

2024 4th International Conference on Consumer Electronics and Computer Engineering (ICCECE 2024)

**Guangzhou, China
12 – 14 January 2024**



**IEEE Catalog Number: CFP24Y71-POD
ISBN: 979-8-3503-8407-9**

**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:	CFP24Y71-POD
ISBN (Print-On-Demand):	979-8-3503-8407-9
ISBN (Online):	979-8-3503-8406-2

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

Table of Contents

Content-based Galaxy Image Retrieval Using Convolutional Neural Networks	1
Songtian Yu, Tao Hu, Minjuan Gu, Tengyu Li, Dashu Zhang	
Spatiotemporal Knowledge Graph Modeling and Persistence Supported by Database	5
Chaojie Zhang, Bingyan Chen, Xin Wang	
Identification of Important Nodes in the Information Propagation Network Based on the Artificial Intelligence Method	11
Bin Yuan, Tianbo Song, Jerry Yao	
Raft Consensus Grouping Mechanism Based on Affinity Propagation Clustering Algorithm	15
Nan Zuo, Yubin Chen, Yuanjie Zheng	
A Conditional Diffusion Model for 3D Human Pose Estimation	20
Zhangmeng Chen, Ju Dai, Junjun Pan	
Knowledge Graph Recommendation Algorithm Combined with PersonalRank Sampling	25
Haibo Jin, Yujing Feng	
EEG Based Autism Recognition Model: EEGCM-Net Based Attention Mechanism	31
Guoqing Lu	
Automatic White Balance Using ShuffleNet-v1 and Adaptive Histogram Matching	35
Chengqiang Huang, Yanjun Yang	
Visual Perception-Driven Dynamic Adaptive Shading	40
Chuanyu Shen	
Segmentation of Pulverized Coal Loading Image Based on Improved SOLOv2	44
Jingyi Du, Yue Xin	
A Method for Deblurring Estimation from a Single Image	51
Hongchun Qu, Jiale Liu	
Pedestrian Detection Based on Lightweight Improvement YOLOX	55
Guangyu Xie, Yaping Wan	
Many-objective Optimization Evolutionary Algorithm Based on Dynamic Region Partitioning	59
Wenlong Li, Hanning Chen, Guopeng Wang, Lizhe Song, Yelin Xia, Zhixue Wang, Kun Jia	
Physical Adversarial Attacks for Infrared Object Detection	64
Xueping Wang, Wei Li	
Research on the Application of Object Detection Methods Based on Multimodal Information Fusion in Digital Forensics	70
Fengyan Jiang, Jiting Jiang	
A Persistent Naming Discrimination Method Based on the Sweeping Direction	75
Fusheng Dai, Wei Zhao	
EffiPoseNet: Integrating Ghost Modules and CoordAttention for Efficient Real-Time Human Pose Estimation on Mobile Devices	84
Long Xu, Zikang Zhang, Wei Peng, Shaoming Sun	
Occluded Face Recognition Algorithm Incorporating Attention Mechanism	91
Yibo Li, Yaru Zhang, Wenguan Chen	

