2024 9th International Symposium on Computer and Information **Processing Technology** (ISCIPT 2024)

Xi'an, China 24-26 May 2024



IEEE Catalog Number: CFP24AX7-POD ISBN:

979-8-3503-8841-1

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:
 CFP24AX7-POD

 ISBN (Print-On-Demand):
 979-8-3503-8841-1

 ISBN (Online):
 979-8-3503-8840-4

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-040

Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



Table of Contents

Research and Optimization of English Automatic Translation System Based on Machine Learning Algorithm	1
Li Ju, Auxilie Aurora Salvosa	
Design and Implementation of a Web Application Firewall System based on OpenResty	
Jiale Liu, Wen Cheng	6
An improved social force model for non-motorized vehicle overtaking behavior	1.0
Rui Zhang, Shida Cheng, Minghui Yang, Xianlei Hou	10
Pedestrian Simulation Modelling in Hospital Waiting Corridor Considering Yielding Behavior	1.0
Rui Zhang, Jiahe Wang, Xi Wang, Xianlei Hou	16
Construction of methanol fuel supply simulation system	22
Jiahao Lin, Meng Cui, Hanzheng Chen, Chuanrui Wang	23
Research Implementation of Privacy-Preserving Blockchain based on Metaverse and FL Design Integration	28
Sindi Ahmed Obaid N, Pengbo Si, Qi Li	
Research and Application of Integrated Simulation Technology for Surface and Subsurface Waters in the Guangdong-Hong Kong-Macao Greater Bay Area	32
Yubo Wen, Ping Wang, Huadong Ma, Keyuan Chen	
Construction of an Intelligent Archive System for Cross border E-commerce Talent Management Based on Artificial Intelligence	38
Hefeng Zou, Kehhong Zhou	
The Study of Model Generalization Ability for Spam Classification Based on Machine Learning Models	43
Shihao Zhang	
Optimized Design of Security Attack and Defence Strategies for Virtual Network Simulation Platforms	47
Xin Li, Chunyan Yang, Ming Xie	
Rapid Design of Metasurfaces Based on Deep Neural Networks	<i>E</i> 1
Anyi Wang, Ruoman Li	51
Correlation-driven layer-wise distillation for language model compression	5.0
Guiyu Li, Shang Zheng, Sai Xia, Yongrui Xu	56
FFDFA-YOLO: An Enhanced YOLOv8 Model for UAV-Assisted Maritime Rescue Missions	<i>(</i> 0
Tianshuo Qiu, Weiming Zeng, Chengcheng Chen	60
SNARK and account-model based verifiable sharding scheme	61
Minghan Lian, Jiangfeng Xu, Yannian Wang	64
Comprehensive Optimization Training Framework for TSK Fuzzy Systems: Applications of MBGD, AMPO, and RDA	70
Mengyu Shi, Jun Li	
Water quality inversion model based on multi-spectral remote sensing from unmanned aerial vehicle (UAV)	76
Shengwei Huang, Mengya Zhao, Sitian Jin	
TTSSO: Traceable threshold single-sign-on	
Yifu Shi, Chunxiang Xu, Zhao Zhang, Xinyu Liu	81

