

2024 5th International Conference on Machine Learning and Computer Application (ICMLCA 2024)

**Hangzhou, China
18-20 October 2024**



**IEEE Catalog Number: CFP24VT9-POD
ISBN: 979-8-3315-3034-1**

**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:	CFP24VT9-POD
ISBN (Print-On-Demand):	979-8-3315-3034-1
ISBN (Online):	979-8-3315-3033-4

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

Learning and Application of Different Machine Learning Methods (KNN, SVM, Decision Tree) in Different Datasets	1
Chaoqun Zhu	
Evaluating the Effectiveness of Feature Selection and Explainable AI in predicting Acute Myocardial Infarction using Machine Learning Models	6
Yong Wang, Jiexuan Shen, Shi Li, Xinglin Li, Grace Ugochi Nneji, Happy Nkanta Monday	
Research on daylight inside buildings based on machine learning	11
Chaofan Chen, Xiao Chen	
A Robust Broad Learning System for Classification Problems in Label Noise Environments	16
Jiale Wang	
Machine Learning in Tennis Match Analysis: Predicting Score Point Vector and Momentum Shift	21
Jinming Hu, Xiaohua Yang, Zixuan Huang, Jinqi Xie	
BPE: Exploring the prompt framework of physics exercises generated from Bloom's taxonomy in LLM	26
Haoran Luo, Jidong Weng, Xunuo Lu, Zengyi Yu	
Intelligent Recognition of Internal Defect Signals in Composite Insulators Based on Variational Mode Decomposition and Random Forest Algorithm	30
Junbo Liu, Changlong Gao, Yufeng Tai, Jinyao Luan, Saipeng Zhang	
A Comparative Study of Machine Learning Approaches for Diabetes Risk Prediction: Insights from SHAP and Feature Importance	35
Zheyang Liu, Qimin Zhang, Huili Zheng, Shaohan Chen, Yiru Gong	
Ship Noise Target Classification Based on Deep Convolutional Networks	39
Lei Zhang, Lu Sun, Jincheng Yu, Jiangzheng Shu	
Research on Automatic Crack Recognition Method for Magnetic Particle Inspection Robot Based on YOLOv8	43
Shuai Kong, Jiansheng Hu, Mao Cheng, Ping Tang	
Research on the method of combining and compressing alarm messages in multiple microserver applications	47
Lijun Pan, Yujiang Long, Ce Wang, Jie Tang, Xi He, Zhenjie Lin	
Perturbation-based SMOTE for multi-class imbalanced classification	53
Suyang Zheng, Kai Zhou, Chouyong Chen	
A Deep Knowledge Tracking Model Incorporating the Forgotten Features of Multiple Concepts	57
Biao Kong, Dongfeng Liu	

Advancements in Sensitive Information Recognition through Blockchain Technology	63
Ming Zhang, Mingtian Peng, Wenyang Cui, Lin Zhang	
Comparative Analysis of Deep Learning Models for Classifying Ulcerative Colitis Stages on the Mayo Scale	67
Param Jain, Zachary Pan	
A Hybrid CNN-LSTM Architecture for Enhanced Music Genre Classification	72
Xiaoyu Xie	
Model Level Contrastive Federated Learning with Differential Privacy	76
Peihao Liu, Yongliang Xu, Meiqing Wang, Peng Cao	
Research on Task Decomposition and Motion Trajectory Optimization of Robotic Arm Based on VLA Large Model	80
Wentao Lu, Xiaofeng Wu, Shuyong Gao, Wei He, Qing Zhao, Lunning Zhang, Maodong Li, Wenqiang Zhang	
Research on the prediction of recycled thermal insulation concrete strength by optimizing different machine learning models	86
Yili Wang, Xiaohuan Liu, Jinghua Ding, Lijun Ma	
Long text classification method of News based on improved BERT	91
Chengwen Li, Jialiang Deng, Shibang Ta, Hongyang Zhong	
Dynamic Identification and Optimization of Key Opinion Leaders in Social Networks Using Advanced GCN Models	96
Yinuo Chen	
Human Pose Transfer with Depth Information	103
Yuhan Song, Pengyou Pan, Peng Pan	
Predicting Liquidity Coverage Ratio with Gated Recurrent Units: A Deep Learning Model for Risk Management	108
Zhen Xu, Jingming Pan, Siyuan Han, Hongju Ouyang, Yuan Chen, Mohan Jiang	
The Research on Sheet Metal Part Recognition Technology Based on Improved Mask R-CNN	113
Mingfei Liu, Jun Liu, Kecheng Zhou, Jian Wang	
Infrared Drone Target Recognition Based on Global-Local Context Aggregation with Self-Attention	119
Liang Zhao, Yan Zhang	
Signal Timing Optimization at Intersections Based on NSGA-II	127
Gaihua Gui, Yuyan Liang, Qiqi Zhang, Zhongchao Wang, Zhanjiang Yuan	
Developing an Insurance Model: Assessing Site-Specific Development Suitability	132
Binghao Tu, Chen Xie	

