

# **2025 8th International Conference on Computer Information Science and Application Technology (CISAT 2025)**

**Kunming, China  
11-13 July 2025**

**Pages 1-668**



**IEEE Catalog Number: CFP25VG4-POD  
ISBN: 979-8-3315-3891-0**

**Copyright © 2025 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:	CFP25VG4-POD
ISBN (Print-On-Demand):	979-8-3315-3891-0
ISBN (Online):	979-8-3315-3890-3

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## Table of Contents

<b>Research on Intelligent Grading Algorithms for Subjective Questions Based on Transformer and Weakly Supervised Learning</b>	1
Juan Li, Xuesong Wang, Tianxiong Xie, Ting Kang	
<b>CViTM-Net: A Hybrid Deep Learning Method for Tuberculosis Detection in CT Images</b>	5
Shaohong He, Siqi Liao, Yuyan Wu, Heng Wu, Zijun Zheng, Youfei Wu, Jianhua Liu, Junhua Zhong	
<b>Time Series Anomaly Detection Based on Asymmetric Autoencoder and Gaussian Mixture Model</b>	10
Weiwei Liu, Cong Liu, Xuefen Niu, Changming Xu	
<b>Optimization of Innovation and Entrepreneurship Education Models and Course Recommendation in Vocational Colleges Using LSTM Neural Networks</b>	16
Benli Li, Aifei Yin	
<b>Commerce Social Network Data Analysis and Product Recommendation Optimization Using Graph Neural Networks</b>	23
Panpan Li, Zhuanping Du	
<b>Decomposed Modular RAG: Task-Aware Multi-Step Retrieval and Reasoning for Small-Scale Language Models</b>	29
Yuchen Wang, Haolong Wang, Kai Wang, Xinyu Du	
<b>A Cross-National Study on Education and Employment Outcomes Using Machine Learning-Based Predictive Modeling</b>	36
Ming'e Yu	
<b>Detecting Business-Logic Vulnerabilities in REST APIs Based on Knowledge Distillation</b>	41
Yuan Pan, Guocong Feng, Kaitian Huang, Chunmei Zhang	
<b>Transfer Learning for Subsequence Clustering from Multiple Source Domains</b>	46
Ling Wang, Qinchun Xu, Rongxian Wang	
<b>Parameter-Efficient Fine-Tuning Methods for Multilingual Named Entity Recognition</b>	51
Hanhui Chen	
<b>Construction and Application of Predictive Model of College Students' Mental Health Based on Machine Learning</b>	58
Jiaogang Lin	
<b>The Model for Personalized Path Planning of English Learning Based on DQN</b>	62
Shuo Yang	
<b>Population Prediction Using Hierarchical LightGBM Based on Feature Extraction from Electricity Indicators</b>	66
Jiandong Yao, Jingyan He, Dan Wang, Dengwei Duan, Bin Li, Yanru Zhang	
<b>MobileUNETR+: An Efficient Medical Image Segmentation Network Integrating Self-Attention and Dual-Pathway Strategies</b>	73
Peiwen Tan, Bo Li	
<b>Research on Household Electricity Prediction Based on Improved Neural Network</b>	78
Haojie Yu, Rongliang Zhang, Zhenzhong Hao	

<b>Research on Dynamic Path Planning of Traffic Isolation Robots by Improving A* and DWA</b>	83
Jing Li, Haili Xu, Jiajun Cai, Shouquan Ma, Siwei Zhang, Qiang Xing	
<b>MR-HAN: Multi-Relational Hierarchical Attention Network for Inductive Text Classification</b>	90
Shiyu Wang, Gang Zhou	
<b>Sentiment Analysis Model for Live Streaming Comments Based on Bi-LSTM and Attention Mechanism</b>	96
Jiadong Zhao, Yue Zhang	
<b>A Multi-Agent Reinforcement Learning Strategy Based on Graph Neural Networks and Credit Similarity</b>	100
Ximeng Luo	
<b>Document Rectification via Hierarchical Attention-Guided Control Point Regression</b>	104
Hongyin Ni, Jiayu Han	
<b>Research on Risk Prediction of Coronary Heart Disease Based on Machine Learning</b>	108
Ruiting Chu, Cuicui Yang	
<b>An audio digital watermarking algorithm based on logistic encryption study</b>	112
Haiyi Fan, Ruotong Gao	
<b>Fusion-Based Retrieval-Augmented Generation for Complex Question Answering with LLMs</b>	116
Yumeng Sun, Renhan Zhang, Renzi Meng, Lian Lian, Heyi Wang, Xuehui Quan	
<b>Privacy-Enhanced Federated Learning for Distributed Heterogeneous Data</b>	121
Tianze Kang, Haifeng Yang, Linyan Dai, Xin Hu, Junliang Du	
<b>A Large Language Model-Based News Recommendation Method Integrating User Hierarchical Interest Representation</b>	126
Zong Zuo, Lei Tan, Han Wei, Jianping Wu, Taojie Zhu, Jing Chen	
<b>Dynamic Retrieval Strategy Optimization in Retrieval-Augmented Generation Based on User Feedback</b>	132
Lulu Lin, Xiao Zhu	
<b>Attention-Based Spatio-Temporal Recurrent Neural Network Prediction Model</b>	136
Guanchun Mao, Junyuan Deng	
<b>A Digital Identity Authentication Framework via BBS+ Signatures and Convolutional Neural Networks</b>	142
Linxi Wang	
<b>Research on the construction of knowledge graph ontology for technology dynamic tracking</b>	146
Simeng Zhu, Yongfang Wang, Hang Yu	
<b>Low-Cost 3D Authoring via Guided Diffusion in GUI-Driven Pipeline</b>	152
Xiao Hu	
<b>Design and implementation of comprehensive intelligent information service system based on spacenetwork big data</b>	157
Sidong Liang, Lu Liu, Xiaodong Yang, Qingtao Jiang	

