Research on Airworthiness System and Design Path of Airborne FPGA** 648
Jiaxin Zhang, Hao Wang, Minmin Liu, Yao Mo, Chenglong Zhong

CA206 **Research on Vision/Radar Sensor Fusion Positioning Algorithm Based on Strong Tracking Filter and Unscented Kalman Filter** 653
Junji Qin, Cong Li, Hui Jing, Gang Wang, Junyu Chang, Guo’an Zhong

CA207 **Multi-view Fused Detection of Simulator Sickness Based on Deep Generalized Canonical Correlation Analysis** 659
Yiquan Shang, Dongsu Wu, Dawei Chen, Jinwei Zhang

CA208 **Pilot Hand Detection Based on Semi-Supervised Learning** 664
Ying Qian, Renshu Gu, Hongbin Gu

CA210 **Sleep Analysis for Fatigue of Crewmembers with Deep Multi-Task Learning** 670
Xingyu Liu, Yu Li, Xuhui Wang, Wanqing Xie, Xiaofeng Liu, Xiangdong Xun

CA212 **2D-DOA Efficient Estimation Algorithm Based on IRD-MUSIC for Frequency Hopping Signal** 675
Xinyong Yu, Bing Liu, Gongda Qiu, Chenchen Tian

CA215 **Applications on Deep Reinforcement Learning in Traffic Signal Control** 680
Haolun Sun, Yilong Sun, Boyang Yu

CA216 **Foggy Weather Traffic Detection System Based on UAV Gimbal Camera** 686
Changjiang Lei, Tianle Yang, Zhihao Li

CA218 **Vehicle Detection Based on YOLOv3 in Adverse Weather Conditions** 692
Jia’er Xia, Tianxiang Chen, Jiangrong Qiao

CA220 **MapReduce algorithm-based fault diagnosis method for power equipment** 697
Yuqing Ju, Zhuowen Zhuang

CA221 **Kalman filter-based Detection and Tracking Method for Substation Moving Targets** 703
Huaqiang Shen, Song Cheng, Yafeng Wang, Yi Zhang

CA223 **Research on Operational Amplifier Optimization Methods** 710
Binkai Chen

CA225 **Optimization analysis of 5G+ frequency allocation problem and simulation experiments of some existing optimization algorithms** 719
Yitao Zhang

CA227 **An adaptive environmental sampling path planning technique for autonomous underwater vehicles based on ant colony optimization algorithm** *727*
Zongxing Li, Kaige Chen, Junxiong Wang

CA228 **Speed Control of Electric Energy Vehicle Based on PSO Algorithm Optimization Method Study** *731*
Haoyang Liu, Silin Ge, Zongming Qu

CA230 **Self-Optimized Drift-Avoidance MPPT Algorithm for Photovoltaic Systems** *739*
Xiaofeng Zhang, Jiaxing Song, Zhaotong Chen

CA231 **Application and effectiveness of weighted KNN in pattern recognition of communication modulated signals** *744*
Yulin Li, Guihang Hong, Congran Feng

CA234 **Research on Image Fuzzy Edge Processing Based on Subpixel and Ramer-Douglas-Peucker Algorithm** *749*
Hailiang Jiang, Fan Liang

CA235 **Research on Radar Working Mode and Signal Analysis Based on LSTM and System Clustering Analysis** *754*
Yujiexin Wang, Dongxu Yang, Meng Zhao

CA236 **Video recognition algorithm of fake face based on SVM model** *759*
Runke Liu, Xiangling Liu, Lingling Xu, Zhenyao Qian

CA239 **Research and Design of Danger Vegetation Real-time Monitoring System for Transmission Line Channel Based on LabVIEW** *763*
Hongyu Ni, Wenhuan Zhu, Feng Zhao, Hui Shen

CA242 **Adaptive Stochastic Resonance Based Low Illumination Image Enhancement Algorithm Based on Symbol Sequence Entropy** *767*
Yalin Gong, Hongying Zhang

CA243 **Research on the Analysis of Mass Digital Image Mining Based on Association Rules Mining** *777*
Xiangshuai Guo

CA244 **Modeling and Simulation of Fast Communication Network for Park Integrated Energy System Based on Internet of Things** *781*
Xiaolei Ying, Haibo Xiang, Congying Bao, Jinsong Yang, Da Xu

