2022 2nd International Conference on Networking Systems of AI (INSAI 2022)

Shanghai, China 14-15 October 2022



IEEE Catalog Number: CFP22BG2-POD ISBN: 978-1-6654-9179-2

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:
 CFP22BG2-POD

 ISBN (Print-On-Demand):
 978-1-6654-9179-2

 ISBN (Online):
 978-1-6654-9178-5

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 Networking Systems of AI (INSAI) INSAI 2022

Table of Contents

Message from the General Chairsx
Message from the Program Chairsxi
Conference Organizationxii
Reviewersxiv
Sponsorsxvii
2022 2nd International Conference on Networking Systems of AI
A GAN Based Data Augmentation Method for Road Pothole Detection
FCD-YOLO: Improved YOLOv5 Based on Decoupled Head and Attention Mechanism for Defect Detection on Printed Circuit Board
Research on Mask Wearing Detection of Natural Population Based on Improved YOLOv4 12 Qian Zhang (Zhengzhou University, China), Bingdian Yang (Zhengzhou University, China), and Zhichao Liu (Zhengzhou University, China)
Design of License Plate Recognition System Based on OpenCV
CANet: A Method of Short Video Emotion Recognition Driven by Multimodal Data
Research of Gesture Recognition Algorithm Based on Acceleration Trajectory Image
Optimization Strategy and Case Analysis of 5G NSA Wireless Network
Research on Intelligent Suspension System Based on Fuzzy Sliding Mode Control

Real-Time Detection of DDoS Attacks Based on Hurst Index Ying Ling (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China), Chunyan Yang (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China), Xin Li (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China), Ming Xie (Guangxi Power Grid Co., Ltd., China), Shaofeng Ming (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China), Jieke Lu (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China), and Fuchuan Tang (Electric Power Research Institute of Guangxi Power Grid Co., Ltd., China)	. 42
Military Web Information Extraction Incorporating Resource Metadata Distribution	46
Collection and Application of Real-Time Operation Data of Distribution Transformer Based on Internet of Things Jinghe Sun (NARI Group (State Grid Electric Power Research Institute) Co., Ltd., China), Baohua Sun (NARI Group (State Grid Electric Power Research Institute) Co., Ltd., China), and Hao Zhu (NARI Group (State Grid Electric Power Research Institute) Co., Ltd., China)	51
Analysis and Prediction of Programming Language Occupancy Based on AdaBoost Yang Gong (Sichuan University, China) and Pan Zhang (Sichuan University, China)	. 57
A Novel Fire Detection Method Based on Deep Neural Network and Image Processing	. 66
Analysis of Tunable F-P Filter and Peak-Detection Algorithm in FBG Demodulation System Zengbiao Chen (Zhongshan Polytechnic, China) and Chao Zhang (Zhongshan Polytechnic, China)	. 74
Steel Strip Defect Classification Model Based on Convolutional Neural Network Composites Fei Ye (Dianchi College of Yunnan University, China) and Lin Bian (Dianchi College of Yunnan University, China)	. 78
Night Pedestrian Detection Method Based on Image Fusion	. 83
Design of Low-Power Router for Wireless Sensor Networks Based on Zigbee	. 87
Classification of Emotional Stress and Physical Stress using Electro-Optical Imaging Fechnology	. 92
Research on the Time Delay of Controller Area Network for Vehicle Hongrong Wang (State Key Laboratory of Vehicle NVH and Safety Technology, P.R. China), Xincheng Liang (Southwest University, P.R. China), Guojun Huang (Southwest University, P.R. China), and Chenguang Lai (Chongqing University of Technology, P.R. China)	. 98
A Single Input Algorithm for Transmission Synchronization of Multiple Memristor Chaotic Systems Jing Luo (Jingchu University of Technology, China), Jinxiang Wang (Jingchu University of Technology, China), and Yaya Xie (Jingchu University of Technology, China)	104

