# **2023 IEEE 9th International Conference on Cloud Computing** and Intelligent Systems (CCIS 2023)

Dali, China 12-13 August 2023



**IEEE Catalog Number: CFP2333N-POD ISBN:** 

979-8-3503-0443-5

## Copyright © 2023 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:
 CFP2333N-POD

 ISBN (Print-On-Demand):
 979-8-3503-0443-5

 ISBN (Online):
 979-8-3503-0442-8

ISSN: 2376-5933

#### 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**

### **Invited Speakers**

	ynote-1	From Human Ensemble Cell Atlas to Digital Life Systems and AI Precision Medicine	I
		Prof. Xuegong Zhang	
		Department of Automation, Tsinghua University	
Invited Ke	vnote-2	Distributional Kernels: an Under-utilized Resource	I
mined He	ynoic 2	Prof. Kai Ming Ting	-
		Nanjing University	
Invited Key	ynote-3	AI Empowered Financial Services	II
		Dr. Jing Xiao	
		Group Chief Scientist of Ping An Insurance Company of China	
Invited Ke	ynote-4	Big Data Issues, No Worries - Active Learning is the Need  Prof. KC Santosh	II
		Chair, Department of Computer Science, University of South Dakota	
	Sessi	on I: Machine Learning- I	
	Hebin	g Chen	
001-006	Hebin A Sw Netw	<u> </u>	1
001-006 002-010	Hebin  A Sw  Netw  Haibin	yarm Intelligence Algorithm for Global Optimization Based on Neural fork Control System Swarm and Game Decision-Making in He, Baiquan Lu  ity prediction of continuous annealing process based on HDFI-SVR	
	A Sw Netw Haibin	yarm Intelligence Algorithm for Global Optimization Based on Neural fork Control System Swarm and Game Decision-Making in He, Baiquan Lu  ity prediction of continuous annealing process based on HDFI-SVR	
	A Sw Netw Haibin Qual Mode Di Wa	yarm Intelligence Algorithm for Global Optimization Based on Neural ork Control System Swarm and Game Decision-Making in He, Baiquan Lu  ity prediction of continuous annealing process based on HDFI-SVR el	7
002-010	A Sw Netw Haibin Qual Mode Di Wa	yarm Intelligence Algorithm for Global Optimization Based on Neural Fork Control System Swarm and Game Decision-Making In He, Baiquan Lu  ity prediction of continuous annealing process based on HDFI-SVR ell  ing, Haili Luo, Tao Wang	7
002-010	A Sw Netw Haibin Qual Mode Di Wa	yarm Intelligence Algorithm for Global Optimization Based on Neural fork Control System Swarm and Game Decision-Making in He, Baiquan Lu  ity prediction of continuous annealing process based on HDFI-SVR ell  ing, Haili Luo, Tao Wang  i-Detail Significant Target Attention Generation Adversarial Network	7

005-045	Research on Genetic Hybrid Algorithm for Rectangle Packing Problem with Multiple Constraints	24
	Yaokun Wei, Yunjiang Kang, Moxuan Yong, Peng Zhao, Bin Xu	
006-049	Label Confidence Based Ensemble Partial Label Learning Xianran Sun, Jing Chai	31
007-059	A Two-stage Clustering Undersampling for Class-overlapped Imbalanced Classification  Yue Gui, Yuanting Yan	38
008-088	KALNS for a Multi-depot Split Delivery VRP with Customers 'Multi-Requirement Xianghu Meng, Haoran Pei, Jing Tang	48
	Session II: Machine Learning-II Hebing Chen	
009-098	Joint distribution alignment and transfer subspace learning for unsupervised domain adaptation  Yueying Liu, Tingjin Luo	53
010-123	Parameter Estimation of LFM based on AtLSSA-FRFT Renfeng Zhang, Ming Xiong, Lijie Wang	59
011-125	Multi-Channel Spatio-Temporal GCN for Human Pose Forecasting Haoyao Tan, Huiyan Chen, Qingzhen Xu, Qiang Chen	66
012-141	Research on load prediction model considering migration scale index based on CNN-BiLSTM-Attention algorithm Ni Xiao, Chuntao Bai, Chenxi Yang, Zhe Yang, Lei Zhang	71
013-142	Shuffled frog-leaping Algorithm based on Heap and Fractional Order Xiaohe Mo, Yaqun Huang, Chunna Zhao, Mengfan Hu	76
014-152	Predicting Student Achievement Based on Fusion Models  Xuelin Wang, Jingyang Li, Shenwen Pang, Benying Tan	82
015-155	Nonlinear dictionary learning algorithm with nonconvex regularizations  Jie Lin, Yujie Li, Benying Tan, Shuxue Ding	93

