

2023 2nd International Conference on Sensing, Measurement, Communication and Internet of Things Technologies (SMC-IoT 2023)

**Changsha, China
29 – 31 December 2023**



**IEEE Catalog Number: CFP23VD2-POD
ISBN: 979-8-3503-7326-4**

**Copyright © 2023 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:	CFP23VD2-POD
ISBN (Print-On-Demand):	979-8-3503-7326-4
ISBN (Online):	979-8-3503-7325-7

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

CURRAN ASSOCIATES INC.
proceedings
.com

2023 2nd International Conference on Sensing, Measurement, Communication and Internet of Things Technologies (SMC-IoT) **SMC-IoT 2023**

Table of Contents

Preface	xi
Organizing Committee	xiii
Technical Program Committee	xiv

SMC-IoT 2023

Bypass Capacitor Design for Wideband Impedance Measurements of Inductive Coupling Approaches	1
<i>Huamin Jie (Nanyang Technological University, Singapore), Zhenyu Zhao (Nanyang Technological University, Singapore), Yongqi Chang (Harbin Institute of Technology, China), Yu Zeng (Nanyang Technological University, Singapore), Fei Fan (Nanyang Technological University, Singapore), Firman Sasongko (Rolls-Royce Singapore Pte Ltd, Singapore), Amit Kumar Gupta (Rolls-Royce Singapore Pte Ltd, Singapore), and Kye Yak See (Nanyang Technological University, Singapore)</i>	
Research on Underwater Object Detection Algorithm Based on Improved YOLOv5	7
<i>Hongyi Xia (Hunan Agricultural University, China) and Lixin Tan (Hunan College of Information; Hunan Agricultural University, China)</i>	
TSPC Trigger-Based Testing Scheme for Pre-Bond Testing and Diagnosis of TSVs	11
<i>Yang Yu (Harbin Institute of Technology, China), Jingqiao Su (Harbin Institute of Technology, China), Hongshui Xu (Harbin Institute of Technology, China), and Ziwen Xiao (Harbin Institute of Technology, China)</i>	
A GA-BPNN Collaborative Method Based on High-Quality Datasets for Designing and Optimizing Via-Holes Vertical Transition	18
<i>Weihong Liu (Xi'an University of Posts & Telecommunications, China), Shuai Zhang (Xi'an University of Posts & Telecommunications, China), and Yanbo Zhao (Xi'an University of Posts & Telecommunications, China)</i>	
A Study of Electromagnetic Acoustic Emission Technology in Non-Destructive Testing	24
<i>Yongqi Chang (Harbin Institute of Technology, China), Yi Shen (Harbin Institute of Technology, China), Xin Zhang (Harbin Institute of Technology, China), Shuzhi Song (Harbin Institute of Technology, China), Zhenyu Zhao (Nanyang Technological University, Singapore), and Huamin Jie (Nanyang Technological University, Singapore)</i>	

