## 2024 International Conference on Networking, Sensing and Control (ICNSC 2024)

Hangzhou, China 18-20 October 2024



**IEEE Catalog Number: CFP24NSC-POD ISBN**:

979-8-3503-6523-8

## Copyright © 2024 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:
 CFP24NSC-POD

 ISBN (Print-On-Demand):
 979-8-3503-6523-8

 ISBN (Online):
 979-8-3503-6522-1

ISSN: 1810-7869

## **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**

A location-allocation problem of emergency facilities considering multi-resources under uncertainty	1
Improvement of Multi-vehicle Queue Transformation Paths Based on MO-GWO	7
Design of a Lightweight Human Pose Estimation Algorithm Based on AlphaPose Zichen Yang, Hanxin Chen, Ming Cheng, Wei Liu, Yan Chen, Yulian Cao and Daojin Yao	13
Integrated scheduling and location considering machine mobility	19
DMGA: A Directional-Mutation Genetic Algorithm for CDMS problem of Kafka	24
A Crease-based Bending-insensitive Liquid Metal Sensor for Pressure Measurement on Curved Surfaces	30
Script Event Prediction Based on Knowledge Distillation of Large Language Models  Chunning Hou, Xinzhi Wang, Xiangfeng Luo and Shaorong Xie	36
Steel Surface Defect Detection Algorithm Based on Improved YOLOv8	42
Output feedback controls of a flexible wing under unknown constraint references  Tingting Meng, Wei He, Wenhe Xu and Bernard Voon Ee How	48
Heuristic Elastic Scaling for Kubernetes Heterogeneous Microservices	54
Anomaly Detection Method for Business Processes Based on Graph Convolutional Neural Network	60
Nested OODA: A C2 Model based on fractal theory	66
A Prior Knowledge-embedded Framework for Occupational Pneumoconiosis Staging  Niu Dang, Weiling Li, Ling Mou, Yunni Xia and Huaqiang Yuan	72
Ultra-wideband Non-line-of-sight Recognition Method Based on MTF-CNN	78
Research on Probability of Discharge in Emergency Departments Based on Stochastic Timed Petri Nets and Machine Learning	84

tretchable resistive NO2-mediated biomimetic olfactory synaptic electronics	90
A Meta Distribution-based Fine-Grained Analysis for Contention-based WiFi Backscatter Networks	94
Yulei Wang, Qinglin Zhao, Li Feng, Mengchu Zhou, Meng Shen, Yu Luo and Yi Sun	
Oynamic Gaussian mutation Particle Swarm Optimization for Accurate Adaptive attent Factor Analysis	00
A Segmentation-based Scheme to Expedite Block Propagation in Blockchain Networks10 Zhihan Qiu, Qinglin Zhao, Li Feng, Mengchu Zhou, Meng Shen, Yi Liu and Yi Sun	06
Efficient Auxiliary Tasks for Skeleton-based Action Recognition	11
Analysis of the Impact of Situational Awareness Effectiveness Based on Wargame 1 Yusheng Sun, Jiahui Yu, Yuanbai Li, Yuxiang Sun and Xianzhong Zhou	17
Fransformer-Based Biometrics Method for Smart Phone Continuous Authentication 12 Zhida Guo, Wuqiang Shen, Mingqian Xiao, Lei Cui and Dehua Xie	23
Online Optimization Method for Virtually Coupled Train Operation Deviation from Reference Curve	29
oint Task Offloading and Resource Allocation for Blockchain-Empowered SAGIN	35
Mitigating Catastrophic Forgetting through Knowledge Transfer and Weighted Loss ntegration in Continual Learning	41
Addressing the Stability-Plasticity Dilemma in Continual Learning through Dynamic Praining Strategies	46
OMobileNet: A Novel MobileNet with Dendritic Learning for Brain Tumor Detection 18 Yu Gao, Zhipeng Liu, Zeyuan Ju, Ningning Wang, Lin Zhong and Shangce Gao	52
Long-term Water Quality Prediction based on Multimodal Fusion and Temporal D-variation	56
An Adaptive Temporal-dependent Tensor Low-rank Representation Model for Dynamic Communication Network Embedding	62
Control Architecture for Humanoid with Real-Time Electro-Hydraulic Actuator	68
Automatic Modeling and Verification of Smart Contracts based on Colored Petri Nets 1'  Zheng Huang, Shuo Li and Zhijun Ding	74