CA245 **Underwater Search and Rescue Robot Based on Convolutional Neural Network** *786*
Yifan Wang, Zichen Guo, Jiangfeng Xu

CA251 **Research and design of a three-port DC-DC converter based on PID algorithm** *791*
Xinchao Zhang

CA252 **Frame Synchronization Algorithm Based on Adaptive Dual- Threshold Decision** *795*
Yaobo Shang, Runling Li, Jiaqiang Zhang, Dongwei Zhang, Zhe Li

CA255 **Research on Conformance Test for Electric Vehicle Wireless Power Transfer Communication Protocols** *802*
Baoqiang Zhang, Jin Li, Meng Zhang, Bin Fan, Kai Song, Jinhai Jiang, Chunbo Zhu

CA256 **Automatic Delineation Method of Target Area Based on Three-Dimensional Convolutional Neural Network Model** *805*
Jinhu Li, Chenghe Zheng, Hanbin Ma, Biao Wang, Sheng Wang, Lingting Wu

CA257 **Design and Implementation of Computer Room Monitoring System Based on Wireless Sensor Network** *809*
Xiulan Chen, Ning Huang

CA259 **Short Term Power Load Forecasting Method Based on Particle Swarm Optimization Algorithm and Recurrent Neural Network** *814*
Yuan Yao, Jiajia Lv, Wensheng Gu, Jiandong Zhao, Yang Liu

CA260 **Research on Facial Expression Recognition Based on Deep Learning Method** *818*
Shihan Fu

CA261 **Analysis on Generative Adversarial Networks: Application in Graphics and Image Processing** *822*
Tianbai Li, Yeung Liu, Yingpei Miao, Zihe Zhu

CA263 **Development of Robot Collaborative Controller for Forging Factory Based on ZYNQ SOC** *828*
Baojiang Sun, Tianyuan Zhang

CA265 **Introduction to Multi-Robot Coordination Algorithms** *832*
Shihan Liu, Yiming Niu, Boyang Wu

CA266 **Research on Control and Simulation of User-side Multi-port Energy Router** *838*
Xiaojun Zhang, Dehuai Kong

CA268 **Systematical Analysis of Maximum Power Point Tracking for Photovoltaic Systems** *843*
Chenyu Liu, Guanghui Xing

CA269 **Research on Power Communication Data Network System and Key Technologies Based on SDN Architecture** *850*
Jigao Song, Yanan Zhang, Qian Wang

CA270 **Research on Key Technologies of Advanced Electronic Measurement Sensors Based on Computer Internet of Things** *856*
Tang Jie

CA273 **Object Detection Algorithms: A Comparison** 861
Zhengkun Shi

CA276 **Comparison on Image to Image Translation Algorithms** 866
Jiajie Chen

CA277 **A Survey of Deep Learning Object Detection Algorithm** 872
Junmei Guo, Haitong Lou, Haonan Chen, Xuehu Duan, Haiying Liu

CA278 **Research on the fault diagnosis technology of power equipment based on artificial intelligence technology** 878
Shasha Yan, Qiang Xie

CA280 **Research on the application of the computer vision technology in image processing** 883
Ling Zhuo

CA281 **Study on two-dimensional electromagnetic scattering based on BP neural network** 888
Yue Wei, Jian Li, Chunhao Gu

CA283 **Research on intelligent base station location optimization algorithm** 892
Tianlong Wu

CA285 **Automatic visual inspection system based on LCD screen** 898
Juntao Han, Hao Xue, Haitong Tang, Ting Wu, Yantong Ye, Jingyang Li

CA288 **An Improved PDE-based GAC Level Set Image Segmentation Algorithm** 904
Yuxia Ma, Guicang Zhang

CA291 **Remote Sensing Object Detection Based on Improved YOLOv3** 910
Wenlong Dong, Shiyang Nie, Yibo Wang

CA292 **Image Dehazing Algorithm Based on Region Segmentation and Block Optimization** 914
Junwei Ye, Di Zhou, Yichen Hu

CA295 **Fault diagnosis of rolling bearing considering different damage degrees based on wavelet entropy and SVM** 921
Zhaoyang Sun, Ankang Yuan, Jiawen Li

CA296 **Detection Algorithm Based on Improved YOLOv4 for Pedestrian** 927
Wen Kong, Yidan Qiao, Ziqi Wei

CA301 **Toward Secure and Timesaving Data Sharing: Cloud Encryption of RSA-co-ABE** 931
Asibaike Aisikaer, Zhongyang Li, Haoxiang Cheng

