# **2022 8th International Conference** on Systems and Informatics (ICSAI 2022)

**Kunming, China** 10-12 December 2022



**IEEE Catalog Number: CFP2273R-POD ISBN**:

978-1-6654-7449-8

## 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:
 CFP2273R-POD

 ISBN (Print-On-Demand):
 978-1-6654-7449-8

 ISBN (Online):
 978-1-6654-7448-1

#### **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**

Control and Automation Systems 4
End-to-End Efficient Indoor Navigation with Optical Flow  Boran Wang, Minghao Gao1
Missile Interception Guidance With Parameter Uncertainties Using Desensitized
Extended Kalman Filter  Jingsong Yang, Wei Hu, Tianhao Liu, Lingguo Cui, Jia Liang8
An Auto-testing System for S-Band Multi-channel T/R Module  Yin Liwei, Zhang Heng, Wang Zhonghua14
Detection of Pulmonary Embolism Based on Receptive Field Amplification and Attention Mechanism
HuaTao Li, ZhongYi Hu, MingZhe Hu, MingJun Hu18
Power and Energy Systems 4
Design of a Container-based Broadband RF Pulse Signal Analysis Algorithm Integration Scheme
Wenfeng TIAN, Hui DENG, Pengfei ZENG24
Perturbation Analysis Based Simulation Approach for Electricity Market Research and Investigation
Xiaohu WU, Xinyong WANG, Wuxing LIN, Ruijing WANG, Xueyuan FAN29
Setting Calculation Method and Protection Coordination for Relay Protection System in Consideration of Arc Flash
Fang Jinghui, Zhang Bo, Zhong Weidong, Feng Jian, Jin Guozhong, Gao Xijun, Wei Ling34
Design of Extreme High Voltage High Stability Test Voltage Source  Minrui Xu, Shufeng Lu, Feng Ji, Gang Chen, Zigang Lu, Zengkai Ouyang44
Intelligent Systems 19
Mask-based Text Scoring for Product Title Summarization  Xinyi GUAN, Shun LONG, Weiheng ZHU, Silei CAO, Fangting LIAO50
Semantic Assisted LiDAR Odometry with Loop Closure in Large Scale Urban

Environment

Jiaye Lin, Yanjie Liu56
Fuzzy Commutative and Implicative ideals in Bounded Heyting Algebras  Chunhui Liu62
Students' Classroom Behavior Detection Based on Human-Object Interaction Model Yonghe Zhang, Guocheng Zhong, Wenjiao Qu, Yundan Xiao
Automated Chicken Counting Using YOLO-v5x Algorithm  Xiangyuan Zhu, Chuhui Wu, Yefeng Yang, Yuelin Yao, Yanshan Wu74
Mamdani fuzzy inference system for rating the performance of Sponge City Programme  Chen Wang, Yang Li, Jinghua Du, Gerald Corzo80
A Deep Learning-based Event Extraction Method in the Field of Electric Power Public Opinion  Bochuan Song, Tongyang Liu, Jingtan Ma, Yude He, Hui Fu
A question answering model for electrical equipment standards based on subject object attention
Luo Huayong, Ding Hui, Lin Jiajun, Li Chen, Hu Junhua, Zhang Bowen92
Chinese Biomedical Entity Relation Extraction Based On Directed Graph Convolutional Network  Baosheng Yin, Wei Zhao
Facial Expression Emotion Recognition Based on Transfer Learning and Generative Model  Tomoki Kusunose, Xin Kang, Keita Kiuchi, Ryota Nishimura, Manabu Sasayama, Kazuyuki  Matsumoto
Learning a Parallel Network for Emotion Recognition Based on Small Training Data  Arata Ochi, Xin Kang113
A Cognitive Computing Based System for Human Factors Readiness Level Assessment in Manned Space Product Design  LiTao Wu, JiaHeng Huang, QingGuo Kan, ZiQi Fan, JiaJing Li, Rui Xu, Bo Wang, Tao Meng
Multi-channel Contrastive Learning for Sequential Recommendation  Quanhong Tian
Short text classification method with dual channel hypergraph convolution networks  Liu JIN, Zhaochun SUN, Huifang MA