Behavior Recognition of Ship Pilots Based on Multimodal Video Data
An Improved Safe Braking Model of Virtually Coupled Trains for Closer Tracking 180 Wenxiao Yan, Jiayu Wang, Liqun Fan, Qiusheng Liu, Qingdong Jia, Yihan Wang and Hongjie Liu
Dynamic Graph Neural Networks with Neighborhood Constraints
A Model Predictive Control Approach for Virtually Coupled Train Set Based on Multi-Phase Trajectory Planning
PID Control by Safe Reinforcement Learning for Vehicle Lateral Control
Orthogonal-Aware Constraint Neural Network Compression Based on Low-Rank Representation Learning
Dynamic Weighted Random Leader Node Election Algorithm for Blockchain
Accelerated Asynchronous Parallel Stochastic Gradient Descent Algorithm for High-Dimensional and Sparse Data Low-rank Representation
Active CyberAttack Detection on Autonomous Vehicle Using Model Predictive Control228  Abd Al-Rahman Hourani, Eslam Mahmoud and Said Mammar
A Visual Information-based Bidirectional Emotion Interaction Interface for Friendly and Empathic Collaborative Robots
Autoregressive-incorporated Non-negative Latent Factorization of Tensors for Temporal Link Prediction in Cryptocurrency Transaction Network
Impact of machine capacity augmentation on the total completion time for parallel batch machines scheduling
Train Safety Control Based on Deep Deterministic Policy Gradient with Control Barrier Function
An Immune Algorithm with Dual-level Ranking Mutation for Large-scale  Multi-objective Multi-robot Maritime Patrolling
Solution Stability Judgment Mechanism Based on a Dynamic Grid System for Multi-objective Optimization Algorithms

An Extended Canonical Polyadic-based Tensor Network for Dynamic QoS Prediction 269 $Qu\ Wang\ and\ Hao\ Wu$
A PID-incorporated Second-order Latent Factor Analysis Model
Realization of an Immersive Virtual Factory for the Chemical Industry
Cooperative Control Based on Distributed Model Predictive Control Method for Urban Rail Transit
Jiahui Lv, Jidong Lv, Hongjie Liu, Zhengwei Luo, Bingyan Zhou and Qianying Ma
A Stochastic Reachable Set based Train Following Safety Protection Method for "Soft-Wall" Moving Block Train Control System
Qianying Ma, Min Yang, Jidong Lv, Hongjie Liu, Wanli Lu and Jiahui Lv
Fault Diagnosis Method for On-board Interface Equipment of CTCS-3 Based on Temporal Knowledge Graph Completion
Distributed Flow Shop Scheduling With Dynamic Job Arrival via Enhanced Genetic Algorithm
Distributed and Coordinated Multi-Agent Learning for Resource Allocation in Vehicular Networks
A GAN-based Hybrid Sampling Method for Transaction Fraud Detection
Time-Aware Density-Based Generative Network for Imbalanced Data in Credit Card Fraud Detection
A Fast Tabu Search Algorithm for the Emergency Route Planning for Forest Fires with Priority Level
A Novel Graph-representation-based Multi-scale Feature Fusion Approach for Road Segmentation
DF-EGM: Personalised Knowledge Tracing with Dynamic Forgetting and Enhanced Gain Mechanisms
Improved Meta-heuristics with a Sarsa Algorithm for Scheduling Distributed  Permutation Flow Shops