IRNet: an information retrieval model based on dual-stream fusion of CNN and Transformer	136
Zhihong Cao, Sheng Tang, Jiakuanzi Cao	
HLAS: An Enhanced Abstractive Summarization Method Based on Hybrid Loss Optimization	145
Hao Chen, Yuan Ji, Lankang Zhu, Shu Yang, Li Cui, Changhui Feng, Penghao Wang, Yuxing Tan, Hanhan Ma	
Dual-Agent Multi-Hop Reasoning Based on Reward Shaping and Action Dropout	150
Qiyue Sun, Yongli Wang, Dongmei Liu	
Research on a Sentiment Analysis Model Based on RoBERTa Integrating Bidirectional Gated Recurrent Networks and Multi-Head Attention	155
Hongyang Li, Chunling Wu, Hebing Du	
Integrated Circuit Image Feature Extraction Based on K-means Clustering Combined with Harris	160
Qing Liu, Yubo Zhou, Huiling Li, Kun Chen, Limin Zhao, Xiangbing Li, Yuxiang Zhao, Jinfang Yang, Jinbing Zhang	
Research on Intent Recognition Method of Air Targets Based on Transformer Model	165
Hailin Zhang, Yafei Song, Zhimin Qi	
RDFormer: Efficient RGB-D Semantic Segmentation in Complex Outdoor Scenes	170
Zhiyong Peng, Yongjie Zheng, Yuhao Cheng, Yulong Qiao	
Adchat-TVQA: Innovative Application of LLMs-based Text-Visual Question Answering Method in Advertising Legal Compliance Review	176
Ruiling Gao, Yingqi Hou, Weijie Tang, Jin Zhang, Yanbo Hu, Haiyun Huang, Wen'an Tan, Liping Li	
A Method for Constructing an Aerial Image Dataset of Civil Aircraft "Black Box" Using AIGC-Generated Samples	181
Qijun Luo, Wenshuo Li, Jingchang Zhuge, Jiaqi Shao	
A heterogeneous image-matching algorithm based on a multi-level screening strategy	186
Xin Yao, Junwei Tian, Xingang Wang, Jian Huang, Xuesong Liu	
Reconstructing Particle Flow Images Using Regression Models and Deep Neural Networks	193
Bingyang Yu, Yuehan Qiu, Junbo Xia, Zhi Zeng	
Progressive Semantic Consistency towards Unsupervised Cross-Modality Medical Image Segmentation	202
Mengyue Wang, Deqing Zhang	
A Novel Adaptive DCT Filter for Image Manipulation Localization	207
Haichou Wang, Hang Cheng, Jiabin Chen, Yongliang Xu	
Multilevel Feature Fusion and KAN Integration for Brain Tumor Segmentation	211
Qinghong Zeng, Yizi Chen	