Vertex Centric Weighted Edge Index to Accelerate Weighted Graph Traversal	95
Jianchao Lin, Chunhui Ren, Siyan Liu	
Research on Multi-dimensional Feature Fusion Recognition Method of Micro-motion Gesture based on Millimeter Wave Radar	100
Honghong Chen, Tian Qi, Tingting Liu, Ben Xi	
Unsupervised Domain Adaptation for Person Re-identification Based on Multi-Scale Attention Mechanism	105
Cong Yang, Yihao Guo, Weixing Zhang	
SG-DDPM: Semantic-Guided Diffusion Model for Low-Light Image Enhancement	111
Shize Wang	
Attention Information Fusion Emotion Analysis Model Based on BiLSTM-BERT	115
Zhiwei Cheng, Shunxin Li	
Construction of Programming Knowledge Graph Based on Student Knowledge Needs	120
Lei Liu	
Motion Retargeting from Human in Video to 3D Characters with Different Skeleton Topology	124
Hao Guo, Shujie Li, Wei Jia	
YOLOv5 Algorithm Optimization: Precise Target Detection amidst Background Interference	129
Bingbing Xiong, Wenxi Shi, Yanyun Fu, Zhansheng Zhu, Deyong Wang, Bin Jia	
An Optimal Fusion Marker-Based Watershed Segmentation Method For Bubble Metering	133
Boda Zhang	
TensoRF-GAN: Improving 3D-Aware Portrait Image Synthesis with Tensor Decomposition	139
Ruiqi Liu, Peng Zheng, Rui Ma	
Heterogeneous Multi-Graph Attention Fusion Network for Tag Information-Enhanced Social Recommendation	144
Chenlan Ji, Chuanping Zhang, Hao Zhang	
Structural Similarity Filter Pruning of Frequency Domain Edge for Convolutional Neural Networks	148
Yajun Liu, Kefeng Fan, Dakui Wu, Wenju Zhou	
Graph Contrastive Learning for Internet Financial Fraud Detection	153
Xiaoguo Wang, Yuxiao Wang	
Data Transfer Optimization Scheme Based on dSpace High-Fidelity LiDAR Model	158
Xianbin Xue, Beihai Tan, Siyang Chen, Ziwei Hu	
Design Implementation of FPGA-based Neural Network Acceleration	163
Lizhao Zhang, Zhongliang Pan	
Design of Low Power Consumption Wetland Environment Monitoring System Based on Lora Network	167
Hongbo Yu, Weiding Wang, Songrui Li, Yue Yu	
A Method of EEG Source Imaging based on TCN and Attention Network	171
Yang Hu, Ziyu Ge, Jinshuo Liu, Guoqing Lu	
DLKNet: Dual Large Kernel Network for Real-Time Semantic Segmentation with Transformer Architecture	175
Decheng Jia, Zhijun Xu, Dongyu Zhang	

Research on Paper-Pen Interaction Methods and Implementation of Mobile Applications	179
Yuxin Chen, Zhongcheng Wu	
Staged Coal Leakage Detection Method Based on Improved Networks	184
Xiangjian Guo, Hui Sun, Xingwei He, Jinhu Wang, Dan Wang, Zhihao Zhou, Rongdong Yu, Shuai Li	
SPAFuzz: Web Security Fuzz Testing Tool Based on Fuzz Testing and Genetic Algorithm	190
Jiang Lin, Weiyu Dong	
PancakeFS: A Write Efficiently and Read Optimized Filesystem	196
Yongkang Wang, Yang Liu, Zhiguang Chen	
Multi-behavior Recommendation Based on Heterogeneous Graph and Attention Networks	200
Shaoci Xie, Yongjie Liao, Kerui Cao	
Multivariate Time Series Forecasting Based on Sliding Attention Correction LSTM Network	204
Jincheng Li, Linli Zhou, Liangtu Song	
Using Graph Isomorphism Network to solve Graph Coloring Problem	209
Yicheng Zhang, Kai Zhang, Ni Wu	
Research on Fusion Optimization of Multi-Provincial College Entrance Examination Volunteer Filling Algorithms Based on Stacking Algorithm	216
Yuxiang Liu, Zhijie Lu	
DLinear-based Prediction of the RUL of PEMFC	221
Ning Zhou, He Zeng, Jianxin Zhou	
Research on Open-Source Component Homology Analysis Model Based on Graph Neural Network and Attention Mechanism	225
Qiaojuan Jia, Ming Zhang, Xingke Guo, Ming Liu, Xiaoyun Tian, Shi Peng, Xiaoyu Jin, Dawei Ma	
Transfer Kernel Sparse Coding Based on Dynamic Distribution Alignment for Image Representation	230
Wei Huang, Min Gan, Guangyong Chen	
Integral Structure Parameters of CAD Model Based on Vectorial Finite Element Discrete Analysis	235
Zhenjiang Wu, Peng Wang, Jiansen Yang, Zhonghai Liu, Dong Cui	
Multiple Sequence Alignment Based on Indicator-Based Multi-Objective Evolutionary Algorithm	239
Yanlian Du, Yan Yang, Xianli Jiang, Yijun Shen, Chengrong Yu	
Video Sky Replacement Based on Dual-Branch Segmentation Network	243
Xiangrong Fu, Binzi Wang, Yang Shu, Wanyu Yang, Liya Tian, Youdong Ding	
A Hierarchical Manageability Reversible Data Hiding based on the Encrytion Process of Shamir's Secret Sharing	248
Yongjun Kong, Mingqing Zhang, Chao Jiang, Xiong Zhang, Siyuan Huang, Fuqiang Di, Tianle Ren	
Ontology-based Decision-making Support in Real-Time Strategy Game	255
Yaochu Wang, Jian Yang, Guoli Yang	
Safe Advantage Actor-Critic based on a Pool of Dangerous Samples	260
Xin Yan, Zhiqiu Huang	
StackFi: An Ensemble Learning-Based Model for WiFi Sensing Classification Tasks	265
Jiaxing Liu	