Attention Mechanism Assisted Deep Learning Algorithm for Multi-Category Household Waste Classification
Shoufei Han, Xu Liu, Xiaojing Liu, Honghao Zhu and Ruyi Han
Redundant Constraints Identification Based Acceleration Method for Multi-Stage Robust SCUC Problems
Yuxuan Zhang, Qiaozhu Zhai, Yuzhou Zhou, Zhihan Han, Wei Qiao and Haozhe Li
A Wind-Pv-Hydropower-Hydrogen Collaborative Scheduling Method
Deep Causal Domain Generalization Network for Human Action Recognition in Internet of Behaviors
A Dynamic Visual Sensor Denoising Method Based on Event Density Classification380 Qiangxiao Zhou, Hai Xiong, Yiheng Wang, Yuhao Shen and Long Cheng
A Reflection-based Channel-State Group Fingerprint to Detect Intrusion Devices in ICS 386 Long Meng, Xiangming Wang, Shenjian Qiu, Pengfei Liu, Nanyi Deng and Yang Liu
MCROS: A Multimodal Collaborative Robot System for Human-Centered Tasks392  Weitian Wang, Zofia Przedworska, Jesse Parron, Maxim Lyons, Michelle Zhu and Amy Tuininga
An improved BPNN-based Fault Diagnosis Method with Multi-domain Feature Extraction for PV Array
A Knowledge-Driven Genetic Algorithm With Variable Neighborhood Search for Flexible Job Shop Scheduling Problems
Data-driven Modeling and Working Condition Prediction in Process Industry Production . 410 Meifang Zhang, Ziqi Wang, Jing Bi and Haitao Yuan
A Quantum Annealing Algorithm for the Resource-Constrained Excavator Procurement
Problem
A novel Dynamic Vision Sensor Image Rain Removal Method Based on Event Density Clustering
Yiheng Wang, Qiangxiao Zhou, Hai Xiong, Yuhao Shen and Long Cheng
A Spatio-Temporal Transformer Network for Human Motion Prediction in Human-Robot Collaboration
Yixiu Yuan, Baicun Wang, Ruirui Zhong and Bingtao Hu
Low-light Video Object Tracking with Data Augmentation and Feature Alignment 435 Yihao Qian and Daxing Zhang
An Efficient Linear Programming Model for Dual-arm Cluster Tools with Chamber Cleaning Operation
Guanzhong Wu, Chunrong Pan, Wenqing Xiong and Lifa He

A CNN-based Fast Generalized Voronoi Diagrams Framework for Path Planning
Human Emotion Recognition in Collaborative Tasks Using Virtual Reality Games 452 Jianna Loor and Rui Li
A Digital Twin-Driven Guidance Method for Human-Machine Collaborative Assembly Operations Based on Machine Learning and Computer Vision
Sea Level Anomalies Prediction Via Two-stage Spatiotemporal Transformer
Using Pyramid Vision Transformer for Assisting Glaucoma Diagnosis with Small Datasets 470 Qinhao Wu, Shuaiyu Yao, Wendi Ouyang, Jingzhe Huang and Qi Kang
Long-Periodicity Detection from Massive Alarms in Power System
Classification of Reachable Markings for Automated Manufacturing Systems with Multiple Unreliable Resources
A Novel Evolutionary Neural Network-based Approach for Online Bus Scheduling 488 Wenyang Tian, Feiyang Wang and Xingquan Zuo
Multi-Agent Q-Learning and Max-Pressure Control for Large-Scale Traffic Signal Control. 494 Yuanzhen Sun, Liang Qi, Mengqi Li, Wenjing Luan and Fuxin Zhang
Heuristic Strategies for Traffic Guidance in Scenarios with Multiple EVs and Multiple Accident Points
New Class Discovery of Steel Surface Defects Using Multi-View Self-Labeling and Overclustering
FPRAN: A Hierarchical Generative Model for Few-Shot Pantograph Fault Diagnosis 512 Qihui Xu, Jiacheng Tang, Qi Kang, Qinhao Wu and Shuaiyu Yao
Convolutional Neural Network with A Novel Attention Mechanism for Skin Cancer Recognition
An Improved Attention-based BiLSTM for PM2.5 Prediction in Air Environment
Single-Step and Multi-Step Prediction for Dissolved Oxygen of Huangpu River Based on Feature Engineering and the BiGRU-Attention-TCN Model
Optimal Deployment of Heterogeneous Visual Sensor Networks for Target Coverage and Feature Aggregation with Lifetime Guarantee