Security-aware Virtual Network Embedding for Multi-hop Wireless Networks	0.7
Yi Liu, Gangning Zhang, Lan Yu, Jingcheng Miao	87
Research on Intelligent Automatic Following Collection System for Constructing Practical	
Training Knowledge Graph	93
Aimin Wei, Jingming Xie	
Visual Obstacle Avoidance Trajectory Control of Intelligent Loading and Unloading Robot Arm	
Based on Hybrid Interpolation Spline	97
Jiangheng Wei, Jinjin Li, Junli Huang, Zhiqun Pang, Kun Zhang	
Enhancing Quantum Information Encryption System Security: An Optimization Approach with BFGS-Supported VQE Solver	103
Hanze Guo, Bo Jiang, Yongzheng Wu, Shiheng Wei	103
Trajectory Tracking Control of Nonholonomic Wheeled Mobile Robots Based on Event-Triggered and Time-Varying Functions	108
Gaohan Li, Yuan Fan, Yuchao Guo	100
Design of Virtual Reality Teaching System for Image Fourier Transforms	
Di Fan, Hongyun Liu, Yongfei Wang, Xiulong Ma	113
IAKA: Lightweight Authentication Protocol for Clock Nodes in Time-Sensitive Networking	
Zhuoyi Lei, Zhaomeng Zhou, Xin Liu, Xingbo Liu, Mingjun Yu	117
Design of LoRa-based multi-parameters river water quality monitoring system	101
Shunxiang Sun, Yuanhui Cui, Denghui He, Xin Wang	121
Siamese Tracker with Attention Correlation and Template Update	126
Xiangchen Xu, Ziyang Wan, Jing Zhou, Zhangsheng Yang	126
Application Prospects for the Unmanned Technology System in Civil Airport Apron Services and	
Support	130
Xiaoke Huang, Chuancan Li, Xiangyu Zhu	
Substructure-Preserving Generalization for on-site robotic construction planning	135
Yang Yi, Yu Lu, Wenjun Zhu, Mengyi Zhang, Yimin Mu, Ryad Chellali	
Evaluating Children's Engagement Through Wrist-worn Biosensors and LSTM Network	139
Song Yu, Xinyu Shui, Sijia Hao, Zhidan Zhou, Jianming Yu, Dan Zhang, Jie Liang	
Debugging Method for Segmentation Faults Based on Hardware-Software Co-Analysis for Processor Verification	1.4.4
Wang Zhao, Pengfei Xu, Li Zhou, Li Luo, Junbo Tie, Zhiqiao Zhao, Guoteng Pan	144
Joint optimization of energy consumption of mobile terminal computing based on cloud-edge-end	
collaboration	151
Lina Li, Qinghe Yu, Guoxing Liu, Cheng Luo, Yiming Xu, Nianfeng Li	101
A low-orbit satellite electromagnetic spectrum sensing system	150
Yu Zhang, Tuo Zhang, Jintao Hu, Shaokang Duan, Yituo Chen, Yongfa Xie	158
Fault Identification Method for Inertial Reference System of Civil Aircraft Based on GNSS PositionA method of GNSS position inversion algorithm	162
Ye Wang, Ziyang Yuan	
Construction of a Big Data-based Student Performance Assessment and Personalised Instruction System in Physical Education Teaching	167
Hui Yu, Jiaxin Wang	167

