2022 2nd International Conference on Frontiers of Electronics, **Information and Computation Technologies (ICFEICT 2022)**

Wuhan, China 19 – 21 August 2022



IEEE Catalog Number: CFP22DA3-POD

978-1-6654-5477-3

ISBN:

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:
 CFP22DA3-POD

 ISBN (Print-On-Demand):
 978-1-6654-5477-3

 ISBN (Online):
 978-1-6654-5476-6

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



2022 2nd International Conference on Frontiers of Electronics, Information and Computation Technologies (ICFEICT)

ICFEICT 2022

Table of Contents

Message from the General and Technical Program Chairs
Committee xviii
Editorial xx
Electronics
Combined Active Jamming Suppression Method Based on Convolution Network Under Random Amplitude and Phase Errors
Variable Temperature Test and Transient Test of Energetic Materials Based on Perturbation Method
Design of a Circulator-Based Sequential Doherty Power Amplifier with Octave Bandwidth and Extended Dynamic Range
Research and Experiment on Dynamic Multi-Agility Waveform of Radar in Anti-Main-Lobe Jamming
Hypersonic Glide Target Tracking Based on Improved Square Root UKF

Radar Target Tracking Based on Some Multi-Dimensional Adaptive UKF	
Research on Contactless Power Transmission Technology of Radar Antenna Based on Electromagnetic Resonance Coupling	
EIT Gesture Recognition Method With Stronger Robustness	
Performance Analysis of Intra-Pulse Modulation Waveform Against Interrupted Sampling Repeater Jamming	
A Compact Low-Cost Circular Polarized Patch Antenna for RFID Reader Application	
PCB Defect Detection Based on GAN Data Generation with Self-Attentive Mechanism	
Analysis of the Schottky Barriers with Au-Si Diode as Example	
A Pseudo-Code Continuous Wave Measurement Radar Technology Based on Snapshot Algorithm	
Intelligent CFAR Detector Against Interference of Multiple Targets	

Weak Target Detection with Information Geometry in Weather Clutter Haonan Sheng (Harbin Institute of Technology, China) and Xin Zhang (Harbin Institute of Technology, China)	77
Research on DPOS-CFAR Detection Algorithm Based on Feedback Control Min Duan (Air Force Early Warning Academy, China), Kun Zhang (Air Force Early Warning Academy, China), Qiang Lin (Air Force Early Warning Academy, China), and Juan Yu (Air Force Early Warning Academy, China)	83
Sea Clutter Data Simulation Based on VI CFAR Algorithm Kun Zhang (Air Force Early Warning Academy, China), Min Duan (Air Force Early Warning Academy, China), Qiang Lin (Air Force Early Warning Academy, China), and Juan Yu (Air Force Early Warning Academy, China)	89
A Latency-Resource Aware FPGA Implementation of TCAM-Based FIB	94
Real-Time Self-Damage Sensing of CFRP Laminates Under Static Three Points Bending	.01
Data Association Method Based on 3-D Assignment in Doppler Blind Zone of Radar	.08
Simplifying THz-CT-CW Imaging System Using Vector Network Analyzer and Two Ellipsoid Mirrors	.15
3D Moving Target Doppler Performance for Distributed LEO SAR	.20
Comparison of Performance of EEG-Based Depression Classification	.25
Prediction of Epileptic Seizures Based on CNN-LSTM Network	.31