<b>Region-guided Latent Diffusion for Training-free Style Transfer</b>	165
Yang Zhao, Ruilin Zhang, Songtao Liu, Yongsheng Dong	
<b>A Multimodal Time-Series Model with Adaptive Attention Mechanism for Alzheimer's Disease Classification</b>	170
Yuchen Yan	
<b>Lightweight Local Differential Privacy For High-dimensional Data</b>	175
Tianyu Zheng, Xiaolin Zhao, Zhenyan Liu, Ce Song, Yiyu Li, Yukun Huang	
<b>PHP-CABE: Partially Hidden Policy Comparable Attribute-Based Encryption with Computation Outsourcing</b>	183
Zihui Wang, Jun Zhang, Jinwei Li, Zhongcheng Wu	
<b>Research on Generalized Named Entity Recognition Approach for Military Texts</b>	188
Yi Ma, Sijie Wei, Minghui Chen	
<b>An Optimized Multimodal Feedback System for VR Skill Training Based on ST-GCN and WaveNet</b>	194
Yaoru Hu, Zelong Tian, Yilin Lyu, Feng Tian	
<b>A Swin Transformer-based model for monitoring attentional states with EEG signals</b>	199
Jianming Sun, Zhihui Xu, Shuo Yang	
<b>Research on Technical Indicator Validation Methods Based on SysML</b>	203
Ji Lu, Bing Yu, Zilong Liu, Yufeng Li, Shicao Zhao, Baoran An	
<b>A True Random Number Generator Based on Multimodal Feature Fusion from Video</b>	210
Baojiang Ye, Haifeng Wang, Wenbin Wang, Kun Zhang, Tianyi Wang, Weidong Wang	
<b>Lightweight Predictive Networks</b>	214
Yueming Wang	
<b>Intelligent Automation of Network Security Operations via Intention-Driven Agents and Large Language Models</b>	220
Guocong Feng, Yuan Pan, Chunmei Zhang, Kaitian Huang	
<b>SecLLM-Intent-Driven Orchestration of Heterogeneous Security Devices via MCP Function Calling and Retrieval-Augmented Generation</b>	225
Guocong Feng, Yuan Pan, Chunmei Zhang, Kaitian Huang	
<b>Robust Contribution Measurement for Federated Learning</b>	230
Junyu Han	
<b>Cross-Domain Cybersecurity Threat Detection via Self-Supervised Feature Disentanglement: A Modular AI Framework for Zero-Shot Generalization</b>	235
Yulin Zhou, Wenkai Li	
<b>DeepSeek-Med-8B: Medical LLM for Chinese Diagnosis and Referral</b>	240
Chenxing Li, Jiawei Mao, Bin Liu, Wei Luo	
<b>Multilevel attention residual network for super-resolution reconstruction</b>	245
Biao Wang, Mingming Liu, Ting Zhou, Hongxing Bai, Jun Su, Lingyu Yan	

<b>Towards a Secure and Efficient Framework for Privacy-Preserving Truth Discovery in Sparse Data Scenario</b>	249
Jie Ren, Junfeng Ye	
<b>Source Code Vulnerability Detection Method Based on Refactored Code Attribute Map</b>	253
Ziyu Wang, Yuhang Liu, Wenhua Huang	
<b>Exploiting Input Space Translation and Contrastive Learning for Multimodal Sentiment Analysis</b>	257
Bowen Yao, Wenhua Qian	
<b>Runtime Verification for Linux Kernel Based on eBPF</b>	262
Lin Yang, Yonggang Che, Fengyu Lin, Xueyuan Gao, Wei Dong	
<b>Research on the Construction of Prediction Model of College Students' Employment under Deep Learning Technology</b>	269
Mei Guo	
<b>InfraMLForge: Developer Tooling for Rapid LLM Development and Scalable Deployment</b>	273
Yuhan Zhang	
<b>NodeBridge: Enhancing Semi-Supervised Learning on Graphs via Inter-node Learning</b>	278
Rong Zhao, Qiuyan Wang, Yang Yan, Hanning Chen	
<b>Research on the Application of Facial Emotion Recognition in Aircraft Surveillance System</b>	283
Mei Liu, Jin Ji, Kui Chen	
<b>Sentiment Classification of Chinese Comments Based on Pre-trained Language Model</b>	287
Hongmei Li, Yuan Guo, Haihang Zhang	
<b>Research on the Innovative Framework and Application of Large Language Models in Cross Modal Tasks</b>	293
Yuanzhuo Ji, Guohua Zhu, Yifan Wang, Zhen Tian, Yaoxuan Liang	
<b>Mixed data outlier detection based on information entropy integration strategy</b>	299
Risheng Wang, Yijing Song, Pan Wu, Xin Li	
<b>Density Peak Clustering Analysis Based on Coulomb Force Similarity Metric</b>	307
Pan Wu, Min Zhang, Risheng Wang, Xin Li, Zhiwei Xie	
<b>UAV-Mamba: Efficient Mamba for Real-time Infrared Small Target Detection from UAV Perspective</b>	316
Guyang Yu, Miankuan Zhu, Tao Pang, Hong Xu, Mingke Gao, Fei Xia	
<b>A Rapid Defect Detection Method for Hard Tools Based on Improved YOLOv9</b>	322
Ao Cui, Guobin Cang, Rundong Yang, Wei Wang, Geng Chen, Xuetao Wang, Dapeng Ma, Qinglong Yang	
<b>Evaluating RTMDet for Efficient Small-Object Detection in UAV Remote Sensing Imagery</b>	327
Feiran Zhang, Cui Jin, Ya Ji, Jiali Liu, Wei Zhang	
<b>VanillaNet-Enhanced YOLO11 for Efficient and Accurate Aircraft Surface Damage Detection</b>	334
Jiankun Bai, Wanyi Yu, Jun Tang	