Improved GAN-Based Channel Estimation Methods for MIMO OFDM Systems	172
Caoqi Gong, Die Hu, Weiting Liu	172
Design and implementation of intelligent equipment early warning system	176
Yujie Yang, Meifang Xue, Yunqi Guo, Jingsong Xue	1/0
Research on Portable Data Acquisition Devices	181
Linhan Jiao, Chnagxin Nai, Zhichao Luan	161
ORB-SLAM3 algorithm based on the positive oblique four-point method and improved bag-of-	
words model	186
Hongxia Liu, Shaobo Li	
Average speed prediction algorithm of electric vehicles based on improved LSTM neural network	192
Zhenyu Chen, Zheng Wang, Wenhui Yang, Jiayi Li, Wenhe Zhao	
A Dynamic Access Method for Cross-domain Circulation of Data Based on Differential Algebraic Neural Networks	196
Shaohua Yu, Jingdong Guo, Xiaoxiao Chen, Xiaolei Liu, Lei Feng	
Adaptive Contention Window of Broadcasting Algorithm Based on Buffer Queue Length	
Hongwei Xu	200
FPGA Based Database Sort-Aggregation Query Acceleration Architecture	• • •
Haijun Xue, Shuai Wang, Xinxin Zhao, Hong Hao, Xiongru Wang, Kai Jiang	204
A carbon scheduling model for industrial parks based on integrated fuzzy decision-making and genetic algorithm	209
Bo Yuan, Peng Xia, Gang Lu, Qiuli Zhao, Facun Liang	
Research on the application of ant colony algorithm based on adaptive factors in robot path	
planning	213
Haoyu Yang, Qing Tan	
Maneuver Recognition Based on Hierarchical CNN-MDN with Partially Trusted Data	218
Yu Zhao, Yonglin Li, Jiyang Xiao, Zhenxing Zhang, Bo Pang, Xunan Huang	210
Trusted Scale-Aware Convolution Network for Few-shot Object Counting	222
Chenliang Sun, Tong Jin, Gongxuan Zhang	222
Social Media Sentiment Classification Based on Long and Short Term Memory Network Algorithms	227
Siyuan Lee	221
A new two-level phase synchronization algorithm for continuous phase modulation scheme	
Shuai Zheng, Ning Wang	231
A Comprehensive Optimization Model of Light Pollution Impact Based on Deep Learning and Evolutionary Algorithm	235
Qikai Hao, Chaoran E, Panpan Xun, Yilin Xu, Yaxuan Zhao	
A Continuous Authentication Method Based on Improved Sparrow Search Algorithm and XGBoost	242
Peng Xiao, Jian Hu, Hailin Wang, Hanruo Li	2.2
Aplication and Practice of Data Authorization and Access Technology in Multi-tenant Environment	251
Zhong Cheng, Xiangxiang Ding, Huan Wan, Kefei Liu	231
Covariance-Based Activity Detection Algorithm in Clustered Cell-Free Massive MIMO	
Haowen Ye, Ranran Lv, Kai Sun, Wei Huang	256

Three dimensional modeling and aerodynamic characteristic calculation evaluation of optoelectronic pods mounted on a certain type of aircraft	261
Yuwen Fu, Pinsheng Zhang	
Unmanned aerial photography pedestrian target detection algorithm in multiple scenarios	265
Wenjun Quan, Hongtao Luo	265
Research on airborne data transmission technology based on 5G technology	250
Jiahuan Sui, Qing Luo, Di Wu, Xiaoou Zhao	270
Fine-Tuning Bert On The Atis Dataset: Data Enhancement To Improve Intent Classification	
Accuracy	274
Lina Sun, Konstantin A. Aksyonov	
A time-series data integration method for power marketing operation and maintenance based on multidimensional data mining	279
Jingxian Lu, Kunpeng Liu, Ying Wang, Yueze Li, Zihan Zhao	
Logarithmic Type Constant Modulus Blind Equalization Algorithm Based on Maximum Correlation Entropy Criterion	284
Mengjun Bi	
Optimization of Distribution Network Configurations in Emergency Projects Using an Improved Particle Swarm Algorithm	288
Wenyu Liu, Liang Long	
DCT-DSLAM: Discrete Cosine Transform Towards the DYNAMIC SLAM	295
Bo Fu, Zhiyuan Guo	293
Function Computation Offloading under Space-Integrated-Ground Collaborative Architecture	301
Shaonan Li, Yongqiang Xie, Jie Zhang, Jian Zhou, Yangyang Wang, Huijie Miao	301
A comparison of the performance of graph breadth-first search algorithms based on OPENMP and CUDA	307
Yunfei Zhang, Yonghao Xiao	
Large Language Model-Driven Semi-Automated Construction of Named Entity Datasets in Specific Knowledge Domain	312
Yahan Liang, Hua Cao	
Construction of A Precise Ideological and Political Evaluation System Based on Data Fusion	210
Lulu Dong, Hao Wang	319
Dynamic Scheduling of Bottleneck Resources in Emergency Projects Using Improved Particle Swarm Optimization	326
Wenyu Liu, Liang Long	
Knowledge Distillation Based on Knowledge Graph Data Augmentation	221
Xuan Liu, Zhirong Liang	331
Algorithm research for stochastic dual control based on set member estimation	226
Xiaoyan Zhang, Yuxuan Xie, Ziyan Shang, Jiaoru Huang, Suping Zhao, Xiaohua Song	336
Path Planning of UAVs Swarm Based on Wolf Pack Algorithm with Composite Walk-Fly Mechanism	341
Wenchang Lv, Zengliang Han	
Prediction of competition results based on multi model optimization	2.4-
Chongyi Wang, Lidong Wang	345