A Design of Key Generation Unit Based on SRAM PUF Ze He (National University of Defense Technology, China) and Shaoqing Li (National University of Defense Technology, China)	136
High-Speed Data Acquisition System for Electrical Impedance Imaging Xiuyan Li (TianGong University, China) and Zhenhu Jiang (TianGong University, China)	141
A Simplified Model MEMS Gyroscope Zero Bias Temperature Drift Calibration Method Base BP Neural Network Tong Wang (Xi'an Microelectronics Technology Institute, China), Xi Liu (Xi'an Microelectronics Technology Institute, China), Sheng Zhong (Northwest University, China), and Hangzai Luo (Northwest University, China)	
DOA Estimation Using Beamspace-Based Deep Neural Network	153
Indoor Human Location Method for FMCW Radar Using Standard Deviation Weighting Yihong Luo (Foshan University, China) and Xiaoxia Li (Guangdong University of Education, China)	159
A 3D Reconstruction of Binocular Endoscope Based on Self-Supervised Dilated Convolution Guo Zhang (Chongqing University of Posts and Telecommunication, China), Weiwei Sun (Chongqing University of Posts and Telecommunication, China), and Junchao Wang (Chongqing University, China)	164
Based on FCOS and HSV Recognition Algorithms for Oil Level and Implementations of Train Hydraulic Brake	
A Wideband Schiffman Phase Shifter Based on SISL Platform	174
A Broadband Power Divider Based on SISL Platform	178
A High Sensitive Formaldehyde Photonic Crystal Fiber Sensor Based on Lossy Mode Resona 183 Yuanchong Zhang (Hainan Normal University, China), Zhaoyue Liu (Hainan Normal University, China), Lina Zeng (Hainan Normal University, China), Lin Li (Hainan Normal University, China), Guojun Liu (Hainan Normal University, China), Zhongliang Qiao (Hainan Normal University, China), Zaijin Li (Hainan Normal University, China), and Yi Qu (Hainan Normal University, China)	nce
A High-Performance MIMO-OFDM VLC System Based on OCT Precoding	188
24 GHz Microstrip Patch Antenna With Wide Beam Width	193

Robust Beamforming for Massive MIMO System with Arbitrary Array Geometry Xin Chen (Sun Yat-sen University, China), Zhiyong Luo (Sun Yat-sen University, China), and Congduan Li (Sun Yat-sen University, China)	198
The Bandwidth and Gain Improvement of Dual-Band Cylindrical Dielectric Resonator A 204	Antenna
Cong Wang (Tianjin University, China), Ningning Yan (Tianjin University, China), and Yu Luo (Tianjin University, China)	
Study on the Effectiveness of Masking Jamming Based on Multi-Domain Joint	209
An Improved SMI Algorithm Based on Sampled Data	217
Design and Simulation of 0.14 THz Ring-Double-Bar TWT	222
Information	
Dynamic Compression of Signals in Frequency Domain at Multi-Carrier Systems	226
An Improved MUSIC Direction Finding Algorithm Based on QR Eigen-Decomposition Jingzhang Bi (Nanjing Marine Radar Institute, China), Rong Liu (Nanjing Marine Radar Institute, China), Jiao Hou (Nanjing Marine Radar Institute, China), and Feng Xiong (Nanjing Marine Radar Institute, China)	231
Research on the Spread and Influencing Factors of the COVID-19 Variant in the UK ZiWei Li (Beijing University of Technology, China)	238
Lightweight of Intelligent Real-Time Detection Model Based on YOLO-v4	244
Application of Various Spectral Techniques in Quantitative Analysis of Tea Quality Lei Xia (Wuhan University of Science and Technology, China) and Pan Zhu (Wuhan University of Science and Technology, China)	248
Design of Intelligent Home Care System Based on Internet of Things Technology Liangliang Wang (Shandong Institute of Commerce and Technology, China), Lianqin Jia (Shandong Institute of Commerce and Technology, China), and Bingzhan Liu (Shandong Institute of Commerce and Technology, China)	259
Pipeline Defect Detection Based on Feature Remapping	264

n Optimal Allocation Method for Cooperative Jamming Resources Based on Multi-Agent Genetic Algorithm	272
Qingping Wang (National University of Defence technology, China), Xiao Yan (National University of Defence technology, China), Fang Liu (National University of Defence technology, China), and Chao Wang (National University of Defence technology, China)	
nd-to-end Modeling for Chinese Dialect Speech Recognition	277
usion Handover Algorithm Based on Accuracy Estimation	282
anoramic Video Streaming Based on Splitting	287
Multi-Target In-bed State Recognition Method Based on mmWave Radar Chuantian Tang (University of Electronic Science and Technology of China, China), Haolan Luo (University of Electronic Science and Technology of China, China), Bo Zhang (University of Electronic Science and Technology of China, China), Gang Wang (University of Electronic Science and Technology of China, China), Shisheng Guo (University of Electronic Science and Technology of China, China), and Guolong Cui (University of Electronic Science and Technology of China, China)	291
ong-Range Real-Time Gesture Recognition for Millimeter Wave Radar Bo Zhang (University of Electronic Science and Technology, China), Haolan Luo (University of Electronic Science and Technology, China), Chuantian Tang (University of Electronic Science and Technology, China), Gang Wang (University of Electronic Science and Technology, China), Yang Zhang (University of Electronic Science and Technology, China), Shisheng Guo (University of Electronic Science and Technology, China), and Guolong Cui (University of Electronic Science and Technology, China)	298
Lightweight Anonymous Key Agreement Scheme in V2G Networks	304
adar-Based Multi-Task Recognition Using Shrinkage Attention Mechanism Dongxu Zhao (Tianjin University, China), Jingyu Yang (Tianjin University, China), Yue Lang (Hebei University of Technology, China), Beichen Li (Tianjin University, China), and Yang Yang (Tianjin University, China)	310
all Detection Based on HOG Features for Millimeter Wave Radar Caiping Song (Chengdu University of Technology, China), Kanghui Ma (Chengdu University of Technology, China), Jiale He (Chengdu University of Technology, China), and Yong Jia (Chengdu University of Technology, China)	316