Automatic Modulation Classification Based on Multi-Scale Graph Neural Network with LSTM	217
Yuntao Chen, Xiaofeng Wang, Shuaiming Lai, Fuhua Xu, Daying Quan, Fang Zhou	
Change Detection of Open Pit Mining Areas in Remote Sensing Images Based on Coupled Local-Global Features	224
Xiaolei Wang, Jingguo Lv, Xiaojuan Zhang, Aiyuan Zhang	
Research on Enhanced Graph Neural Network for Automated Knowledge Graph Construction	228
Qianyu Chen	
Zero-shot low-light-level image enhancement algorithm based on atmospheric scattering model	232
Shijie Shi, Dake Zhou, Yiming Shao	
FocusSculpt: Part-Level Modification of 3D Point Clouds through Text and Visual Prompts	236
Xiaoqin Peng, Honghua Chan, Zhikun Wen	
Enhanced Pre-Trained Transformer with Aligned Attention Map for Text Matching	244
Qi Liu, Miaohui Zhang, Anan Zhang, Qi Huang, Jiang Wei, Xu Sun	
Unlocking the Potential of Raw Images for Object Detection with YOLOv8 and BOT-SORT Techniques	252
Bolai Jin	
TICNet: Three-branch Real-time Semantic Segmentation Network with Intensive Compensation of Railway Track Scenes	258
Yiwen Bai, Lu Yang, Lei Zhang, Yajing Song	
Research on Pavement Distress Detection in UAV Images Based on Deep Learning	263
Hongbo Shuai, Lianxia Ma, Yinbo Zhang, Dudu Guo, Rong He	
Advanced Techniques for Chinese Image Captioning Investigating Attention Mechanisms Based on Object Detection for Chinese Image Caption Generation	268
Yongbin Hua, Pei'ang Li, Xiangjin Zeng, Hong Xu	
Self-Supervised Graph Neural Networks for Enhanced Feature Extraction in Heterogeneous Information Networks	272
Jianjun Wei, Yue Liu, Xin Huang, Xin Zhang, Wenyi Liu, Xu Yan	
High-Dimensional Feature Fusion for Font Generation with Denoising Diffusion	277
Xinlong Liu, Xiafen Zhang	
Innovative research on image dehazing by integrating multi-dimensional attention and multi-model fusion MixdehazeNet	282
Junting Ou, Dujuan Zhou, Junshen Hong, Fanbiao Bao	
HRM-UNet: Image Segmentation of Retinal Blood Vessels on the Basis of Improved VM-Unet	286
Qianqian Huang, Weiwei Yu	

MS-TFGNet: A Dual-Branch Transformer for Guided Learning in Lung Cancer Lesion Segmentation using PET/CT Images	290
Junfeng Mao, Yusheng Wu, Hongqin Xiang, Wan Wang, Xiaoqin Ha, Jingjun Wei	
Subgraph Filtering Method of Knowledge Graph Based on Domain Attributes	296
Yiming Song, Gaosheng Fu	
Knowledge Graph Reasoning with Fusion of Entity Semantic and Structural Information	300
Mengxuan Liu	
Detailed expression capture and animation model for 3D face recognition	306
Shengxiang Mei, Hua Shi, Chenjin Wu, Zhen Chen	
Targetless Extrinsic Calibration of Multiple LiDARs Based on Pose Graph Optimization	311
Weiyang Cao, Huiyuan Xiong	
Performance Evaluation of Multimodal Image Generation Algorithm Based on Deep Learning	316
Zexiang Chen	
CuesTrack:Multi-Object Tracking Based on Weak Clues and Trajectory Prediction	321
Yitao Zheng	
Viewpoint Planning for Fuel Leak Detection in Rail-Mounted Inspection Robot	326
Sheng Zhu, Shuyue Zhang, Kanjian Zhang, Haikun Wei	
Genetic-Algorithm-Based Hierarchical Echo State Network for Temperature Prediction	331
Sheng Yang, Shuaiheng Li	
A Context-Encoder-Based Thermal Anomaly Detection Network for Dual-sensor Surveillance	335
Xianjun Wang, Wenzhan Li, Herui Li	
The matic analysis of innovative drug policies based on LDA modeling	340
Xinmeng Sheng, Zhichao Mao, Yijing Huang, Ludan Zhang, Shikui Cao	
Smoke And Flame Detection Method In Multiple Scenarios	347
Yucong Xie, Hongtao Luo	
Automated Detection of Heart Disease Using PhysioNet ECG Signals and Machine Learning Models	352
Nishant Gadde, Rishi Kanaparti, Siddhardh Manukonda, Avaneesh Mohapatra, Aniket Venkatesh	
Enhancing Scene Text Detection with Parameter-Free Attention Mechanism and an Improved FPN	359
Yuan Li, Yong Yan	
Improving Aircraft Engine Remaining Useful Life Prediction scheme based on Handcrafted Features and Neural Network Integration	363
Dequan Bi, Meihua Bi, Lien Qian, Xuyang Teng, Miao Hu	