Traffic Light and Zebra Crossing Detection Algorithm Based on Bagging Ensemble Learning	270
Tingwen Chen, Shili Luo, Yanru He, Yezhen Gao	
Identification of Schizophrenia and Depression Based on Deep Learning and EEG	275
Yubo Zhang	
Progress in Artificial Intelligence Applications Based on the Combination of Self-Driven Sensors and Deep Learning	279
Weixiang Wan, Wenjian Sun, Qiang Zeng, Linying Pan, Jingyu Xu	
A Big Data-Driven Unsupervised Indoor and Outdoor Detection Approach Using Deep Contrastive Learning	285
Jun Zhu	
Application of Multi-Frequency Modular Distribution of Steady-State Visual Evoked Stimuli and Human-Computer Interaction	289
Ziyu Ge	
Signal Enhancement and Dimensionality Reduction by XDAWN and Compressive Sensing Models	293
Jinshuo Liu, Yang Hu	
Radar HRRP Open Set Target Recognition Based on Supervised Contrastive Learning	297
Siyu Chen, Xiaohong Huang	
A Method for Constructing a Dictation System Based on Artificial Intelligence Technology and a Dictation Machine	302
Rui Wang	
Contactless Height Measurement for Infants and Toddlers Based on Computer Vision	306
Liang Qiao, Siyu Liu, Jiapeng Li, Kejie Zhang, Yang Wang, Haoyang Li, Chunyan Liu	
Formation Prediction of MCA Intracranial Aneurysms based on Machine Learning and Deep Learning Algorithms	311
Jinjing Wang, Miao Song	
Adaptive Multi-Prototype Representation Learning	317
Wei Sun, Shaojie Zhang	
A Deep Learning-Based Multi-Feature Ambisonics Speech Enhancement Algorithm	322
Jiacheng Zhou, Yi Zhou, Hongqing Liu	
A New Method of Motion Planning for Mobile Robots Based on Improved JPS and Polynomial Trajectory Planning	327
Yi Zhang, Zhangtao Yu, Zhiqiang Shi, Zhe Zhou, Yuxuan Qi	
Residual-Based Convolutional Correlation Analysis for Enhanced Models in SSVEP Classification	335
Zihao Nie, Raofen Wang	
Multi-behavioral Recommender System with Heterogeneous Graph Learning	340
Jiaming Feng, Yang Liu, Junjie Zhang	
Research and Application of Artificial Intelligence Large Language Models Based on Feature Enhancement	344
Li Zhuang, Qiulin Wang, Lihua Song, Peiying Wu	
Recognition of Tobacco Yellowing Degree in Curing Process Based on Deep Learning	348
Xuan Song, Zhao Cheng, Weimin Guo, Shuzhen Cao	