An Abstract Interpretation-Based Framework for WCET Analysis of Parallel Programs54  Xinbang Hu, Guanjun Liu, Xiaofeng Li, Kaiwen Zhang, Jian Guan and Bin Gu	2
Human Resource Allocation for Parallel Assembly Processes with Temporal and Spatial Constraints	8
Checking Non-Interference Based on Unfolding Techniques of Petri Nets	4
Safe Reinforcement Learning-Based Adaptive Hierarchical Control Approach for Virtual Coupling Trains	0
Dynamic Bailout Model for Risk Contagion in Interbank Networks	6
Enhanced Segmentation for CT images of Visceral Organs based on Directional  Connectivity	2
Shuaiyu Yao, Yuchen Dai, Yuehao Zhao, Bochun Hu, Lihang Yao and Qi Kang URL-SemCom: An Alert Identification Model Based on URL Semantic Comprehension57 Hao Huang, Jin'Ao Shang, Zi'An Luo, Xiaozhi Deng, Yunfan Yang, Qinqin Wu, Chenwei Yang and Yang Liu	8
Drone-Assisted QR Code Recognition Method for Warehouse Management	5
Guerrilla Warfare Strategy Ameliorate Besiege and Conquer Algorithm for Complex Optimization Problems	1
A Machine-learning and Discrete Multi-verse-optimizer-based Hybrid Method for Feature Selection	6
MCV-facilitated Green Energy Far-field Wireless Charging for MEC Network	2
A CNN-LSTM model for electric load forecasting	8
Data-driven key parameter prediction of dryer section in the papermaking process 61 Yafei Yang, Qifan Gao, Wei Tang, Cheng Zhang and Xuyong Fei	4
Active-Passive-Combined Anomaly Detection in Electricity-Carbon Blockchain Trading System under Limited Bandwidth	9
Improved Neural Interaction Networks Model for Cyberbullying Detection	6
Investigating Labeled Cyberbullying Incidents on the Weibo Social Network	2

Improved Proximal Policy Optimization Algorithm for Multi-objective Disassembly Line Balancing Considering Hazardous Tasks	8
Zeyu Guo, Xiwang Guo, Jiacun Wang, Shujin Qin, Liang Qi and Qi Kang	
Application of effective transition covers on deadlock control of unsignalized intersection systems	4
Shuqi Miao, Huixia Liu, Meng Cao, Cheng Huang and Wenqiang Sun	
Scheduling of Multi-finger-robotic Cluster Tools with Multi-space Process Modules 650 Lei Gu, Naiqi Wu, Yan Qiao and Siwei Zhang	0
Rod Pumping System Fault Diagnosis Based on Multi-Model Ensemble Method 650 Chenyu Tian, Rui Lin and Liang Zhao	6
Leveraging the Nbeats Model for Predictions of Student Academic Outcomes	2
Combating Cyberbullied Images in the Real World: A Comparative Study of CNN Architectures	8
Heyun Shui, Liming Lu, Luyi Shao, Qingyi Xu, Xiaoyu Sean Lu and Qi Kang	
An Improved Fireworks Algorithm for the Multi-Skilled Robot Hybrid Disassembly Line Balancing Problem	4
Design and Fabrication of 3D-Printed Magnetically Triggered Soft-Porous Scaffolds for Drug Delivery	0
Network Traffic Prediction with Decomposition and Multi-scale Autocorrelation in Large-scale Cloud Data Centers	5
An effective adaptive large neighborhood search algorithm for multi-AGV dispatching problem in matrix manufacturing systems	1
Research on Multi-Task scheduling in smart warehouse systems based on dual-task chains $69$ Chenwei Zhang and Weimin $Wu$	7
3D Object Detection with Twin-surface Depth Completion and Pseudo-LiDAR Grid Fusion	3
Self-supervised Point Cloud Completion With Feature Augmentation For Large-scale Aerospace Components	9
Multi-agent Air Combat Decision-making Based on Battlefield Attention Information71 Yihuan Wang, Yaofei Ma, Jiangyun Wang, Haitao Yuan, Meijia Wang and Hanbo Ma	5