Dirt video anomaly detection method based on automatic identification of the exit port	370
Ziyuan Zheng, Xinwen Gao	
A Review of Research on Machine Vision-Based Dimensional Measurement Methods for Parts	376
Lei Ding, Hong Xu, Bing Xu, Peng Du	
FDNet: Remaining Useful Life Prediction for Lithium-Ion Batteries Based on Fourier series and DenseNet	382
Siwen Chen, Xiujuan Zheng	
Fault Diagnosis of Turnouts Based on VMD and GA-BPNN	387
Bin Cao, Yunshui Zheng	
Fault Diagnosis of Suspension Controllers Based on KAN-ResNet	391
Jingwen Zheng, Mingwei Li, Yi Tian, Xindong Wang	
Improved Smoke and Fire Detection Based on YoLoV8	396
Ye Tao, Bangyu Li, Peiru Li, Jin Qian	
Electrified railway catenary geometric parameters detection method based on a propelled trolley	400
Wei Wang, Bo Sun, Haiqing Liu, Lei Guo	
Few-Shot Deep Learning-Based Detection Method for Sonar Pulse Signals	408
Leilei Zhou, Zhen Liu, Jing Zhang, Degang Zhao, Zongtang Zhang	
Optimizing Transformer based on high-performance optimizer for predicting employment sentiment in American social media content	414
Feiyang Wang, Qiaozhi Bao, Zixuan Wang, Yanlin Chen	
A Transformer-based Diagnostic Prediction Model for Bipolar Disorder	419
Guancheng Wu	
High-speed Maglev Train Suspension Gap Prediction Based on CNN-AGCRN	425
Mingwei Li, Gengchen Lv, Xindong Wang, Tianxiang Yue	
Multi-class military target detection algorithm based on improved YOLOv8	431
Feng Li, Jun Jia	
Application of PSO-LSTM algorithm to predict the SOC state of lithium batteries	436
Shuwei Wang, Jia Li, Zhandong Zhang, Zhe Yan	
Financial Prediction Using DeepFM: Loan Repayment with Attention and Hybrid Loss	440
Liu Min, Qian Yu, Yuhan Zhang, Keming Zhang, Yiwen Hu	
Research on Condition Monitoring Method of Power Equipment Based on Voiceprint Signal	444
Mingxuan Li, Wenpeng Cui, Zhe Zheng, Qingchen Yang, Yuzhe Chen, Wanpeng Guo, Chengqi Li	