Research on Key Technologies for Intelligent Detection of High-Speed Railway Pantograph Network Status Based on Improved YOLO Algorithm	353
Rong Wang, Shenglan Chen, Jun Wang, Wenchen Chen, Hai Pei	
A Flow Field Classification Method Based on Deep Learning	358
Xiaorui Bai, Wenyong Wang, Jun Zhang, Dengfeng Hu	
Urine Routine Tests-based Machine Learning and Urinalysis to Predict Acute Kidney Injury	362
URT-based Machine Learning and Urinalysis to Predict AKI	
Tingyao Jiang, Ye Sang, Hao Tan	
Deep Learning Based RF Fingerprint Identification Using Cyclic Shift Characteristic	369
Yuxin Guo, Aiqun Hu, Yu Jiang	
An Intelligent Risk Assessment Model Based on NLP	375
Xi Yang, Haibo Zhang, Xing Huang	
Visual Alignment Estimation Algorithm of Robotic Arm Based on Key Point Regression	383
Huichao Pan, Zhenli Wang, Xianming Fan, Zhaoxin Jia, Xin Li	
MMCS: A Code Summarization Approach Based on Multi-modal Feature Enhancement	389
Zhaolei Zhou, Lei Liu	
Design of Distributed Offloading Algorithm Based on Mobile Edge Computing Network	394
Ling Xu, Yingsheng Zhao, Yiguo Mei, Zhiguang Liu	
Using the XGB-LCE Model for Cardiovascular Disease Prediction from Individual Pivotal Factors	399
Yingjie Long	
An Efficient CNN Model for Outdoor Hazard Sound Classification with Hearing-Impaired Accessibility	403
Xin Zhao, Jiayi Liu, Yifei Chen	
Health Monitoring System Design of IoT-based Multi-Physiological Parameters with STM32	409
Xiangnan Tang, Wenjun Xu, Haiying Ye, Jinke Cai, Su Zhou, Lili Cai	
Calibrating Car-Following Models on Scenarioized Data using GA-NM Algorithm	413
Jiangfeng Chen, Ningyuan Yi, Jianjun Yu	
Rice Pest Recognition Method Based on Improved YOLOv8	418
Yang Yang, Juxing Di, Guisuo Liu, Jiali Wang	
Research on Optimisation Strategies of Energy Saving Train Operation Control	423
Qinda Xue, Jingyi Lin, Sheng Jin, Fanghong Guo	
A 146pW, 0.4V, 0.015%/V Line Sensitivity, High PSRR Leakage-Biased CMOS Voltage Reference with the Optimization of Body Parasitic Effects	430
Kai Yu, Qunshan Hu, Sizhen Li	
Weak Ship Target Detection Based on Attention Mechanism	435
Jianyu Zhang	
Esophageal Image Segmentation with Dual Attention Based on TransUNet	439
Zhehao Yu, Shaochen Jiang, Liejun Wang	
Improving the Accuracy of Multi-Step Prediction of Railway Freight Volume Based on Informer Model	444
Jiaqi Liu, Yun Jing	

Increase the Efficiency of Deploying Application Instances in Edge Environment	449
Song Wang, Lan Shen, Tian Lv, Haipeng Li, Chengxi Gao, Yanhong Jing	
Research on Job Scheduling Optimization for Automated Dual-Station Stacker Cranes in Stereoscopic Warehouses	453
Wenjie Cui, Wenxuan Zhou, Lei Xing	
Research on Ship Path Planning Based on Bidirectional A*-APF Algorithm	460
Fanqi Meng, Xiaoxiao Sun, Jinshan Zhu, Bin Mei, Peijie Zheng	
Prediction of Negative Emotions from Online-Offline Handwriting Features	467
Wentao Zhou, Yong Li, Liyang Xie, Zhongcheng Wu	
Research on Logistics Distribution Path Optimization Method Based on Ant Colony Algorithm	474
Fan Yu	
Steel Surface Defect Detection Based on Improved YOLOv7	479
Xue Wang, Feng He, Ying Chen, Suhuan Feng	
Research on Feature Extraction for MOOCs Evaluation Based on K-means Clustering Algorithm	483
Zhihong Zhong	
Design and Development of a Virtual Simulation Game for Garbage Classification Empowered by Digital Technology	487
Liyan Liu	
Application of AIGC Technology in Vernacular Architecture Design	492
Yuanming Zhang, Hui Yin	
Application of Improved A* Algorithm in Game Pathfinding	498
Yan Yang, Yanlian Du	
A Novel Two-stage Method for Texture Defect Detection	502
Lu Liu, Min Jiang, Lifa Xu	
Research on Prediction of Consumer Electronics Sales Based on GA-BP Neural Network	508
Yan Zhang, Qihong Tan, Yanwu Wang	
A Missing Data Imputation Method for Electricity Consumption Data Based on TCN-attention with Mask Tokens	513
Yifeng Mao, Ming Yang, Peng Li, Zhujian Ou	
Author Index	518