Dynamic Differential Testing for Black-Box IPsec Implementations	350
Jiaxing Guo, Dongliang Zhao, Liying Zhang, Chunxiang Gu	
SAM-LSTM: Prediction of the Sunspot Cycles Based on LSTM-Attention Model with Soft	
Attention Mechanism	354
Xinhua Miao, Binhong Li	
A Mining Conveyor Belt Tear Detection Method based on Improved STDC	359
Zhen Wang, Xiaoming Li	337
Sentiment classification model for Uyghur language texts based on BERT BiLSTM	364
Feierdun·Keremu, Li Liu	304
Research on Speaker Recognition Based on the ECAPA-TDNN Method	368
Zhenye Gan, Xu Zhang	300
Research on coal shearer Drum Teeth Wear Detection Based on YOLOv8 and Dynamic Snake Convolution	372
Jinbo Qiu, Tao Hu, Deyu Zhuang, Tong Fang	
A Landslide Displacement Prediction Model Incorporating VMD and XGBoost for Hunter-Prey Optimization	376
Xiao Liang, Huiqin Wang, Jiangliang Zhang, Ruili Guo	
Research on Improved CNN and Dual-Layer LSTM Micro-expression Recognition	200
Huibin Luo, Hanzhao Pan	380
Short-Term Photovoltaic Power Prediction Based on VMD-mRMR and TCN-BIGRU-ATTENTION	386
Zhi Li, Yusheng Ju	
Improving the Segmentation Method of Overburden Dump Wall in Open-Pit Mines Using HRNetV2	390
Cong Zhang, Lidong Yang	
Health evaluation method of oilfield photovoltaic inverter based on Analytic Hierarchy Process- Extreme Gradient Boosting	394
Hongtao Hu, Chenxiao He, Tingxiang Zhong, Guangjia Zhao	
Aircraft Satellite Map Detection Based on Improved SwinTransformer	
Feng Li, Jun Jia	399
A Review of Research on Cross Domain Pedestrian Re-identification Based on Deep Learning	40.4
Haixia Yao, Ning Chen	404
Enhanced Detection of Android Malware Using Ensemble Learning: A Dual Approach with Bagging and LightGBM	409
Haikuo Yin	
Passive radar multi-target detection experimental study at sea	414
Zaiyuan Wu, Jie Song, Zhongxun Wang, Qian Wang	414
Predicting Employee Attrition Using Machine Learning Approaches	410
Aitong Jin, Zicong Yang, Xiaoshan Liu, Shang Lou, Zhipeng Zhuang, Shixuan Zhang, Chunfu Zhang	419
A depth completion method used in live working safety monitoring tasks	427
Hao Guo, Li Xu, Mingming Qiao, Dehua Zou, Hui Li, Jianping Chen, Xi Yu, Wentao Xu	427
PSO-LSTM optimally weighted short-term wind speed prediction based on meteorological factor screening	433
Hengquan Yu, Fan Yu, Bingxin Tian, Jiuchun Ren	