An Improved Person Re-Identification Method based on AlignedReID++ algorithm Xiangyuan Zhu, Xiaozhou Dong, Hong Nie, Yusen Cen137
Research on Vehicle Parking Position Detection Based on Swin Transformer Semantic Segmentation  Hong-Tu Shi, Jian-Zhang Liu, Ruo-Xuan Wang, Yan-Xin Huo, Chao Wei Cui, Yong-Qiang Zhang143
A Novel Ping-pong Task Strategy Based on Model-free Multi-dimensional Q-function Deep Reinforcement Learning
Hongxu Ma, Jianyin Fan, Qiang Wang149
Multi-target Threat Assessment Method Based on An Effective Reduction Method Yang Gao, Na Lv
Learning a Bimodal Emotion Recognition System Based on Small Amount of Speech Data
Junya Furutani, Xin Kang, Keita Kiuchi, Ryota Nishimura, Manabu Sasayama, Kazuyuki Matsumoto160
Computer Systems and Applications 5
An intelligent sensor for deep-sea sediment thermal conductivity  Chunyue Zhang, Jiawang Chen, Kaichuang Wang, Jingkun Ai, Kun Wang165
Hardware Strategies in Medical Systems for Visually Impaired Treatment  Zhuoheng Ran, Haizhou Sun
A Trust Prediction Method Based on Heterogeneous Information Networks  Ruili Xiao, Xiangrong Tong, Yinggang Li
Movie Recommender System Based On Heterogeneous Graph Neural Networks Khalil Ur Rahman, Huifang Ma, Ali Arshad, Azad Khan Baheer182
Multi-hop Knowledge Base Q&A in Integrated Energy Services Based on Intermediate Reasoning Attention
Wenbin Zhang, Jiaju She, Yingqiu Wang, Meng Zhao, Yi Wang, Chao Liu189
Communications and Networking 1
Promoting a Hybrid Cryptosystem System's Security based on Fresnel lens and RSA Algorithm  Peng Yang, Chenqi Fan, Weishun Xue, Xiaojian Xue195

## Image, Video, and Signal Processing 13

Deep Iterative Reconstruction Network Based on Residual Constraint for Low-Dose CT Imaging
Jin Liu, Yanqin Kang, Tao Liu, TingYu Zhang, Yikun Zhang201
Framework for Image Sensor Design Parameter Optimization for Pupil Detection  Gernot Fiala, Zhenyu Ye, Christian Steger
GMLB Filter With Uncorrelated Conversion for Multi Nonlinear Targets Tracking  Xinghui Wu, Min Wang213
Two-dimension Super-resolution RD Imaging Algorithm in Automotive Radar  Jieru Ding, Min Wang, Xinghui Wu, Zhiyi Wang218
Shoppers Interaction Classification Based on An Improved DenseNet Model Using RGB-D Data  Almustafa Abed, Belhassen Akrout, Ikram Amous
Wrong Wiring Detection of Electricity Meter Based on Image Processing  Yina Yang, Chaoliang Wang, Jie Yin, Jing Ye, An Wen, Qiang Wang228
Facial Expression Recognition based on Convolutional Neural Network with Sparse Representation  Xuan Liu, Jiachen Ma, Qiang Wang234
Survey of Online Exam Proctoring Model to Detect Cheating Behavior based on Face Recognition Sucianna Ghadati Rabiha, Iman Herwidiana Kartowisastro, Reina Setiawan, Widodo Budiharto240
Design and Development of a Medicine Box Recognition System Based on Machine Vision  Jiamin Huang, Jiacheng Zhou, Yujie Jiang, Mingxuan Yan, Xiaojun Zhang, Zhi Tao247
An Image Encryption Scheme with the Associated Thumbnail Shanwu Shao, Ji Li, Ping Shao, Xiangyuan Zhu253
The Correlation Filter with Adaptive Spatial and Temporal Regularization for Inland Ship Tracking Lei Xiao, Feiyan Nie, Jingjing Shao, Zhongyi Hu261
Missing Small Bolt Detection on High-speed Train Using Improved Yolov5  Yiming Wei, Xiaobo Lu267

SkeletonCLIP: Recognizing Skeleton-based Human Actions with Text Prompts  Lin Yuan, Zhen He, Qiang Wang, Leiyang Xu, Xiang Ma273
Data Engineering and Data Mining 6
Test and Analysis Of Indoor And Outdoor Barometric Altimetry  Shuaichen Li, Jianfeng Wu279
Research on Algorithms of Positive and Negative Co-occurrence in Spatio-temporal Datasets
Jing Du, Zhanquan Wang, Mengfei Ye286
Neural Network For Risk Assessment In Life Insurance Industry: A Case Study Theophile K. Dagba, Mahussi Franck Dominique Lokossou
Application Research of the XGBoost-SVM Combination Model in Quantitative Investment Strategy  Hongxin Zhu, Anmin Zhu
Customer Portrait for Metrology Institutions Based on the Machine Learning Clustering Algorithm and the RFM Model  Xiaojing Zhang, Dongshuo Zhao, Yaran Li, Yudong Liu, Gang Hu
An Efficient Approach for Trajectory Simplification Based on Essential Inflection Point Extraction  Yi Zhang, Liang Zhou
Other Topics in Systems 3
Population Prediction in China Based on Lasso-FGM Model  Yanan Li, Yunyan Wang, Yanfang Wang315
Two-Point Boundary Value Problems in the Quotient Space of Fuzzy Number Zhiyong Xiao, Kun Liu, Xinxin Wang321
Research on Hand-eye Calibration Method Based on Binocular Camera <i>Jiming Sa, Shuai Liu, Xuecheng Zhang, Yuyan Song, Ziang Hu328</i>

Byzantine Consensus Based on Modified Treap Topology

Other Topics in Informatics 2

Yan Gao, Qiang Wang, Liang Cai	334
Chinese Semantic Description Framework of Operational Plants	anning Statements
Xinye Zhao, Bo Yuan, Guangming Sun, Peng Liu	339