Multi-Source Fusion User Authentication Based on Channel and Image Features	30
<i>Aiwen Wang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Jie Tang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC), Hongyu Luo (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Hong Wen (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Pin Han-Ho (The University of Waterloo 200 University Avenue West Waterloo, Canada), and Shih Yu Chang (The University of Waterloo 200 University Avenue West Waterloo, Canada)</i>	
PreIndex: A Simple But Efficient Tree Index for Encrypted Databases	35
<i>Boheng Lin (University of Science and Technology of China, China), Hui Du (CNNC Huawei Engineering Design & Research Co., Ltd, China), Peiquan Jin (University of Science and Technology of China, China), and Xiaoni Fang (Hefei Zhongke Debei Data Technology Co., Ltd, China)</i>	
MR Thermometry Based on Magnetic Nanoparticle Para-Phase	40
<i>Shuai Wang (National University of Defense Technology, China), Silin Guo (National University of Defense Technology, China), Wenzhong Liu (Huazhong University of Science and Technology, China), and Zhaoyang Xu (Huazhong University of Science and Technology, China)</i>	
A Lightweight Intrusion Detection Method for Industrial Internet Based on Hybrid Feature Selection	45
<i>Xiangdong Hu (Chongqing University of Posts and Telecoms, China) and Hao Nie (Chongqing University of Posts and Telecoms, China)</i>	
Basic Error Prediction for Smart Meters Based on ISSA-LSSVM With Combination Weighting ...	51
<i>Ning Li (State Grid Xinjiang Electric Power Co., China), Wei Zhang (State Grid Xinjiang Electric Power Co., China), Lei Kang (Hunan University, China), Li Ma (Hunan University, China), and Xinlei Han (State Grid Xinjiang Electric Power Co., China)</i>	
Ergodic Energy Efficiency Performance of UAV-Based IoT Systems	57
<i>Chunxia Su (Suzhou University of Science and Technology, China), Zirun Zhou (Suzhou University of Science and Technology, China), Zihao Zhu (Suzhou University of Science and Technology, China), and Chuanyang Liu (Suzhou University of Science and Technology, China)</i>	
EH-SCSD: A Semi Centralized and Semi Distributed Clustered Routing Algorithm Based on EHWSN	62
<i>Haiqin Huang (Shenzhen University; Research Institute of Tsinghua University in Shenzhen; Sun Yat-sen University, China), Xiang Chen (Research Institute of Tsinghua University in Shenzhen; Sun Yat-sen University, China), Lan Wang (Shenzhen University, China), Junfeng Jiang (XG Intelligent System Co., Ltd, China), and Hengliang Tang (XG Intelligent System Co., Ltd, China)</i>	
GrassJoin: Distributed Set Similarity Join Based on Graph Partitioning Model	67
<i>Xin Xiong (East China Normal University, China)</i>	
The Remaining Useful Life Prediction of Smart Meter Based on Improved Gaussian Process Regression	73
<i>Wei Zhang (State Grid Xinjiang Electric Power Co., China), Ning Li (State Grid Xinjiang Electric Power Co., China), Sen Yan (Hunan University, China), Zhiming Guo (Hunan University, China), and Yongchao Wang (State Grid Xinjiang Electric Power Co., China)</i>	

Group Key Generation Scheme Based on Random Forwarding Network for Large-Scale IoT Devices.....	78
<i>Xiaowen Wang (Southeast University, China), Jie Huang (Southeast University; Purple Mountain Laboratory, China), and Jiajie Chen (Southeast University, China)</i>	
Facilitating Research for IoT-Based Vehicle-to-Everything (V2X) Survey Web Application Design	85
<i>Zhiran Wang (The University of Sydney, Australia), Bintao Hu (Xi'an Jiaotong-Liverpool University, China), Yuan Gao (Shanghai University, China), Sida Huang (Xi'an Jiaotong-Liverpool University, China), and Yuji Dong (Xi'an Jiaotong-Liverpool University, China)</i>	
HAD B+-Tree: A Hotness-Aware Adaptive B+-Tree for SSD/HDD-Based Hybrid Storage Architecture	91
<i>Yufei Wei (University of Science and Technology of China, China), Hui Du (CNNC Huawei Engineering Design & Research Co., Ltd, China), and Peiquan Jin (University of Science and Technology of China, China)</i>	
Blockchain-Empowered Solutions for IoT-Based Digital Artwork Storage System	96
<i>Shurong Ge (Xi'an Jiaotong-Liverpool University, China), Matilda Isaac (Xi'an Jiaotong-Liverpool University, China), Wenzhang Zhang (Xi'an Jiaotong-Liverpool University, China), Yuji Dong (Xi'an Jiaotong-Liverpool University, China), Sida Huang (Xi'an Jiaotong-Liverpool University, China), and Bintao Hu (Xi'an Jiaotong-Liverpool University, China)</i>	
Research and Application of Automated Real-Time Detection of Circular Arcs on Plate Surfaces	101
<i>Tao Jiang (Shenzhen University; Research Institute of Tsinghua University in Shenzhen; Sun Yat-sen University, China), Xiang Chen (Research Institute of Tsinghua University in Shenzhen; Sun Yat-sen University, China), Jing Liu (Shenzhen University, China), Junfeng Jiang (XG Intelligent System Co., Ltd., China), and Hengliang Tang (XG Intelligent System Co., Ltd., China)</i>	
Design of Physical Layer Secure Communication for Real Wireless Propagation Environment .	106
<i>Hongyu Luo (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Jie Tang (The University of Waterloo 200 University Avenue West Waterloo, Department of Electrical and Computer, Canada), Aiwen Wang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Hong Wen (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, USETC, China), Pin Han-Ho (The University of Waterloo 200 University Avenue West Waterloo, Department of Electrical and Computer, Canada), and Shih Yu Chang (The University of Waterloo 200 University Avenue West Waterloo, Department of Electrical and Computer, Canada)</i>	
Enabling Robust Distracted Driving Performance Across Datasets with CLIP	112
<i>Cong Duan (Hunan University, China), Jiakai Liao (Changsha University of Science Technology, China), Ning Ding (Hunan University, China), and Libo Cao (Hunan University, China)</i>	
Adaptive Dynamic Sampling Method Based on Features of Test Data	117
<i>Yishen Qi (Beijing Institute of Technology, China), Ping Song (Beijing Institute of Technology, China), and Youtian Qie (Beijing Institute of Technology, China)</i>	