Malicious Software Detection Based on Improved Convolution Neural Network
Spatial Detection of Passive Radar Signal in the Symmetrically Distributed Noise Field Based on Covariance Matrix Reduction
Research on 5G Interference Auto-Optimization
A Linear Array Optimization Method Based on Near-Field Manifold
3D Point Cloud Feature Information Assisted Audio Source Separation
Computation Technology
Preventing Multistage Discriminative Event-Based Model From Catastrophic Forgetting: A HAT
Preventing Multistage Discriminative Event-Based Model From Catastrophic Forgetting: A HAT Trick
Preventing Multistage Discriminative Event-Based Model From Catastrophic Forgetting: A HAT Trick
Preventing Multistage Discriminative Event-Based Model From Catastrophic Forgetting: A HAT Trick

Giamese-Prototypical Network with Data Augmentation Pre-Training for Few-Shot Medical	207
mage Classification Jin Yan (Cloud Network Operation Department Chinatelecom E Cloud Company, China), Kaiyuan Feng (Xidian University Xi'an, China), Hongyu Zhao (Xidian University Xi'an, China), and Kai Sheng (Academy of Adfvance Interdisciplinary Research Xidian University, China)	387
Analysis of Depression Based on Improved Deep Forest	392
Multi-Object Tracking Algorithm Based on Multi-Layer Feature Adaptive Fusion	397
Simulating Spectre Attacks Under the RTL Model	404
A Lightweight Convolutional Neural Network Method for Image Classification	410
Deblur GAN-v2 Based Mechanical Pipeline Defuzzification Algorithm	416
A New Model for Evaluation of Radar Anti-Stealth Preplan in Mosaic Warfare Yanhong Duan (Air Force Early Warning Academy, China), Siyong Peng (Air Force Early Warning Academy, China), Jianjun Yang (Air Force Early Warning Academy, China), Li Chen (Air Force Early Warning Academy, China), Peihao Liu (Air Force Early Warning Academy, China), and Ying Du (66389 Troops of PLA, China)	421
Dog Monitoring System Powered by Deep Learning	427
Stable Resource Allocation Based on Multi-Agent Reinforcement Learning for Edge Computing 132 Song Jiang (Yunnan University, China) and Xuejie Zhang (Yunnan University, China)	;
Efficient and Privacy-Preserving Outsourced Calculation with Multiple Keys Using Chinese Remainder Theorem Zhengkai Li (East China Normal University, China), Zhenfu Cao (East China Normal University, China), Jiachen Shen (East China Normal University, China), and Xiaolei Dong (East China Normal University, China) China)	439

Parallel Computing Based on FPGA for 3D Edge Routing Optimization
Intelligent Computation Offloading Mechanism of UAV in Edge Computing
Pointing Accuracy Test Practice of Airborne Active Phased Array Radar
Research on Table-Miss Attack Detection in SDN
Classification of Welding Defects Based on Convolutional Neural Networks and Electromagnetic Eddy Current Testing
TBNet: Two-Branch Cloud Detection Network for Remote Sensing Imagery
EFP-Net: High-Precision Remote Sensing Image Object Detection
A Routing Protocols Fuzzing Method Based on MAN-IN-THE-MIDDLE
Positioning Performance Evaluation for 5G Positioning Reference Signal