016-156	A Undersampling-DoppelGANger based Data Generation Method for Unbalanced BGP Data	100
	Yumeng Yang, Ximin Yang, Wan Tang, Liuhuan Li	
	Session III: Artificial Intelligence- I Xiaojie Wang	
017-005	Study on Informational and Intelligent of Vehicle Security Check and Audit Method	106
	Fujun Wang, Yunfei Ling, Dong Yin	
018-016	Research on calibration method of fisheye cameras based on VTD Jianfei Wang, Quanshan Hou, Pengchao Zhao, Qiang Wang	111
019-020	A Novel Method of GRU Interval Prediction of Short-term Electric Load Considering Real-time Electricity Price Wenlu Zhao, Xin He, Wen Wang, Xinyu Li	115
020-027	URF4CCT: A Text Understanding Framework for Chinese Telecom Fraud Cases  Zeyuan Hu, Ziang Yuan	121
021-029	Research progress of industrial robot fault diagnosis based on deep learning Rongshen Lai, Lei Dou	126
022-030	Predictability of cellular network traffic based on conditional entropy Bo Sun, Lei Yao, Zida Liu, Junlan Feng, Xing Wang, Lin Zhu, Chao Deng, Yong Zhang	132
023-031	CTW-Net: A deeper W-type network for multiscale feature fusion medical image segmentation  Quan Feng, Liang Luo, Xiaoqian Zhang, Yufeng Chen	138
024-034	Option pricing using deep convolutional neural networks enhanced by technical indicators  David Liu, Yu Wu	143
025-038	A Pythagorean fuzzy information acquisition method based on BiLSTM Jun Xu, Fen Hu	148
026-042	A GNN-Based Routing and Scheduling Mechanism for Multi-domain Computing First Network  Xingnan Li, Jiangang Lu, Peiming Zhang	153

027-043	A Policy Conflict Detection Mechanism for Intent-based Networking Bo Li, Xiaozhi Deng, Peiming Zhang	164
	Session IV: Artificial Intelligence-II Xiaojie Wang	
028-044	LOLWTC: A deep learning approach for detecting Living off the Land attacks  Kuiye Ding, Shuhui Zhang, Feifei Yu, Guangqi Liu	176
029-052	A Deep Unsupervised Representation Learning Architecture using Coefficient of Variation in Hidden Layers  Xuemei Ding, Jielei Chu, Jiangtao Hu, Hua Yu, Tianrui Li	182
030-056	Speech Enhancement with Lip Perceptual Loss Jingyuan Zhang, Fangxiang Feng, Dingqian Hong, Xiaojie Wang	187
031-061	Remaining useful life prediction for IGBT based on SO-Bi-ALSTM Xianjun Du, Yiming Li	193
032-065	Intelligent Smishing Detection System for Massive Users Qiang Li, JianXin Zhang, Nan Zhou, Liang Ming, Bo Zhao, YueJin Du, Li Zhong, Jia Li	199
033-068	EKIGCN: External Knowledge Injected Graph Convolutional Networks for Aspect-based Sentiment Analysis  Xuefeng Shi, Min Hu, Fuji Ren, Piao Shi	207
034-069	COVID-19 Diagnosis from X-Ray Images Using Deep Learning Luting Ruan, Changjiang Zhang	213
035-072	Travel Time Estimation Neural Differential Equation Model based on Self-Attention Mechanism  Yijun Feng, Danfeng Zhu, Mu Li, Xiangdong Wu	217
036-076	TCCE_LSTM_A: A Temperature Correction Model with Clustering and Expansion by Combining Long Short-term Memory with Attention Mechanism  Yukai Yao, Changjiang Zhang, Yu Wang, Jing Zeng	225
037-077	A Novel Approach to MRI Reconstruction: Complex Neural Networks with Hierarchical Architectures  Kangkang Liu, Jinru Xin, Defang Chen, Liuxin Cheng	230