Web3.0-Based Media Management Platforms for Named Entity Recognition Technology	122
<i>Jialuoyi Tan (Xi'an Jiaotong-Liverpool University, China), Sida Huang (Xi'an Jiaotong-Liverpool University, China), Qiong Ji (Xi'an Jiaotong-Liverpool University, China), Bintao Hu (Xi'an Jiaotong-Liverpool University, China), and Yuji Dong (Xi'an Jiaotong-Liverpool University, China)</i>	
SSCMT-ETC: A Semi-Supervised Contrastive Mean Teacher Model for Encrypted Traffic Classification	127
<i>Yanliang Jin (Shanghai University, China), Jie Fang (Shanghai University, China), and Yuan Gao (Shanghai University, China)</i>	
A Range/Angle-Based Localization Framework in WSN: A Clustering Approach	134
<i>Sijie Kong (East China Normal University, China) and Bo Xiao (East China Normal University, China)</i>	
TPMI:Accurate Throughput Prediction for Better Bitrate Selection in Adaptive Video Streaming	140
<i>Jiang Liu (Anhui Polytechnic University, China), Jun Li (Anhui Polytechnic University, China), XiaoHan Yang (Anhui Polytechnic University, China), and MengTing Sun (Anhui Polytechnic University, China)</i>	
Interpretable Pulmonary Disease Diagnosis with Graph Neural Network and Counterfactual Explanations	146
<i>Jiahong Li (Shenzhen University, HKUST(GZ), China), Yiyuan Chen (Cornell University, USA), Yichi Wang (Shenzhen University, China), Yiqiang Ye (Shenzhen University, China), Min Sun (China Mobile Information Technology Co. Limited, China), Hao Ren (Guangdong Second Provincial General Hospital, China), Weibin Cheng (Guangdong Second Provincial General Hospital, China), and Haodi Zhang (Shenzhen University, China)</i>	
Diversity-Oriented Contrastive Learning for RGB-T Scene Parsing	155
<i>Hengyan Liu (Xi'an Jiaotong-Liverpool University, China), Guangyu Ren (Imperial College London, UK), Tianhong Dai (University of Aberdeen, UK), Di Zhang (Xi'an Jiaotong-Liverpool University, China), Pengjing Xu (Xi'an Jiaotong-Liverpool University, China), Wenzhang Zhang (Xi'an Jiaotong-Liverpool University, China), and Bintao Hu (Xi'an Jiaotong-Liverpool University, China)</i>	
Geometric Path Plans for Perpendicular Parking Based on Clothoid Curve	161
<i>Ning Ding (Hunan University, China), Libo Cao (Hunan University, China), Cong Duan (Hunan University, China), and Jiakai Liao (Changsha University of Science and Technology, China)</i>	