CA302 **5G Network Traffic Prediction Based on WP - Deep Gaussian** 938
Zhuohao Fang, Ran Zhao, Hongming Yang

CA303 **Research on bearing fault diagnosis by convolutional neural network based on wavelet time-frequency maps and parameter optimization** *943*
Chenjian Jia, Meng Gao, Tianshuo Dong

CA306 **Security Technology of Trusted Internet of Things Based on Machine Learning** *951*
Weitao Zheng, Shulin Wu, Yuxiang Cai, Caiwei Guo, Xin Jiang, Qimin Xiao, Taining Huang, Jianxiong Huang, Wei Zhou

CA309 **Research on Wood Strip Classification Method Based on Deep Learning** *955*
Enkai Bian, Chen Yu, Yuzeng Wang

CA311 **Research on surface defect detection method of solid wood board based on improved YOLOv5s** *959*
Chen Yu, Enkai Bian, Yuzeng Wang

CA313 **Research on Ground Cloud Image Segmentation Technology Based on Bilateral Feature Fusion** *964*
Xue Zhang, Kebin Jia, Liang Zhang

CA314 **An Improved Particle Swarm Optimization Algorithm Based on Simulated Annealing for Large-Scale Node Location of WSN** *971*
Yitao Li

CA317 **Design of serial-parallel converter based on FPGA** *975*
Jiahui Yang, Peixuan Li, Yihan Li, Qingxin Cao

CA318 **Predict Critical Node Pairs Based on Reinforcement Learning in SDN** *979*
Haoxian Feng, Zhaogang Shu, Zhifang Zhang, Yuantao Wang, Zhiwei Liu

CA322 **Research on Technology of Improving Communication Data Transmission Efficiency Control** *983*
Qian Gao

CA323 **Adaptive Genetic Algorithm for Alternate Access Scheduling Optimization of Stereo Garage Considering FCFS Principle** *987*
Wu Zhengda, Luo Hongyu, Chen Jingyi, Huang Tianhua, Qi Yinjian, Cai Tianxing

CA325 **3D Image Recognition Technology for Analog Circuit Based on DSP and BP Algorithm** *995*
Shiling Huang

CA326 **A Cloud Resource Scheduling Method Based on Multi-dimensional Service Evaluation** *1000*
Siyuan Zheng, Yuanmou Chen

CA328 **Application of Deep Learning Method for Small-sized Object Detection of SMDs in PCB Complex Scene** *1005*
Zhihao Wang, Xizhong Shen, Lirong Huang

CA329 **Load balancing routing algorithm based on geographical location code** ***1010***
Hui Li, Furong Chai, Dong Chen, Qi Zhang, Weiying Feng, Jinxi Qian, Ying Tao, Feng Tian, Qinghua Tian

CA330 **Routing and Wavelength Assignment Algorithm Based on Link Distance and Hop Count Balancing in Double Layer Satellite Optical Network** ***1015***
Chendi Feng, Yuanfeng Li, Qi Zhang, Weiying Feng, Dong Chen, Jinxi Qian, Ying Tao, Feng Tian, Qinghua Tian

CA332 **An Adversarial Defense Scheme for Federated Learning Based on GAN** ***1020***
Yanxi Peng, Zhongying Niu, Pengfei Wang

CA334 **Low Texture Artifacts Recognition and Visual Servo Position Based on YOLOv4-Tiny** ***1029***
Jun Lin, Jiaguo Luo, Xianghui Liu, Xungao Zhong, Guizhi Yang, Jing Zhao

CA336 **Research on Photovoltaic Output Forecasting Model Based on the Selection of Similar Days by Fuzzy Clustering** ***1034***
Yan Furong, Chen Yan, Yuan Bao, Zhang Wen, Zhao Jing, Ouyang Hong, Zhang Jing

CA337 **Design and implementation of a new power consumption monitoring and analysis system based on intelligent neural network** ***1040***
Guo Hongbo, Zhang Wen, Yuan Bao, Chen Yan, Gao Shijie, Fu Shangying, Shen Han, Ouyang Hong, Wan Quan, Liu Junling

CA339 **Optimization of attribute-based access control policy with priority filtering** ***1045***
Weize Xu, Lei Kong, Nan Wang, Jinzhong Liu