A Secret Image Sharing Method Based on Shared Matrix and Variational Hyperprior Network
Yuxin Ding (Computer Science and Technology, Harbin Institute of
Technology (Shenzhen), China), Miaomiao Shao (Computer Science and
Technology, Harbin Institute of Technology (Shenzhen), China), and Cai
Nie (Computer Science and Technology, Harbin Institute of Technology (Shenzhen), China)
Research on Blockchain's Role in Promoting the Digital Economy Among the Belt and Road
Countries118
Jingxuan Li (China Academy of Information and Communications
Technology, China), Fei Gao (China Academy of Information and
Communications Technology, China), Bo Zhu (China Uicom Digital Technology Company Limited, China), and Ziyu Gu (Beijing Normal
University, China)
A Review: Machine Learning in Visible Light Wireless Positioning System
Pan Zhu (Chongqing University of Posts and Telecommunications, China),
Shibo Gong (University of Sussex, United Kingdom), Xuerui Zhao
(University of Sussex, United Kingdom), and Xinhuan Sun (University of
Sussex, United Kingdom)
A Private Cloud Operation Evaluation Method Based on Low-Carbon Digital Grid
Botao Wang (STATE GRID Corporation of China, China), Xu Xu (UCSI
University, Malaysia), Dai Zhang (STATE GRID Corporation of China,
China), Jingjing Wang (STATE GRID Corporation of China, China), Xian
Luo (STATE GRID Corporation of China, China), Weijing Yao (STATE GRID
Corporation of China, China), Xiangyu Yuan (STATE GRID Corporation of
China, China), Ronghao Yang (STATE GRID Corporation of China, China), Fen Liu (STATE GRID Corporation of China, China), Liang Dong (STATE
GRID Corporation of China, China), Wei Fu (NARI Group, China), Lei
Zhang (NARI Group, China), and Jun Liu (NARI Group, China)
Research on Particle Swarm Algorithm Based on Adaptive Acceleration Mechanism
Pengfei Liu (Gansu Construction Supervision Co., Ltd., China) and
Pengjuan Liu (Aba Teachers University, China)
On Design of Hydropower System Aided by Internet of Things Architecture with OPC-UA and MQTT
Zhigao Yang (State Grid Electric Power Research Institute, China),
Yining Wang (State Grid Electric Power Research Institute, China),
Guangya Xiong (State Grid Electric Power Research Institute, China),
and Weifeng Pan (State Grid Electric Power Research Institute, China)
A Motion Imagery EEG Signal Recognition Algorithm Based on Power Spectral Density Combined
with Particle Swarm Optimization Algorithm Optimized Support Vector Machine
Ruijing Lin (Inner Mongolia University of Technology, China), Chaoyi
Dong (Inner Mongolia University of Technology, China), Pengfei Ma
(Inner Mongolia University of Technology, China), Xiaoyan Chen (Inner Mongolia University of Technology, China), Huanzi Liu (Inner Mongolia
University of Technology, China), and Dongyang Lei (Inner Mongolia
University of Technology, China)
Camera-LiDAR Fusion Based Three-Stages Data Association Framework for 3D Multi-Object
Tracking152
Zeguo Fu (Fudan University, China), Huiliang Shang (Fudan University,
China), Liang Song (Fudan University, China), Zengwen Li (Chongqing
Changan Automobile Co., Ltd., China), and Changxue Chen (Chongqing
Changan Automobile Co., Ltd., China)

Mobile Object Detection Without Labels with Camera-LiDAR Fusion for Roadside Perception . 158 Xuhua Chen (Fudan University, China), Xinhua Zeng (Fudan University, China), and Liang Song (Fudan University, China)
Research and Implementation of Autonomous Learning Platform for Image Classification 163 Shiyu Zhao (Fudan University, China), Menghua Jiang (South China Normal University, China), Zengwen Li (Chongqing Changan Automobile Co., Ltd., China), Changxue Chen (Chongqing Changan Automobile Co., Ltd., China), and Liang Song (Fudan University, China)
Multi-Dimensional Spatial-Temporal Fusion for Pedestrian Trajectory Prediction
A New Architecture of Regional-Level Industrial Internet Platform Based-5G Network
A Novel Transformer-Based Framework for Multi-View 3D Human Mesh Reconstruction 180 Entao Chen (Fudan University, China), Bobo Ju (Fudan University, China), Linhua Jiang (Fudan University, China), and Dongfang Zhao (University of Nevada, USA)
Research on Unsupervised Domain Adaptation System for Machine Translation
An Innovative Multilevel Line Graph Attention Network for Predicting Molecular Properties . 194 Yeling Zhang (Fudan University, China), Huancong Shi (Zhejiang University, China), Zhihui Chen (Zhejiang University, China), Dongfang Wu (Zhejiang University, China), and Linhua Jiang (Fudan University, China) (China)
Commodity Price Analysis and Prediction Based on Ensemble Learning
Research on Detection and Early Warning Method of Foreign Objects in Vehicle Gauge Based on Canny Edge Extraction
Missile Attack Zone Fitting Based on K-SAE-SVM
A FNV Based IPv6 Address Autoconfiguration Scheme for Power IoT Sensory Device
Design-Based Research of Early Warning System for Drowning Based on Artificial Intelligence

Application of Machine Learning in Risk Assessment of Big Data IOT Credit Financial Management of Operator	. 228
Liyuan Wang (Shanghai University of Political Science and Law, China)	
A Cluster-Based Parallel Doppler Search Algorithm for Deep Space Exploration Applications . Yun Yu (Chinese Academy of Sciences, China) and Quan Guo (Chinese Academy of Sciences, China)	233
Research on Data Communication Monitoring System of Master and Slave Equipment in Avior System Based on 1553B Bus	nics . 237
Design and Test of Intelligent Diffuse Reflector False Target Jamming System	241
Energy Efficiency Optimization for DAS Based on Neural Network	249
Big Data Analysis Method for Power Information Based on Visualization Technology	255
Author Index	261