<b>A Bronze Inscription Recognition Method Based on Multi level Feature Fusion Network</b>	339
Taikang Zhang, Jingyi Liu, Lei Yang, Diao Zhou	
<b>Enhanced Fake News Detection Using BERT-Attention Model and Comparative Algorithm Analysis</b>	343
Qinling Sun	
<b>A few shot semantic segmentation network for remote sensing images</b>	349
Ting Wang, Ruijie Yan	
<b>A Mean-Teacher Framework for Source-Free Domain Adaptive Foggy Object Detection</b>	357
Ningning Qu, Yu Sang, Xin Gao, Siman Li	
<b>EMR-net: A lightweight multi-scale feature fusion PCB defect detection algorithm</b>	361
Ying Li, Wei Yang	
<b>Gearbox Fault Diagnosis Based on a Dilated Convolutional Neural Network</b>	367
Shibo Luo, Yafen Liu, Yu Wang, Yang Han	
<b>A Wavelet Frequency Domain Enhanced Network for Hyperspectral Image Classification</b>	372
Beibei Zhang, Xuan Dong, Zhen Ye, Qiushi Qu	
<b>The research on the recognition method of foreign fibers in cotton based on improved lightweight YOLOv8</b>	378
Weiyuan Long, Li Cao	
<b>Research on a Fault Diagnosis Method for Elevators Based on Sound Signals</b>	385
Qianting Xu, Yanru Lin, Huilin Liu	
<b>Integrating Spatial Contrast Attention and Triple-branch Tunable Atrous Convolution for Panoramic Dental X-ray Segmentation</b>	391
Pingyang Zhong, Kun Wang, Xi Hu, Zengxi Hang	
<b>Understanding Parameter Influence in Gravitational Waveforms: A Dual-Method Sensitivity Analysis</b>	395
Chenyiteng Han	
<b>An End-to-End Scratch-Trained Object Detection Framework with Local Attention and Multi-Scale Feature Fusion</b>	404
Teng Yang, Tingsong Ma, Dongliang Chen, Xinyu Ye	
<b>An Advanced Digital Genetic Circuit System For Stroke Detection</b>	408
Yu Shen, Jiakang Liu, Bingrui Yu, Qiang Hao, Yicheng Han, Jiqing Wang, Xiang Wang	
<b>ETCNext: Multiscale Dual-view Feature Fusion Network for highway vehicle image classification</b>	413
Xinjia Chen, Hongwei Ding, Yuanjing Zhu, Changhao Liu	
<b>Optimizing Facial Expression Recognition: From Model Visualization Insights to Attention-Enhanced Performance</b>	417
Jiayang Zhang	
<b>Elderly fall behavior recognition algorithm based on improved YOLOv8-Pose</b>	422
Xuesong Wang, Tianxiong Xie, Juan Li	

<b>Application and Effect Evaluation of Improved DETR Algorithm in Small Object Detection</b>	426
Ningxiang Sun, Zhang Hao, Tianping Li	
<b>Shape-Prior Driven YOLO Model for Pothole Detection to Assist Visually impaired pedestrians</b>	431
Xiaoqing Hu, Sanqian Li, Zaidao Han, Risa Higashita, Ji Zou, Jiang Liu	
<b>Strong Amplitude Suppression in Seismic Data Using PSO-VMD</b>	435
Jun Mei, Yajuan Xue	
<b>A Lightweight Multi-scale Dilated Fusion Network for Real-Time Semantic Segmentation</b>	440
Ping Han, Wencong Lv, Huahong Zuo	
<b>Parallel Attention Groups and Dynamic Channel Fusion for Image Dehazing in Port Security</b>	444
Jingqi Zhang, Xianqiao Chen, Boshi Li, Zhou Yan	
<b>ACR Net: Adaptive Contrast Reconstruction U-Net for Hot-Rolled Steel Defect Detection</b>	448
Jiayi Zhang, Jingliang Wei, Jiaqi Li, Puyu Wang, Shilei Wang, Zhenzhen Li, Yueying Liu	
<b>Joint Segmentation of Optic Disc and Cup Using Attention Mechanism and Context Aggregation</b>	453
Zhiyong Zeng, Zhenkun Lu, Shuang Han, Lang Chen	
<b>A Lightweight Real-Time Image Deraining Network for Maritime Port Scenes</b>	459
Meng Li, Xianqiao Chen, Boshi Li, Yao Lu	
<b>Adaptive Fuzzy Neural Network for Efficient and Robust Image Segmentation on Edge Devices</b>	463
Hetian Liu, Weijie Zhang, Shenghui Di, Zhen Huang, Zicong Fan	
<b>BlueSegamba-UNet: A Lightweight Super-Resolution-Aware Framework for UAV-Based Blueberry Ripeness Segmentation</b>	467
Huaxu Guo, Jialuo Du, Kuo Song, Yong Sun	
<b>Insulator defect detection algorithm based on improved YOLOv8</b>	471
Chenghao Han, Zhi Zhang, Huashan Zhang	
<b>Microbial Image Classification with Limited Data Quality: A Progressive Enhancement-Fusion Approach</b>	476
Zhaolong Yu	
<b>Multimodal instance segmentation based on spatial axial band attention used in electrical distribution scenario</b>	482
Jinbin Luo, Jian Zhang, Hao Chen	
<b>Sparse Input Novel View Synthesis using Gaussian Splatting for Power Distribution Network Scene</b>	488
Jian Zhang, Jinbin Luo, Qidi Guo	
<b>Hierarchical Cross-scale Attention-based Multi-instance Learning for Whole Slide Image Classification</b>	493
Longzhe Yue, Haixing Li, Wanying Huang	
<b>Robust Infrared Image Feature Modeling and Matching for Power Distribution Line Inspection</b>	498
Duanjiao Li, Jinbin Luo, Jian Zhang	