CA340 **Dual SVD++ Recommendation Model Based on Attention Convolutional Neural Network** ***1053***
Peng Li, Junyan Cao, Ziwei Guan

CA341 **Research on semantics and algorithm of formal analysis tool Scyther** ***1058***
Chen Xi, Lu Siqi

CA343 **Design and exploration of electrical automatic monitoring system under the background of 5G communication technology** ***1075***
Yunjia Liu, Zhenbo Mi, Xueyan Yin, Yifei Yin, Yihao Zhan

CA344 **Early Time Series Classification Using TCN-Transformer** ***1079***
Huiling Chen, Aosheng Tian, Ye Zhang, Yuzi Liu

CA345 **An Improved Practical Byzantine Fault Tolerance Consensus Algorithm** ***1083***
Guangxia Xu, Kaizhou Shi

CA350 **Design of underwater stirring robot control system based on genetic algorithm** ***1090***
Junwen He, Fangjian Ning

CA352 **Study of PLC-based industrial robot control systems** *1094*
Bin Wu

CA353 **Overhead transmission line inspection robot control system reliability design** *1098*
Bin Wu

CA355 **A Lightweight Neural Network for Vehicle Object Detection** *1103*
Xuechen Sun, Tianrui Xia, Tianyu Wang, Chunyi Xu

CA356 **Noise-aware Canny Algorithm for Edge Detection** *1107*
Yitong Yuan

CA358 **Traffic Lights Detection Method Based on the Improved YOLOv5 Network** *1111*
Xumeiqi Chen

CA360 **Robustness of Mask-RCNN at High Ambiguous Environments** *1115*
Yunrong Lu

CA361 **Big Data and Deep Learning Techniques Applied in Intelligent Recommender Systems** *1119*
Yifeng He

CA363 **Power grid operation information controllable intelligent terminal system based on Internet of Things and blockchain** *1125*
Qiu Dong, Miao Ji, Liu Shen, Xu Hu, Zhang Di

CA366 **Research on Intelligent Power Teller Cabin System under the Integration of 5G Communication Technology** *1130*
Yunge Wang, Yunke Ni, Dingwei Zhao, Yue Pan

CA367 **A Novel and Robust Multi-Modal Remote Sensing Image Matching Method** *1137*
Tianxin Shi, Fanzhi Cao, Hanxin Zhao, Pu Wang

CA369 **A Novel Self-supervised Affine-invariant Feature Learning Method for Remote Sensing Image Matching** *1142*
Fanzhi Cao, Tianxin Shi, Kaiyang Han, Pu Wang

CA370 **Turbo Codes in Satellite Communication** *1146*
Juntao Ni

CA371 **Multi-timescale distributed active and reactive power coordinated optimization method for distribution network** *1151*
Yuhang Chen, Wanxin Lu, Shengzhi Zhou, Ming Sun, Zhao Song

CA372 **Recognition of HVDC Transmission Line Lightning Strike Interference Based on HHT Algorithm** *1157*
Shuping Gao, Fei Wang, Zhenxi Xu

CA375 **Precise Recommendation Technology Based on Mobile User Profile Situation Information** *1161*
Huili Xue, Kongsheng Guo

CA377 **PID trajectory tracking control of RP robot based on model compensation** *1165*
Zhang Shuqian, Ye Yangfang, Ma Jing, Zhang Wenhui, Gao Zihao, Jiang Zhongyang

CA378 **Research Advanced in Deep Learning Based Image Recognition** *1169*
Zhihan Mu, Zhibin Mo

CA380 **Application Research in Computer Design System Based on 3D High-Definition Image Visual Communication** *1174*
Han Huang

CA382 **Control Strategy of Energy Storage Device in Distribution Network Based on Reinforcement Learning Q-learning Algorithm** *1178*
Shenglong Qi, Zhihao Yu, Xiaokang Wang, Hongyu Wang, Yingchun Du, Chunsheng Ma

CA385 **RF IoT Design for Underground Pipeline Inspection** *1183*
Lin Zhou, Jiamin Cao

CA387 **A Continual Few-shot Learning Method via Meta-learning for Intrusion Detection** *1188*
Hao Xu, Yongjun Wang

CA389 **BTFuzz: Accurately Fuzzing Bluetooth Host with a Simulated Non-compliant Controller** *1195*
Jin Lei, Yongjun Wang, Xu Zhou, Ke Yan