Application of Convolutional Neural Network in Multimodal Emotion Recognition	4.40
Gaoyuan Qin, Yue Zhu, Zhizhong Wu, Qingqing Jiang, Jinyi Yin, Jingwei Sun, Xi Chen, Yingqi Wang	440
Emotion Recognition Based ECG in Olfactory-enhanced VR Scenes	4.45
Wanqing Liu, Xinyue Zhong, Guangyuan Liu, Jialan Xie	445
LRFE-YOLO: Low-Rank Feature Enhancement for YOLO in Few-Shot Industrial Meter Fine	
Needle Detection	449
Jiaxing Liu, Yisong Li, Zhuming Chen	
Potential risk assessment based on TOPSIS three branch decision	455
Zhe Li, Chenyu Zhu, Shouhu Cheng, Zhi Liu	133
Research on ship air wake based on CFD simulation and lidar observation	460
Pinsheng Zhang, Yuwen Fu	400
Research on Performance Enhancement Strategies for Multimodal Short Text Classification by Fusing BERT and CNNs	464
Jun Zhu, Yaqun Cao	
FedJS: An Efficient Federated Learning Approach for the Internet of Vehicles	470
Tiancheng Ye	470
Sentiment Analysis of Medical Text Based on Deep Learning	470
Yinan Chen	478
Pavement Damage Detection Based on Improved YOLOv5 Model	402
Jiaoru Huang, Haohui Song, Xiaoping Wen, Fucai Qian	483
Detection of Defects on the Inner Surface of Pipe based on Gaussian Mixture Model	400
Linqian Ma, Lingyuan Kong, Zelin Zhang, Nan Geng	488
Research on Vehicle GPS Dynamic Sampling Based on Deep Reinforcement Learning	492
Chuanxiang Du, Mary Jane C. Samonte	492
Noise control method of 110kV indoor substation based on genetic wavelet neural network	400
Jiawen Liu, Xiangsheng Lei, Chungeng He, Qiang Liu	499
Electricity theft detection using neural networks and Particle Swarm Optimization optimization	505
Shangru Jia	505
Research on Predicting Container Vessel Handling Time Based on Improved Deep Residual Shrinkage Net	509
Zhiyi Jin, Yu Cao, Linlin Liu, Xu Cheng	
Transformer-based Instance Segmentation with Multi-Scale Spectrum-Averaging Blend Queries	515
Lirong Zhu, Ye Lin, Chihwei Lin	515
Target Recognition of SAR Image Via Joint Weighted Fusion of Multiple Features	510
Sheng Liao, Yiding Sun, Jingpu Zhao, Zhengyang Feng	519
An estimation method of Doppler shift combined with compression perception for the assessment of underwater movement targets	523
Jingyao Wang, Zhe Li, Yonggang Che, Yichuan Wang, Zhen Liu, Zhuxi Hu	
Image Cropping Method	505
Huiyang Wang, Guanghua Chen, Zhibo Zhang	527
A stitching seams search strategy based on spectral image classification for hyperspectral image stitching	535
Hong Liu, Bingliang Hu, Xingsong Hou, Tao Yu	220