<b>Research on the Design of a Mimetic Defense Architecture for Distributed Situation Awareness Devices Based on Dynamic Heterogeneous Redundancy</b>	504
Liyu Lu, Muxian Liu, Guihua Liu, Zhibo Dong, Fanyu Wu	
<b>Performance and Stability Trade-offs of Attention Mechanisms in YOLOv8n-based Indoor Crowd Detection</b>	511
Yang Yang, Tao He, Qiang Li	
<b>Fault Entity Recognition Method of Aviation Processing Module Based on BERT-HDA-CRF</b>	515
Zhilong Zheng, Panpan Jiang, Zhenwei Zhou, Lubin Yu, Junbin Liu, Dengyun Lei	
<b>Dual-Branch Architecture Model Enhanced by Wavelet Transform Network for Progressive Pedestrian Trajectory Prediction</b>	520
Qihan Liu, Zhanguo Xia, Sicheng Liu, Huan Ping, Chunlei Li	
<b>Intelligent Diagnostic Model for Pulmonary Disease based on Multi-modal Data Integration Strategy of Chest CT images</b>	531
Yao Niu, Jiahao Liu, Wei Li, Jia Xu	
<b>SCL-CSDG: Soft Contrastive Learning for Cross-Subject Domain Generalization in EEG Emotion Recognition</b>	536
Shuhui Jiang, Hong Liu, Xiuxiu Qiu	
<b>A Frequency-Domain Style Adapter For Cross-Domain Few-Shot Segmentation</b>	541
Luxin Jiang	
<b>Ship Detection Algorithm Based on Improved YOLO11</b>	547
Jingzhe Dong, Danpu Zhang, Jiadong Li, Jianfeng Yang	
<b>A Road Waterlogging Segmentation Method Based on Improved YOLOv8n-Seg</b>	554
Yuanhao Ding, Yushen Liu	
<b>A spatio-temporal attention network-based visual recognition method for post-stroke depression</b>	559
Hang Xu, Xinyue Wang, Lepeng Wang, Xiaofeng Lu	
<b>Research on 3D Reconstruction Method for Dynamic Scenes Based on Monocular Vision</b>	565
Zhaotian Wu, Zhendong Hua, Jiangfeng Jin, Cong Han	
<b>Research on Heart Image Segmentation Algorithm Based on Improved UNet++Model</b>	570
Xiang Yu, Yao Guan, Chenyu Wang	
<b>Double Branch Image Dehazing Algorithm Based on Probabilistic Uncertainty Modeling</b>	574
Yuchao Zhou, Hongyu Sun, Jingwei Dong, Yinuo Yan, Luyang Shao	
<b>Artifact Elimination in 3D Gaussian Splatting via Multi-Scale Feature Maps</b>	579
Yizhou Fang, Dongxiao Han, Yi Wang, Yuwen Li	
<b>Physics-based Diffusion Model for Joint Cloud and Haze Removal in Remote Sensing Images</b>	586
Cheng Ma, Guojun Liu	
<b>Federated Meta-Reinforcement Learning for Adaptive Wireless Networks: A Unified Framework Integrating Proximal Policy Optimization, Meta-Learning, and Graph Neural Networks</b>	590
Yulin Zhou, Yuwu Li	

<b>Steel surface defect detection algorithm based on EBC-YOLOv8</b>	595
Gang Wang, Zhixin Dai, Yaohui Pan	
<b>Research on Mass Detection in Mammographic Images Based on an Improved YOLO Network Model</b>	602
Xiaohao Luo, Zhili Chen	
<b>A PET/CT Dual-modal Breast Cancer Classification Method Based on Vision Transformer</b>	608
Chenjun Ge, Zhili Chen	
<b>Microcalcification Classification in Mammograms Based on HyperResNeXt</b>	614
Meng Shao, Zhili Chen	
<b>A Lightweight Spatiotemporal Separable Convolution Network for HSI Classification</b>	620
Shuqing Qian, Yuan Ge, Guoyang Wan, Jingwei Cheng	
<b>Image tampering detection and localization model based on multi-scale edge information enhancement</b>	624
Yanfeng Li, Yongfei Ma, Lihua Hu, Yaling Xun, Haifeng Yang	
<b>AMDA-Net: Adaptive Multi-scale Deformable Attention U-Net for Medical Image Segmentation</b>	633
Lianjun Song, Wei Yuan, Yuexiu Zhang	
<b>RFEGSA: Gene Expression Feature Selection Utilizing Recursive Feature Elimination and Gravitational Search Algorithm</b>	639
Yuanyuan Han	
<b>Feature Selection Integrating Decision Importance Grouping and Particle Swarm Optimization</b>	645
Yuanyuan Han	
<b>Qwen3-Powered Log Classification for Improved SOC Decision-Making</b>	651
Yuan Pan, Guocong Feng, Kaitian Huang, Chunmei Zhang	
<b>Airport shuttle vehicle path planning method combining graph neural network and reinforcement learning</b>	656
Xiaolin Liu, Keke Ren	
<b>Research on Key Technologies and Verification Methods for Software Pilot Testing Oriented to Production Deployment</b>	660
Yin Luo, Jun Lin, Dongyu Yang, Xun Lu, Cijia Zhi, Dan Li	
<b>A SNR-Gated Multi-Channel Convolutional LSTM Network for Automatic Modulation Recognition</b>	669
Jingyi Xing, Shengfa Xu, Chunpeng Xu	
<b>Automatic Recognition System for P&amp;ID Diagrams in Distributed Control Systems</b>	674
Nanxin Qu, Jianzhong Xue, Shaohua Gao	
<b>A Short-Term Wind Power Forecasting Method Based on STL-TimesNet-iTransformer Model</b>	679
Ding Ma, Delong Cui, Qirui Li, Zhiping Peng, Jieguang He, Zhusen Liang, Yonglin Huang	
<b>Modeling Vehicle Queuing at Battery Swapping Station in a Random Environment</b>	684
Wanyuan Cheng	