CA392 **A novel improved SLIC superpixel segmentation algorithm** *1202*
Zhijie Chen, Zhaoqi Zhong, Xiangyu Pan, Xin Xi

CA395 **AGV scheduling strategy based on the A* algorithm** *1207*
Yizhang Zhu, Chunzhou Zhao, Wenxuan Wang

CA396 **UAV Formation Obstacle Avoidance Based on Improved Consistency Algorithm** *1213*
Shaoli Hu, Jiankai Tang, Chen Chen, Hongli Xu, Shuai Wang

CA399 **MIMO Radar Array Structure Optimization System Based on Space-Time Autoregressive Algorithm** *1217*
Qingqin Meng, Haiqi Xu, Yi Zhang, Naiyu Han

CA400 **Design of Electric Energy Monitoring System Based on Internet of Things** *1221*
Meng Mu, Long Hao, Bin Hao, Chao Chen

CA401 **Path Planning Design of Mobile Robot Based on Fuzzy Control in Unknown Environment** *1225*
Hongwang Zhao, Bo Lv, Yi Liang

CA404 **Ultra-short-term PV Power Forecasting Based on FA-DELM Model Considering Weather Classification and VMD Noise Reduction** *1229*
Yanxi Jiang, Qun Zhang, Fengze Zhong

CA405 **Research on single-layer and non-nested contour generation algorithm in laser marking** *1240*
Haopeng Fang

CA406 **Research on Control Algorithm of Electric Energy Vehicle Based on Improved Gray Wolf Optimization Algorithm** *1245*
Shuo Zhao, Xiao Liu, Yi’ ao Wang

CA409 **Malicious traffic detection based on GWO-SVM model** *1252*
Lechao Liu, Yan Zhuang, Xufei Gao

CA410 **Partial Weighted K-nearest Neighbor Classification of Incomplete Data** *1258*
Shengtao Gao, Xinying Yuan, Jinlin Tang

CA411 **Remote Sensing Image Scene Classification Based on ECA Attention Mechanism Convolutional Neural Network** *1265*
Youbin He, Shuting Zhou, Xin Quan

CA413 **Research on Intrusion Detection Model Based on PCA-SVM** *1270*
Lei Pan, Tianyi Zheng, Rongyao Fu

CA415 **Research on feature matching algorithm of remote sensing scenes** *1276*
Chenhang Xu, Enchong Dong, Haiping Zhang

CA417 **An improved denoising autoencoder for multimodal industrial process monitoring combined with Gaussian mixture mode** *1281*
Hongzhining Yang, Wenqi Li

CA418 **Application of frequency-domain features and high-order cumulants in ANN-based communication modulation recognition** *1288*
Yihui Wang, Zhe Liu, Yuanxin Xu

CA419 **Study on blood vessel segmentation of laser scattering microscopic image** *1294*
Boyang Qu, Zhengheng Rui

CA422 **End-to-End Low-level Hovering Control of Quadrotor Based on Proximal Policy Optimization** *1300*
Qiansong Wang, Wei Wang, Subing Huang

CA423 **Improving SRN-Deblur Performance Based on Blur Direction-based Classification** *1305*
Xinyi Xu, Yue Lu, Feiran Xu, Ming Zhao

CA426 **Trajectory Optimization Algorithm of UAV Based on Pointer Network** *1310*
Zhiqi Guo, Jinzhou Deng, Tiao Tan, Ming Zhao

CA427 **Research on PCB defect detection based on SSD** *1315*
Litian Kang, Yawei Ge, Hong Huang, Ming Zhao

CA430 **A Method for Cross-receiver Specific Emitter Identification Based on CBAM-CNN-BDA** *1320*
Yanan Zheng, Wenwei Ying, Shaohua Hong, Lin Wang

CA431 **Channel Attention Mechanism-based Multi-Feature Fusion Network for Specific Emitter Identification** *1325*
Wenwei Ying, Pengfei Deng, Shaohua Hong

CA435 **Pedestrian Dead Reckoning and WIFI Fusion Positioning Based on Chaotic Particle Swarm Optimization** *1329*
Dawei Lin, Jie Dong, Zhibin Zang, Ruihao Cong, Zhihan Liang, Jianjun Chen

CA436 **Network Intrusion Detection Method Based on Attention Mechanism and DenseNet** *1335*
Xin Guan, Xinyu Cao

CA440 **GHM-DenseNet Intrusion Detection Method Based on GAN** *1341*
Jianhua Ren, Zhenyu Sun