Deep Learning-Based PRACH Detection Algorithm Design and Simulation	505
Video Infrared Small Target Detection Combining Hybrid Attention with Cross-Scale Feature Fusion Zaiping Lin (National University of Defense Technology, China), Yihang Luo (National University of Defense Technology, China), Qiang Ling (National University of Defense Technology, China), Tianhao Wu (National University of Defense Technology, China), Chao Xiao (National University of Defense Technology, China), and Boyang Li (National University of Defense Technology, China)	512
An Ensemble Survival Prediction Method of High-Grade Glioma Based on Multi-Feature Fusio 519	n
Han Xue (Changchun University of Technology, China), Huimin Lu (Changchun University of Technology, China), Yifan Wang (Changchun University of Technology, China), Yilong Wang (Changchun University of Technology, China), Guizeng Wang (Changchun University of Technology, China) (Changchun University of Technology, China)	
Deep Reinforcement Learning-Based Joint Task Offloading in Cloud-Edge-End Cooperation Environments Chao Fang (Beijing University of Technology, Beijing, P.R. China; Purple Mountain Laboratories, P.R. China), Hang Xu (Beijing University of Technology, P.R. China), Yulong Bai (Beijing University of Technology, P.R. China), Tianyi Zhang (Beihang University, P.R. China), Yihui Yang (Beijing University of Technology, P.R. China), and Zhaoming Hu (Beijing University of Technology, P.R. China)	524
HMM Inception-Restnet Network Classifier for Manchu Word Recognition	531
Computation and Communication Cost-Aware User Assignment Method for Hierarchical Federarning	
A Near Memory Computing FPGA Architecture for Neural Network Acceleration Guanchen Tao (Zhejiang University, China), Yonggen Li (Zhejiang University, China), Yanfeng Xu (China Electronics Technology Group Corporation No.58 Research Institute, China), Jicong Fan (China Electronics Technology Group Corporation No.58 Research Institute, China), Haibin Shen (Zhejiang University, China), and Kejie Huang (Zhejiang University, China)	543
An Integrated Service Bus Based on Microservice	549
Research on Prediction Model of COVID-19 Based on Deep Learning	556

EMG Gesture Recognition Algorithm Based on Parallel Multi-Scale CNN	2
Group Decision-Making Method Based on Attention Mechanism and Contrastive Learning Task . 569 Xiaoyu Qu (National University of Defense Technology, China) and Bo Li	•
(National University of Defense Technology, China) Resource Management Strategy for Multi-Traffic Delay Optimization in Transmission Pipeline Gallery Networks	5
Institute, China), Chengbo Hu (State Grid Jiangsu Electric Power Company Ltd. Research Institute, China), Xueqiong Zhu (State Grid Jiangsu Electric Power Company Ltd. Research Institute, China), Zhen Wang (State Grid Jiangsu Electric Power Company Ltd. Research Institute, China), and Ziquan Liu (State Grid Jiangsu Electric Power Company Ltd. Research Institute, China)	
Deep Reinforcement Learning-Based Traffic Engineering in Cloud-Edge-End Collaboration Environments 58	2
Environments	3
Contextual Attention Enhanced Network for Salient Object Detection in Optical Remote Sensing Images	9
Visual Long-Term Target Tracking Method Based on Uncertain Estimation Principle	5
Intrusion Detection Method Based on Wasserstein Generative Adversarial Network	9
Mimic Honeypot Design and Analysis	4
Acceptance of Chatbot Based on Emotional Intelligence Through Machine Learning Algorithm	
Akter Rokaya (Shandong university of Technology, China), Shuvo Md Touhidul Islam (Shandong University of Technology, China), Haotian Zhang (Shandong University of Technology, China), Liming Sun (Shandong university of Technology, China), Ming Zhu (Shandong university of Technology, China), and Lianjun Zhao (Shandong university of Technology, China)	

Images	
Simulation of Named Entity Label Prediction Based on Combined Neural Network Qinghua Lu (Software Engineering Institute of Guangzhou, China)	
Solving Two-Dimensional Elliptic Singular Perturbation Problems by Particle Swarm Optimization Algorithm Qin Zhou (Hunan International Economics University, China)	