038-091	Research and Implementation of Code Similarity Based on Deep Learning Xibao Wu, Wei Zhao, Zhuo Tan, Xinyao Zhang, Wenbai Chen	235
039-093	Multimodal RU-Net: A Segmentation Network Based on Multimodal Cardiac CMR Images  QiBin Hong, ChangJiang Zhang	240
040-096	Content Richness Evaluation Method For Abstractive Summarization Xingyue Zhang, Dingxin Hu, Baofeng Li, Yu Qin, Lei Li	245
041-099	Multimodal rough set transformer for sentiment analysis and emotion recognition  Xinwei Sun, Huijie He, Haoyang Tang, Kai Zeng, Shen Tao	250
042-110	Sentiment Classification Based on RoBERTa and Data Augmentation Xiaoyi Wang, Siyuan Xue, Jie Liu, Jing Zhang, Jincheng Wang, Jianshe Zhou	260
043-140	Enhancing Chinese Event Causality Identification with Supervised Contrastive Learning  Maoxin Yin, Yuheng Chen, Huixun Qian, Haifeng Liu, Junsheng Zhou	265
044-144	Impact Factors Analysis on Path Selection of Passengers in Urban Rail Transit Emergencies Dagui Qin, Yu Wang	272
045-148	A Particle Filter-Based Ultra-Wideband Indoor Localization Optimization Algorithm Yiru Liu, Fengqi Han, Jianguo He	277
046-158	Action Recognition with PIR Sensor Array and Bidirectional Long Short-term Memory Neural Network Tong Liu, Jianchu Liang, Kai Wan, Jun Liu	284
047-159	Chinese Named Entity Recognition Based on Grid Tagging and Semantic Segmentation  Xuedong Zhao, Zhiliang Shi, Yan Xiang, Ying Ren	289
048-160	Importance Guided Query Focused Long-Input Summarization Shuaiyao Ning, Caixia Yuan, Xiaojie Wang, Ling Huang	295

Session V: Artificial Intelligence-III

Lei Li

049-164	Mongolian Medicine Named Entity Recognition via Dictionary-based Synonym Generalization Si Qin, Feilong Bao, UUGANBAATAR Dulamragchaa	300
	Session VI: Intelligent System Lei Li	
050-019	The First Experimental Study of Monocular Visual Localization for Train using Deep Learning Method Yong Wang, Junqing Xie, Jingtao Zhang, Shu Li, Kai Fan, Miao Zhang	306
051-063	Iterative Learning Data Driven Strategy for Aircraft Control System Xiaoyong Guo, Jianhong Wang, Jia Gao	313
052-084	Design of Virtual Simulation Teaching Platform for Campus Robot Based on ROS-Gazebo  Jianchuang Wu, Huixiang Liu, Mingyue Hu, Xibao Wu, Wenbai Chen	319
053-094	Game confrontation model of USV based on multi-agent reinforcement learning Kai Liu, Xiao Wang, Chunlei Wang	324
054-105	The Design and Realization of Vehicular GNSS / INS Integrated Navigation System Yong Lu, Huilong Zhao, Ming Xiong, Xing Zheng	329
055-130	Control and Design of Pole-changing Motor Driver Yangfeng Cao, Shengdun Zhao	335
056-143	Application research of smart-home system for manned spacecraft Yanchao Gao, Zhenhao Zhao, Liang xiaofeng, Zhao Yin, Xu Zhang	341
057-153	Path Planning Method based on Extended Random Artificial Potential Field Ningyu Wang, Benying Tan, Xinqian Cao, Shuxue Ding	345
058-162	Manipulating Multi-Agent Navigation Task Via Emergent Communications Han Yu, Wenjie Shen, Ling Huang, Caixia Yuan	351