Fresco Arbitrary Scale Super Resolution Reconstruction Based on Frequency Domain Transform	5 40
Jiaqi Liu, Jianfang Cao	540
Medical Signal Inference with Limited Information	- 10
Xuntao Xu, Yanying Mei, Liang Han	546
A Method of Extracting and Visualizing Hierarchical Structure of Hardware Logic Based on Tree- Structure For FPGA-Based Prototyping	55 1
Junbo Tie, Guoteng Pan, Lin Deng, Changqing Xun, Li Luo, Li Zhou	554
LGMD-based Neural Network for Detecting Abnormal Velocity Targets in Moving Crowd	
Zhongxiang Zhao, Bin Hu	562
Wide-angle ISAR Imaging Method Based on Entropy Minimization	
Jishun Li, Yasheng Zhang, Canbin Yin, Wenhua Cheng	567
Research on non-invasive method of EEG signal extraction	
Jianping Zhang, Lixin Lin, Lili Zhou	573
Target Recognition in SAR Scenes Based on MFW-Light	
Zhihao Cai, Weize Meng, Shiqi Xing, Sinong Quan, Xinyuan Su	578
Research on imaging synchronization error and configuration of bistatic forward-looking	
	584
Hao Liu, Haiyu Wen	
VTFEFN: An End-to-End Visual-Tactile Feature Extraction and Fusion Network	599
Shuai Tian, Yuanpei Zhang, Zhuojun Zou, Lin Shu, Jie Hao	
Intelligent elastic resource allocation strategy based on supervised learning	604
Lina Li, Chuncheng Hu, Shuxin Wang, Junan Lv, Yiming Xu, Nianfeng Li	
Moving ship target compensation imaging method based on envelope energy center Lianrong Zhu, Youquan Lin, Hui Yu	608
Multi-Scale Deep Convolutional Time Series Anomaly Detection Based on Correlation Matrix	
Jiuhao Zheng, Jiangyong Duan, Ke Zhang, Zhongsong Ma	613
AtlantaSDF: Neural 3D Indoor Scene Reconstruction with the Atlanta-world Assumption	
Dapeng Deng, Yansong Shi, Gang Shi, Guanghui Gao	618
Utilizing Multi-Scale Laplacian Features and Transfer Learning for Underwater Reflection	
	623
Xiaoyu Pan, Kang Yang, Zishun Zhai, Chengcai Liang, Shiqing Guo	<i>323</i>
Multi-Level Contrastive Student-Teacher Structure for Semi-Supervised Medical Image	
Segmentation	628
Boliang Li, Yaming Xu, Yan Wang, Xiaoyang Li	
U-net Remote Sensing Image Segmentation Algorithm Based on Attention Mechanism Optimization	633
Shuwan Feng, Ruixiang Song, Sihan Yang, Desheng Shi	<i>333</i>
Research and application of speech recognition technology in power system MSRC-Transformer	
	637
Yuechao Wang, Jianfang Shen	
Full Field Digital Mammography Authentication Method Based on Autoencoder and Principal Component Extraction	641
Binjia Zhou, Qirui Wang, Qianwei Zhou	<i>J</i> -F1

Multi-Attention Mechanism and Dynamic Threshold Guided Multi-source Denoising for Distant	
Supervision Relation Extraction	647
Yinggang Zhang, Binhong Xie, Hongyan Zhao	
A segmentation method for left ventricular magnetic resonance images based on temporal feature enhancement	65.4
Yuanzhe Li, Huahu Xu, Yongji Cao, Xingyuan Chen	654
Multi-answer Constrained Optimal Querying: Maximum Information Gain Coding	
Zhefan Li, Pingyi Fan	659
Deep Learning Model for Chinese Dialect Speech Recognition Based on Key Vector Optimized Temporal Features	666
Wei Wang, Boyang Hao, Tengfei Chai, Xiangfeng Shen	
CyberARAIM: A Model for Rapid and Precise Identification of Affected Digital Assets in Practical Combat Scenarios with Analysis of Boundary Scope and Dependency Relationships	671
Feng Guo, Qibin Sun, Yingmei Wang, Yanan Wei, Boren Xu	
The Protection of Historical Sites along the Grand Canal Based on 3D Digital Imaging Technique	C02
Jingqi Chen, Guoqi Xu, Lu Lu	682
Identification Method of Accelerated Intention Based on Improved PSO-SVM Algorithm	(0)
Zishuo Gu, Hanchi Hong, Xiujing Gao	686
Portable heart sound diagnostic instrument based on CNN+ConvLSTM	60.4
Jifan Kong, Huijie Zheng, Boda Zhou, Yao Cui	694
Methods for Correlation Analysis of Alarm Information in Multi-Microservice Application	
Environments	699
Xianfeng Zhu, Renmeng Lu, Xun Li, Guangyi Zhang, Lijun Pan	
A Joint Semantic-Based Approach to Text-Guided Domain Migration Image Translation	705
Feng Yuan, Hao Wang, Jiale Li, Genan Sang, Li Li, Yifei Xu	703
Design of signal conditioning circuit for sonar receiver with strong anti-interference ability Peihong Wang, Jianjun Zhu, Yufei Zhai, Morgunov Yuri Nikolaevich, Baowei Chen, Smolenskii Egor	709
Geometric Perception Fusion Applying on Monocular Depth Estimation	715
Chunhua Wang	715
Author Index	719