<b>Research on Behavior Modeling of Computer Generated Forces Based on Improved DDQN</b>	689
Lingqi Yan, Xueman Fan, Changyou Xue	
<b>Enhancing Spectral Graph Recommendation via Gated Fusion and Layer Normalization</b>	694
Yuege Zhu, Zhen Zhao	
<b>Design of a Multiscale Temporal Aware Model for Evaluating Spoken Fluency in Oral Expression</b>	699
Qianyi Zhou	
<b>An Intelligent Question-Answering System Based on Deep Hybrid Search and Knowledge Graph for the Ecological Knowledge</b>	705
Shuailing Zhao, Yuyang Tang, Yilin Xing, Gaoyu Shi, Zi Li, Yiwei Zhao, Xiaodan Zhang	
<b>Exploration of the realization of data storage encryption technology based on deep learning algorithm</b>	713
Hongmiao Yang	
<b>Transformer Fault Diagnosis Method Based on SRBM-VPMCD</b>	717
Shaowei Liu, Bixiang Dai, Runyi Wang, Zhou Jing, Chen Ge, Jinhao Zheng	
<b>A Method of Psychological Stress Recognition Based on Pulse Rate Variability Signals and Deep Learning Technology</b>	722
Yanbo Chen, Xin Yang, Junzhe Li	
<b>Integrating Color Perception in Multimodal Sentiment Analysis: A Hybrid Model Using DeBERTa and DenseNet</b>	727
Yanyu Chen	
<b>An improved rime optimization algorithm for cloud manufacturing scheduling under open shop environment</b>	733
Zian Zhao, Pengran Wang	
<b>AdvFlowGAN: High Quality Adversarial Network Flow Synthesis Based on GAN</b>	737
Xiaoyue Yin, Meichen Liu, Zhaoxu Ge, Hua Wu	
<b>A relay assignment method that balances communication quality under cooperative communication networks with multiple source nodes</b>	744
Haotian Xing, Guifen Chen	
<b>Area Coverage Planning Algorithm Based on Discrete Points Access Information Clustering</b>	748
Shuo Li, Chi Zhang, Yingte Chai, Wenbo Su, Jin Zhu, Enlei Shi	
<b>Research on an Intelligent Verification Method for Hidden Dangers in Power Metering Boxes Based on Deep Instance Segmentation</b>	757
Yu Cui, Haishan Zhou, Yuxuan Zhu, Wanxu Zhao	
<b>Research on Data Processing of Personnel Target Damage Caused by Blast Wave Based on CNN-LSTM Hybrid Model</b>	762
Yong Li, Zhiyuan Zhang, Ming Jiang, Pengcheng Qin, Zhiyang Hu	
<b>A Federated Learning Intrusion Detection Method for Resource Constrained Smart Grid Devices</b>	767
Tianze Wang, Rong Gao	
<b>A method for assessing the operational saturation of electric power operators based on the fusion of multi-source risk factors</b>	774
Hongbo Zou, Qian Liu, Aotian Yuan, Siyuan Chen, Hengrui Ma, Bo Wang	

<b>Optimization Method for Network Topology Discovery Based on Minimum Vertex Cover</b>	780
Song Long, Chuntao Li, Qiuying Zhang, Xiaofang Shen, Bin Xu, Wengang Zhang	
<b>Research on Temperature Prediction Algorithm for Water-Oil Interface Layer in Oil Tank Fire Based on Neural Network</b>	784
Xiaochen Liu, Weihua Zhang, Wenqing Wang	
<b>Research on tobacco debris recognition system based on YOLO model</b>	790
Jing Luo, Kaizhang Deng, Feng Guo	
<b>Optimization of YOLOv8 algorithm for traffic sign object detection based on MBCA and C2f AKConv module</b>	794
Qichao Duan, Pengju Han	
<b>Map scene generation framework based on language models</b>	799
Ruichen Wang, Yu Xu	
<b>HS-EfftNet: Heart Sound Classification Using EfficientNet Integrating Dynamic Convolution and Coordinate Attention</b>	805
Wenqiang Zhou, Huizhong Lin, Kaizhi Chen, Shangping Zhong	
<b>DVSG-SLAM: Dynamic Visual SLAM Based on semantic and geometric information</b>	809
Mingxing He, Qi Ouyang, Xinglan Zhang	
<b>Automatic synchronization method for dual server switching database based on FP algorithm</b>	813
Jiejuan Guo, Qian Liu, Zhongying Zhao, Jiaxu Liu, Zhenwei Qin	
<b>DKVMN-RFG: A Knowledge Tracing Model Based on Relation-aware Graph Attention</b>	817
Taiwu Yao, Yabing Wang, Guimin Huang, Jian Yao	
<b>Spatial and Temporal Evolution Analysis Model of Biodiversity with Multi-source Heterogeneous Data Fusion</b>	821
Lijiang Bai, Qiang Zhang	
<b>Homomorphic Encryption Based Privacy Protection Scheme Design for Tourism Big Data</b>	825
Shichong Nie, Yang Gao, Kaiyu Li, Bilin You, Pan Jiang	
<b>Two classes of NMDS codes with dimension 3 and 4</b>	830
Menglei Chen, Jiantao Li, Wei Zhang	
<b>Special Convolution and Mask R-CNN: A New Method for Text Recognition on Cultural Relics</b>	835
Haoyang Zhang	
<b>CCNN-based digital awareness strategy of data network security situation</b>	839
Changchun Su, Xinyu Zhang, Leiliang Sun	
<b>AI Agent for Socioeconomic Prediction: Modeling Female-Headed Households in South Africa</b>	844
Tanush Sharanarathi, Shreyas Iyer	
<b>Multi-view Dynamic Graph Convolutional Traffic Prediction with Periodic Offset</b>	850
Yujia Wang, Yaling Xun, Xing Wang, Yanfeng Li	