Discrete Multi-Objective Particle Swarm Optimization Algorithm for Optimal Decision-Making in IoT Communication System	167
<i>Mo Yang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Runhui Zhao (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Yulin Peng (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Hong Wen (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Jie Tang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Tao Tang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), Yongfeng Wang (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China), and Qiang Liu (University of Electronic Science and Technology of China, Institute of Aeronautics and Astronautics, UESTC, China)</i>	
A Driver's Dangerous Driving Behavior Detection Method Based on the YOLOV5- CA Network ...	173
<i>Yonghui Wen (Guangzhou University, China) and Wenli Shang (Guangzhou University, China)</i>	
A Novel Power Load Forecasting Method Considering Output Rate of Wind and Photoelectric Power	180
<i>Xin Lin (Power Grid Planning Research Center Guangxi Power Grid Co., Ltd, China), Zhongqiang Bao (Power Grid Planning Research Center Guangxi Power Grid Co., Ltd, China), Qideng Luo (Power Grid Planning Research Center Guangxi Power Grid Co., Ltd, China), Hengwang Zhou (Power Grid Planning Research Center Guangxi Power Grid Co., Ltd, China), Zhen Pan (Power Grid Planning Research Center Guangxi Power Grid Co., Ltd, China), Qiao Wang (Central Southern China Electric Power Design Institute, China), Xueying Guo (Central Southern China Electric Power Design Institute, China), and Kui Li (Central Southern China Electric Power Design Institute, China)</i>	
An Enhanced Hierarchical Defense Model for the Internet of Things	185
<i>Xiaojun Xu (China Fire and Rescue College, China), Fangzhong Qi (China Fire and Rescue College, China), Zong Lu (China Fire and Rescue College, China), Changjun Song (China Fire and Rescue College, China), Jisheng Du (China Fire and Rescue College, China), and Jiaping Qi (China National Offshore Oil Corporation, China)</i>	
Adaptive Progressive Compressed Sensing Algorithm Based on Feature Domain Sparsity	190
<i>Zhengheng Chen (Beijing Institute of Technology, China), Ping Song (Beijing Institute of Technology, China), and Youtian Qie (Beijing Institute of Technology, China)</i>	

Research on Accurate Trajectory Generation Method for Automated UAV Flight Based on Lightweight 3D Bounding Box Model	196
<i>Yonghua Peng (Electric power construction company of Hunan Province, National electrical network Hunan Province electric power company, China), Cheng Jiang (Electric power construction company of Hunan Province, National electrical network Hunan Province electric power company, China), Chen Wang (Electric power construction company of Hunan Province, National electrical network Hunan Province electric power company, China), Lairong Yin (College of Automotive and Mechanical Engineering, Changsha University of Science and Technology, China), and Weiwei Xiao (Hengyang Tellhow Communications Automobile Co., Ltd., China)</i>	
Research on Intrusion Detection Based on SVM Fusion Anomaly Data	201
<i>Tie Tian (Ministry of Education Chongqing University of Technology, China), Yujie Tao (Ministry of Education Chongqing University of Technology, China), Chao Wu (China Merchants Testing Vehicle Technology Research Institute Co., Ltd., China), Chengjun Feng (China Merchants Testing Vehicle Technology Research Institute Co., Ltd., China), Yong Luo (Ministry of Education Chongqing University of Technology, China), Dongyang Dai (Ministry of Education Chongqing University of Technology, China), and Haoyu Li (Ministry of Education Chongqing University of Technology, China)</i>	
Enhancing Intrusion Detection in The Internet of Vehicles: An Ensemble and Optimized Machine Learning Approach	207
<i>Jiangjian Tu (Guangzhou University, China; Laboratory of On-Chip Communication and Sensor Chip of Guangdong Higher Education Institutes, China) and Wenli Shang (Guangzhou University, China; Laboratory of On-Chip Communication and Sensor Chip of Guangdong Higher Education Institutes, China)</i>	
Author Index	213