CA441 **A Motor Bearing Fault Diagnosis Method Based on Signal Analysis and Convolutional Neural Network** *1349*
Anji Lin, Yuxuan Run, Wang Zhao

CA442 **Study on visual odometry and optimization of SLAM system** *1355*
Yao Chengxu

CA444 **Tomatoes Maturity Detection Approach Based on YOLOv5 and Attention Mechanisms** *1363*
Wenwang Han, Wangli Hao, Jing Sun, Yakui Xue, Wu Li

CA449 **Evaluation Method of Change Degree of Dynamic Scene for Mobile Robots Based on Area Ratio and SLAM Algorithm** *1372*
Shiqian Zhao, Jiayang Zhao, Mi Zhang, Wen Yue

CA450 **Research of Vehicle Detection under UAV Based on YOLOv4 Improved Algorithm** *1378*
Xueqing Sun, Yuhan Li, Zhiguo Zhou

CA455 **A Multi-Layer Hybrid Intrusion Detection Method Based on Nb And SVM** *1384*
Ruimin Wang, Huangwei Jiang, Guohua Shi

CA456 **Road Information Extraction from Remote Sensing Images Based on Fully Convolutional Network** *1389*
Peng Xiao, Dongfang Yang, Yongfei Li, Jiawei Zhao

CA459 **Research on Image Fusion Technology of Infrared and Visible Image Based on MST and CNN** *1395*
Hao Lv, Bao Deng, Xiaorui Li

CA461 **Research on Image Fusion Methodof SAR and Visible Image Based on CNN** *1400*
Bao Deng, Hao Lv

CA465 **Micro-expression Recognition Using Pre-trained Model and Transformer** *1404*
Yali Fan, Minghan Jia, Yifan Zhang, Yang Yu

CA467 **Research on Single Disk Error Recovery Technology Based on Erasure Code** *1409*
Zhang Yuning, Feng Shu

CA468 **Research on Vision Accurate Positioning and Algorithm of Automatic Maintenance Robot for Unmanned Power Distribution Room** *1414*
Jiming Zhang, Xianquan Xu, Jing Xu, Sheng Xia

CA472 **Research on Data Security Transmission Technology of Park Integrated Energy System Based on Quantum Secure Communication** *1418*
Rongli Wang, Haibo Xiang, Yunhui Fang, Congying Bao, Jiangjing Wang

CA475 **A Simple but Effective Non-local Means Method For Salt and Pepper Noise Removal** *1423*
Xinyue Ma, Shugang Liu

CA477 **Infrared Image Colorization Algorithm Based on DCGAN and Its Edge Device Acceleration** *1433*
Haoyuan Chi, Zebin Zhang, Qiqi Ge, Wenhuan Zhu

CA480 **Facial Expression Algorithm using Attention Mechanism** *1437*
Yiyang Zou

CA481 **A Design of Reinforcement Learning Accelerator Based on Deep Q-learning Network** *1441*
Yufei Nai, Zhenghan Fang, Limeng Zhao

CA483 **Design of high automatic target recognition unmanned reconnaissance system based on YOLOv5** *1446*
Shuangxing Ji, Hua Tang, Yue Ming, Chen Zhao

CA485 **The Electromagnetic Topology Optimization Algorithm Based on BP Neural Network Technology** *1450*
Haoze Li

CA487 **Research on Optimization of Fireworks Algorithm Based on Gravity Search Operator** *1456*
Lianghao Gong, Qunfeng Liu

CA488 **Path optimization analysis of UAV-intelligent robot cooperative inspection of substation based on A* algorithm** *1461*
Xinyang Zhang, Mingzhi Qiu, Jun Feng

CA490 **Speech recognition method based on DNN-LSTM combined with Wiener filtering algorithm** *1467*
Haoyan Pei, Keliang Song, Tianyu Zhu

CA491 **Face Recognition Based on Adaptive Nearest Regularized Subspace** *1473*
Zhenyue Zhang, Donghai Zhao

CA492 **Improved YOLO Pedestrian Detection Algorithm Based on Attention Mechanism** *1478*
Kun Yao, Jiefu Shi, Yu Xia

CA493 **Multi-objective Detection and Tracking Algorithm for Unmanned Street View Based on Improved YOLOv5 and DeepSORT under Complex Scenes** *1483*
Chi Zhang, Hanyun Zhang, Chenyang Zhang