<b>Traffic Flow Prediction Method Based on Multi-scale Feature Learning and Long-range Dependency Capturing</b>	859
Jiongyu Chen, Lichan Zhou, Yuqing Yang, Jianghui Cai	
<b>A novel hand-eye calibration method for eliminating cumulative error of robot kinematics</b>	866
Junyi Lin, Hongbing Li, Qi Dou, Yupeng Li	
<b>An Interpretable Graph Neural Network for Multi-lead ECG in Coronary Artery Disease Detection</b>	872
Jing Qin, Lisha Pei, Bin Wang, Lu Liu, Yutian Wei	
<b>XApplication of Multi-Level Recommendation Algorithm Combining Collaborative Filtering and Game Theory in Network Cultural Value Propagation</b>	877
HeNan Li	
<b>Collaborative Distillation Strategies for Parameter-Efficient Language Model Deployment</b>	881
Xiangdong Meng, Yan Wu, Yexin Tian, Xin Hu, Tianze Kang, Junliang Du	
<b>Network Intrusion Detection Using Temporal Convolutional Networks for Time-Series Traffic Modeling</b>	886
Jiaqi Sun	
<b>Cluster-Based Traffic Optimization and Dynamic Resource Allocation for Network Systems</b>	891
Jiaqi Sun	
<b>Optimization of Airline Scheduling Using Reinforcement Learning with PPO Algorithm</b>	896
Duo Li, Qiao Cui, Shuang Yu, Simin Zeng, Haihao Lin, Xiangsheng Huang	
<b>Frequency-Domain Dual Masking for Enhanced Time Series Anomaly Detection</b>	904
Jiale Chen, Shichao Zhang	
<b>Research on Robot Path Planning Integrating Multiple Algorithm Concepts</b>	909
Yuxin Lu, Jialong Li	
<b>Ideal Lattice-Based Efficient Data Sharing Scheme for Cloud Storage</b>	914
YanJun Li, Jinlong Wu, Jian Liu, Shanshan Huo, Yuzhu Zhang	
<b>Cross-Hierarchical Multimodal Sentiment Analysis for Mental State Monitoring</b>	920
Wenjie Yuan, Ying Liu, Dongjian Gao, Yaobin Shi	
<b>Research on Software Architecture Design Based on Functional Safety</b>	925
Wenxia Xi, Wei Guo, Ruiya Shi	
<b>A Distributed Incremental Processing Framework for Large-Scale IoT Data Streams</b>	930
Zebo Huang	
<b>A Blockchain-Based Secure Framework for Distributed Data Storage and Transmission in IoT-Cloud Environments</b>	935
Zebo Huang	
<b>A Hybrid User Behavior Prediction Model for Wireless Networks Based on Collaborative Filtering and GRU Networks</b>	940
Jiazhen Wang, Zebo Huang	

<b>Q-Learning-Based Dynamic Traffic Routing Optimization for Adaptive Path Selection in Complex Networks</b>	945
Jiazhen Wang, Zebo Huang	
<b>A load forecasting method for photovoltaic systems based on distributed learning</b>	949
Junwei Zhang, Ke Zhou, Xiankui Wen, Yu Fu, Mingjun He, Yang Yu	
<b>Enhancing Text-to-SVG Generation via Structured Instruction Embedding and Syntax-Aware Reinforcement in Large Language Models</b>	954
Peiqing Lu, Shihao Zhao, Yushang Zhao, Runmian Chang, Yinuo Yang	
<b>DataFuse: Optimizing Interview Analytics Through Multimodal Data Integration and Real-Time Visualization</b>	959
Minhui Xie, Boyan Liu	
<b>Square Superpixel Generation and Representation Learning via Granular-ball Computing</b>	964
Shilin Zhao, Dawei Dai, Guolai Jiang, Fenglin Yu, Chengfang Zhang, Shuyin Xia	
<b>Cross-Linguistic Transfer for Low-Resource Sentiment Analysis: Adapting Multilingual BERT to Dialects and Minority Languages</b>	969
Shaoyue Feng	
<b>Lidar-inertial-wheel SLAM for ground robots in complex scenarios</b>	976
Xiaolong Li, Yangqi Ou, Qirui Sun	
<b>Design of a Dynamic Trajectory Cooperative Control Model for Autonomous Vehicles Based on Urban Traffic</b>	981
Haochuang Shi, Tao Lin, Xingzhi Lin	
<b>Emotion Analysis and Communication Effect Optimization for Cross-Cultural Documentaries Based on Convolutional Neural Networks</b>	986
Jiaheng Zhuang	
<b>Autonomous Resource Management in Microservice Systems via Reinforcement Learning</b>	991
Yujun Zou, Nia Qi, Yingnan Deng, Zhihao Xue, Ming Gong, Wuyang Zhang	
<b>PID Parameter Optimization Based On The Improved Moth Flame Optimization Algorithm</b>	996
Jing Han, Yichao Zhu, Chunjie Shu, Rui Zhao, Huijuan Wang, Yuxiao Sun	
<b>Development and Accuracy Optimization of Machine Learning-Based Spare Parts Demand Forecasting Models</b>	1001
Jing Zhang, Zhongyin Li, Wei Hu, Yousong Li, Linyang He, Changzhi Bian, Yifei Pang, Yong Li, Lichun Wang, Jun Fan	
<b>Neural Network-Based Method for Jitter Suppression of Roll Angular Rate in Dual-Spin Projectiles</b>	1006
Xinyi Wu, Fangxiu Jia, Xiaoming Wang, Zixiong Xiao, Xiaobao Guo	
<b>HT-FVD: Hybrid Transformer Framework for Fine-Grained Vulnerability Detection in Third-Party Libraries</b>	1014
Rui Chen, Peng Wu, Jiancheng Zhang, Cheng Chen	
<b>Optimization and Application of Improved Fire Detection Algorithm in Inspection Robot Field</b>	1020
Lianyi Zhao	