Real-Time Semantic Segmentation Model Combining CNN and Transformer to Detect Belt Runout	451
Yuan Shen, Xiaokun Ma	
Consider computer vision for building component recognition and defect detection	457
Zhe Yang	
Research on lightweight models in the identification of Tibetan medicinal materials	461
Xinlong Hu, Xinyao Ge, Yue Shen, Gaden Luosang	
SSA-LSTM Based Deformation Prediction Modeling of Concrete Dams	466
Longlong Li, Yi Chen, Shuting Lin, Zhiyuan Huang, Shenghuang Zhang, Luyi Sun, Jinhua Guo	
Deformation prediction model of gravity dam based on ZOA-BiLSTM	473
Jiansheng Huang, Zhanyong Zhou, Xingcheng Lin, Zhiyuan Huang, Shuting Lin	
CAE-YOLOV8: Occlusion Object Detection based on improved YOLOv8	480
Ruiyu Liu, Hanlin Zhang, Zhe Liu, Dan Chen	
Foreign Object Detection Method in Transmission Lines Based on Improved YOLOv8	484
Hongpeng Wang, Yunlong Liang	
Research on Small Target Detection for Drone Based on Improved YOLOv5	489
Shijie Shao, Weihua Yuan, Yewei Wang, Zikang Zhou	
An Improved YOLOv8 Model for Pavement Crack Detection	493
Qian Liu	
Research on the Application of Generative Adversarial Network in Forecasting of Public Works	499
Pengfei Bao, Qiuli Qin	
Object Detection of Insulator and Its Self-Explosive Defect Identification Based on Lightweight YOLOv5	503
Zibin Zhao, Shengcan Yu, Yiqing Lian, Zhen Huang, Jiaxuan Hou, Haixin Liu	
Sweat colorimetric detection system based on OpenMV	509
Yuanyuan Meng, Yanxia Chen, Chennong Li, Yandi Liu, Lei Qin	
An Ultra-short-term Wind Power Forecasting Method Based on Convolutional Transformer Network	513
Jiaming Li, Zhen Huang, Shijie Li, Jiaxuan Hou, Haixin Liu, Shengcan Yu	
Research on the Application of Evolutionary Algorithms Enhanced by Deep Learning in Intelligent Manufacturing Scheduling	518
Daqi Sun, Haijuan Zang	
Research on Automation Control of Intelligent Logistics Assistant	526
Ziwen Li, Dun Lin, Kaitao Deng, Weijia Li, Yezhao Li, Libin Feng	

A Point Cloud Registration Method for Antarctic Power Cabins Based on an Improved SAC-IA Algorithm	530
Junyao Lu, Shuo Shan, Kanjian Zhang, Haikun Wei	
Application of Signal Averaging CEEMDAN and Adaptive Wavelet Threshold Denoising in Signal Processing	535
Junbo Liu, Jingyao Luan, Yufeng Tai, Changlong Gao, Shouxue Li, Lixin Jiao	
QMOGWO: Multi-Objective Evolutionary Algorithm-Driven Path Optimization for Delivery Vehicles	539
Peng Shao, Xinyu Liu	
Exploration on the Application of Twin Assurance for Unmanned Aerial Vehicle Control	544
Yanfei Zhu, Yueping Peng, Le Li, Jie Zhang, Hengliang Yang, Yongping Ren	
Offline Signature Verification Based on Feature Disentangling Aided Variational Autoencoder	549
Hansong Zhang, Jiangjian Guo, Kun Li, Yang Zhang, Yimei Zhao	
Feature recognition of natural gamma-ray spectral data based on K-L transformation	555
Daobing Han, Qingxin Meng	
Rolling bearing fault diagnosis algorithm based on RCMSDE fusion transfer learning	560
Xiangyu Yu, Yulong Ying, Kun Li	
Multi-feature fusion based radar seeker against corner reflector interference	566
Tianxiang Tang, Linmao Qiu, Chen Li, Jiadong Zhang	
Research on YOLOv8 Detection Algorithm Based on SKAttention Fusion	571
Linpo Shang, Yanzuo Chang, Yi Chen, Liuyi Yu, Zhenbang Zeng, Jinping Chen	
Analysis of the Impact of Other Factors on the Download Volume of New Games Using a Polynomial Model	575
Taking the Top 50 Popular New Games as an Example	575
Ziqing Zhong, Peng Yuan	
Based on Inner Product Function Encryption Secure Cross-Modal Retrieval	580
Jiaoling Chen, Wanxi Yan, Wenyu Qin, Zishun Ni	
An anomaly monitoring and early warning method for power grid microservice network based on log visualisation and analysis	584
Renmeng Lu, Xianfeng Zhu, Xun Li, Na Long, Guangyi Zhang	
Application Study of Collaborative Multi-Model in Wordle Game	591
Yan Liu, Jianyi Tan, Zicong Yang, Aitong Jin, Yue Zheng, Xinke Wang	
Analysis of Audience Evaluations Based on Word2Vec and LDA Topic Modeling	597
Meili Zhu, Qingqing Wang	
Motion Diffusion Model for Long Motion Generation	603
Xiaoxu Han, Hegen Xu, Huiling Sun	