<b>Semantic-Constrained GAN-Based Joint Description-Feature Transmission Method for Image Semantic Communication</b>	1024
Yi Ding, Jia Liu, Xinaoxue Zhang	
<b>Research on Computation Offloading Strategy Based on Quality of Experience Optimization in Mobile Edge Computing</b>	1029
Haisheng Huan, Peng Zhao, Nuo Chen	
<b>Boosting Transferable Attacks with Decision-based Adversarial Perturbations</b>	1037
Weiqliang Guo, Yatie Xiao, Zhenbang Liu, Pian Wang	
<b>Design and Implementation of a Tactical Wargame Adversarial Platform Based on Lightweight SDK</b>	1043
Rui Hu, Wenhao Qi, Bin Zhao, Haofei Ma	
<b>Control Strategy of Electric Dynamometer Based on the Improved Whale Optimization Algorithm</b>	1048
Yuqi Yang, Guang Tong	
<b>Design of supply chain risk prediction and early warning model based on deep neural network</b>	1053
Xiaoli Chen	
<b>The Design and Improvement of an Auxiliary Tool for Filtering Test Data of Spacecraft products Based on Python Tkinter</b>	1059
Jianwei Shi, Haoqi Zhao, Yutao Zhou	
<b>An Auxiliary Two-Stage Model for Multimodal Aspect-Based Sentiment Analysis Based on Aspect-Face Dual Alignment</b>	1063
Wencong Wang, Junjie Chen	
<b>Intelligent Medicine Management System Based on 8051 Microcontroller</b>	1070
Jinru Li, Yumei Gong	
<b>Optimal Path Planning Based on ID3QN for Vessel Navigation in Port Areas</b>	1075
Sheng Yan, Xianqiao Chen, Xiaohan Li, Boshi Li	
<b>ML-Driven Dynamic Task Scheduling for Heterogeneous Computing via Spatiotemporal Performance Prediction</b>	1079
Yeheng Jin, Xuejun Yu, Cunzhuo Lu, Jing Xia, Yanqi Lu, Jinyang Yan	
<b>YOLO-Based Detection Method for Complex Underwater Acoustic Pulse Signals</b>	1084
Leilei Zhou, Jiaying Qiu, Jing Zhang, Zhe Chen, Weiguo Dai, Degang Zhao	
<b>Architecturally Diverse Stacking Ensemble for Attributing LLM Outputs via Relational Reasoning</b>	1089
Zijun Zhou, Chen Zhao, Xinrui Li, Haoyun Zhang, Runmian Chang	
<b>Optimization of Anti-Affinity Virtual Machine Placement Using Improved Game Theory Algorithm</b>	1093
Yajie Li	
<b>Design of Detection and Defense Framework Based on SQL Injection</b>	1098
Zhicheng Han, Lin Yuan, Aolin Yin, Lei Wu	
<b>LSTM-Transformer Fusion Variational Autoencoder (LTF-VAE) for ADS-B Anomaly Detection</b>	1103
Dongxu Jiang, Lei Liu	

<b>A Holistic Analysis of MANETs Routing Protocols in Diverse Mobility Models</b>	1108
Tingfang Sun, Abdur Rashid Sangi, Yiyang Hu, Yuxuan Jin, Maryam Cheraghy	
<b>MEMS Reconfigurable Antenna for Multimodal Perception in Humanoid Robots</b>	1113
Leiyang Zhai, Zhewei Liu	
<b>Layout Optimization of 500kV Substation Main Wiring Diagrams Based on Enhanced Genetic Algorithm</b>	1118
Junyi Liu	
<b>Enhanced Thermal Power Load Data Prediction Based on Large Models</b>	1122
Pengyu Song, Xiaomin Wang	
<b>Methodological Study of Cross-Domain Co-Simulation for Port Equipment Operation Monitoring and Collaborative Early Warning</b>	1127
Shan Liang, Xianqiao Chen, Boshi Li, Yao Lu	
<b>Lightweight Road Object Detection Algorithm Based on LEP-YOLO</b>	1131
Zhuorang Yang, Xiaopeng Wang, Xiang Zhang	
<b>Lightweight Visual Navigation with Dual-ROI Collaboration and State Machine for Autonomous Mobile Robots</b>	1135
Yuheng Wen, Xincheng Ying	
<b>Strategic symptom warning based on causal knowledge map and D-S evidence theory reasoning</b>	1139
Shangkun Chai, Zhong Liu, Qing Cheng, Zefan Zeng	
<b>CPERNN: An RNN-based Multi-scale Variable Interaction Model for electrical Time Series Forecasting</b>	1148
Lin Liu, Jiliang Rao, Sijia Liu, Qi Zhou	
<b>Fair Influence Maximization in Social Networks Based on Graph Embedding and Graph Neural Networks</b>	1153
Xinjun Fan, Shuxin Yang, Lijuan Zhang	
<b>Research on Coplanarity Defect Detection of Component Pins Based on Point Cloud Processing</b>	1162
Xinliang Tian, Xiaobo Wang, Zhen Gao, Jiang Li	
<b>Dynamic MoE ultra short term power load forecasting based on time meteorological cooperation</b>	1168
Jing Zhi, Xuemei Yang, Yuantian Xue, Jie Wang, Hongtian Zhang, Tiejian Yuan	
<b>Data Empowerment for Intelligent Decision-Making: A Data-Driven Online Intelligent Analysis Platform for Institutional Research Levels</b>	1176
Yanyan Guo, Moji Wei, Xianyi Li, Chen Li	
<b>Application of the PCA-DQN Algorithm in Optimizing Ice-Accretion and De-icing Strategies for Power Transmission Lines</b>	1181
Yue Li, Hao Yang, Anjiang Liu, Chen Dou, Mengqi Li, Yuejing Wang, Yutian Wang	
<b>Fast Post-Training Pruning Framework for CNNs Based on Fisher Information</b>	1186
Yunbiao Zhang	
<b>Research on Target Detection Technology of Industrial Robot Based on Deep Learning</b>	1191
Xiufeng Tao, Aldrin D. Calderon	

<b>Research on malicious encrypted traffic detection method based on Laplacian image sharpening</b>	1195
Junwei Zhang, Ke Zhou, Xiankui Wen, Yu Fu, Mingjun He, Yang Yu	
<b>Containerized Group Orchestration and Cloud-Edge Collaborative Scheduling Based on KubeEdge</b>	1202
Zehan Wu, Jian Li	
<b>Real-Time Scheduling Optimization via Physical Core Isolation and Hierarchical Task Classification on ARM-Linux</b>	1209
Tianze Guo	
<b>A partially constrained semi-precise registration method for point clouds facing irregular boundaries</b>	1216
Wenyu Zhang, Fuheng Qu, Yunqi Yang, Rui Zou, Enguo Wang, Chengzhi Su	
<b>Graph Convolutional Networks using Heat Kernel for Recommendation</b>	1222
Yaxiu Yu, Jun Zhang, Xiaoming Ju	
<b>InspectX: Optimizing Industrial Monitoring Systems via OpenCV and WebSocket for Real-Time Analysis</b>	1228
Minhui Xie, Boyan Liu	
<b>Spectral Space Transfer Learning and Generalization for Vehicle Recognition</b>	1233
Yiyang Zhou	
<b>Temperature Prediction for Chinese Provinces Based on Graph Convolutional Network</b>	1237
Yuxuan Liu	
<b>Key Technologies for 1.6Tb/s Coherent Optical Transmission Systems to Data Center Interconnection</b>	1245
Junfeng Zhao, Rui Tang, Song Jiang, Xinchuan Bao	
<b>Cross-platform driver porting method and application based on HarmonyOS HDF</b>	1250
Ruyi Qiao, Shiyu Gan	
<b>Hardware Design Margin Model for IC Test and Case Analysis</b>	1257
Puhong Lei, Jiwei Li, Xiao Hu	
<b>Medical image encryption based on four-dimensional chaotic system and DNA coding</b>	1263
Wei Ge, Yiqun Zhu	
<b>Hot Reloading for Runtime Code Modifiability via File Monitoring and Dependency Analysis</b>	1270
Xuejie Wu, Shengyao Gu, Junlin Huang, Xiaotian Huo, Hongjin Zhu, Honghui Fan, Liulei Zou	
<b>Task assignment method based on SDN and improved pigeon-inspired optimization in cloud collaboration environment</b>	1275
Chengyue Hu, Xiangyue Zhang, Dongyue Huo, Jia Liu, Kaili Zhang, Yuyun Kang	
<b>Epileptic EEG signal detection based on deep learning</b>	1281
Jieming Li, Yingtao Zhang	
<b>A Multi-Channel Network Attack Detection Approach Based on Prior Knowledge Filtering</b>	1286
Ruinan Lin, Po Wu, Dan Wang, Xiao Zhang, Chong Ruan, Tao Zhang	

<b>An Efficient Format-Preserving Encryption Scheme Based on RECTANGLE</b>	1294
Kaisheng Ye	
<b>Research on Foreign Object Detection Algorithm for Coal Conveyor Belt Based on Deep Learning</b>	1302
Zhengxin Liang, Li Mou	
<b>Non-intrusive load monitoring based on pyramid attention network and bigru network</b>	1306
Jiongyi Zhu, Xiaoxue Guo	
<b>Newton-least squares cooperative localisation of sonic boom signals from multi-source rocket debris</b>	1312
Le Lyu, Yan Liang, Jiemin Zhu, Junsheng He	
<b>Lift real-time data transmission and scheduling system based on 5G communication</b>	1316
Laiwu Jin, Gang Huang, Jinlong Li, Bei Guo	
<b>Design of Cabinet Monitoring and Management System Based on Two-Factor Biometric Authentication</b>	1320
Gang Zhao, Wei Zhang, Liang Li, Yongbo Yao, Xiangqian Ma	
<b>Robust Hyperspherical Classification with Dynamic Assignment Based on RepViT</b>	1325
Yujie Bai, Lihua Hu	
<b>A Spectral Projected Gradient Method for a Class of Graph Clustering Problems</b>	1330
Yukai Zheng, Wenshun Teng, Qingna Li	

**Author Index**