Balancing Innovation and Privacy: Data Security Strategies in Natural Language Processing Applications	609
Shaobo Liu, Guiran Liu, Binrong Zhu, Yuanshuai Luo, Linxiao Wu, Rui Wang	
A Review of Electromagnetic Elimination Methods for low-field portable MRI scanner	614
Wanyu Bian, Panfeng Li, Mengyao Zheng, Chihang Wang, Anying Li, Ying Li, Haowei Ni, Zixuan Zeng	
Leveraging Large Language Models: Enhancing Retrieval-Augmented Generation with ScaNN and Gemma for Superior AI Response	619
Min Gao, Peiqing Lu, Zihao Zhao, Xiaowei Bi, Fa Wang	
Design and Implementation of a Large scale Power Time Series Production Simulation Solver	623
Jiaying Miao, Yi Zhang, Feng Zhang, Bohan Zhang, Yutao Qiu, Chenghuai Hong, Binren Wang, Xiahui Xie	
A GPU parallel stitching algorithm for low-altitude parallax scenes	627
Sha Liu, Shan Zhou, Yan Hu	
FPGA Verification Method Based on Test Coverage Analysis	631
Lanlai Wang, Wei Liu, Li Xu, Daojin Xu, Xiaoming Zhang	
Nonlinear Optimal Classification Trees	635
Sen Xue, Xiaoyu Luo, Chuanhou Gao	
Research on Access Channel Control of Electric Power Marketing Service System Based on Multi Factor Identity Authentication Protocol	640
Xiao Ding	
Research on Data Protection of Electric Power Marketing Based on Differential Privacy	645
Yimin Wang, Lei Zhao, Ziyue Yang, Yulong Ma, Haoyou Han, Lingxuan Tian, Congdong Lv	
Research on Cloud Security Access Control Protocol for Power Marketing Services	650
Yimin Wang, Jianghui Wang, Ziyue Yang, Menghan Xu, Meng Zhu, Lei Zhao, Yulong Ma, Congdong Lv	
Chinese Font Generation Algorithm with Redundant Feature Suppression	655
Xiaoqi Guo, Cunrui Wang, Guodong Zhan, Juxiang Zhou	
A PSO algorithm-based performance evaluation method for enterprise-level transformation in the power industry	661
Guorui Wang, Jiang Jiang, Shen Wu	
Research on River Network Water Dispatching and Flood Risk System Based on Hydrological Hydrodynamic Coupling Model	667
Yongzhi Liu, Yao Liu, Rui Tian, Yanyun Ruan, Xiang Wang, Xiaoyang Liu, Wenting Zhang	
An Organizational Optimization Algorithm for Resource Scheduling of Highly Infectious Disease Prevention and Control	673
Sheng Su, Qidong Wen, Yandong Wang	

Improved Discrete Wolf Pack Algorithm for Solving Travelling Salesman Problems	677
Guangqiang Li, Xinyue Chen, Xunkai Zhu, Ruoxi Liu, Lehao Xie, Qing Zhang	
Transmission Line Routing Based on Multi-source Geographic Information and Improved Grey Wolf Algorithm	682
Shu Yang, Yudong Xia, Lankang Zhu, Hao Chen, Li Cui, Wenwu Pan, Ali Li, Liang He	
Author Index	687