	Session VII: Computer Vision Wenbai Chen	
059-015	Target visual detection and positioning for autonomous driving Li Yang, Zhijia Zhang, Huaici Zhao, Shixian Wang, Yongmao Zhao	356
060-023	Adaptive reppoint: an efficient approach for orientated object detection in remote sensing imagery Yuhao Zhan, Jiandan Zhong, Yongjun Du, Qiaomu Wei, Chao Chen, Lin Fu, Luying Li	361
061-047	Advanced Stereo Vision-Based Solutions for Header and Crop Height Detection in Combine Harvesters  Yibo Guo, Yanming Li, Zixiang Liu, Chengliang Liu	366
062-051	Adversarial Defense based on Image Style Transfe Zhiquan He, Jiantu Lv, Xujia Lan	374
063-053	LineMod-2D Rigid Body Localization based on the Voting Mechanism Chenbo Shi, Gongwei Zhang, Chun Zhang, Xiangteng Zang, Xiangqun Ren, Yujie Lian, Changsheng Zhu	380
064-054	Unsupervised Optical Mark Localization for Answer Sheet Based on Energy Optimization Chenbo Shi, Junsheng Zhang, Jie Zhang, Chun Zhang, Xiangteng Zang, Lei Wang, Changsheng Zhu	386
065-062	Surgical Instrument Segmentation Based on Geometric-aware Semi-supervised Contrastive Learning  Zhiquan He, Jingli Qiu	393
066-078	Precision Visual Recognition Application Study for 3C Assembly Robots Yiqun Wang, Bo Zhang, Jialu Quan, Wenbai Chen	398
067-082	Improving Nighttime Semantic Segmentation with Dual-Domain Mixed	403

409

**Attention and Shallow Feature Enhancement** 

Detection of microcrack in eggs based on Improved U-Net

Chenbo Shi, Yuejia Li, Yanhong Cheng, Yuxin Wang, Changsheng Zhu, Kang Wang, Chun

Guoqiang Yu, Xudong Zhou

068-103

Zhang

069-106	Fine-grained Classification of YOLOv5 Remote Sensing Aircraft Targets Incorporating Broad Learning System Hong Xue, Xiyuan Wang, Yuan Meng, Xueqin Wang	414
070-122	CMCLNet Cross-Modality Attention Fusion and Cross-Level Feature Interaction for RGBD salient object detection  Lifang Xiao, Huimei Chen, Qingzhen Xu, Qiang Chen	419
	Session VIII: Natural Language Processing and Knowledge Engineering Wenbai Chen	
071-131	ERNIE-BC: An ERNIE-BiLSTM-CRF Fusion Model for Segmentation-based Event Extraction Yue Gao, Chongqing Zeng, Zhenye Liu, Wanli Liu, Shimin Cai	424
072-147	Chinese named entity recognition based on MacBERT and Joint Learning Dangguo Shao, Kun Huang, Lei Ma, Sanli Yi	429
073-161	Object Detection from the Images of Hotel Scenario Based on Faster-R-CNN-FFS Model  Jing Zhang, Anqi Zhou, Chuanxiu Zhao, Degen Huang, Jian Xu	434
074-163	Traditional Mongolian-to-Cyrillic Mongolian Conversion Method Based on the Combination of Rules and Transformer  Muhan Na, Feilong Bao, Weihua Wang, Guanglai Gao, UUGANBAATAR Dulamragchaa	440
075-166	Survey of Multimodal Sentiment Analysis Based on Deep Learning Jing Zhang, Siyuan Xue, Xiaoyi Wang, Jie Liu	446
076-175	3M: Multi-Task Multi-Prompt Learning Model for Aspect Based Sentiment Analysis  Yanwei Bao, Xingda Li, Fuji Ren	451
077-176	Research on Question Answering for Knowledge graph of Aircraft PHM Fault Xiangzhen Meng, Bo Jing, Lekun Xia, Jiahui Li, Xiaoxuan Jiao, Shaoting Pei, Peilin Jiang	457
	Session IX: Bioinformatics and Intelligent Information Processing  Hebing Chen	
081-033	Application progress of digital twin in medical field Siyu Yan, Yan Zhang, Xiaoli Chu, Guoqi Tan, Zhipeng Lin	462

085-075	An enhanced stroke prediction model based on data class balance and machine learning  Chaofan Liu	469
086-087	Multi-parameter Blood Glucose Prediction Algorithm for Type 1 Diabetes Based on Hybrid Neural Network Deep Learning Technique  Zixuan Chen, Zedong Nie, Jingzhen Li, Youwen Wu, Hongjun Zhou	474
087-095	SpriteHyper2vec: A SCSPRITE Data Completion Method Based on Hypergraph Random Walk  Yamin Liu, Yusen Ye, Lin Gao	480
088-097	Combining adaptive filtering and motion state for wearable PPG-based heart rate extraction Renyang Liu, Yuhang Liu, Jiatao Du, Hongju Zhou, Zedong Nie	485
	Session X: Cloud Computing Ying Jiang	
091-009	Design of integrated intelligent information system for manned spacecraft based on cloud platform and smart home technology  Zhenhao Zhao, Yanchao Gao, Zhao Cheng, Zhao Yin, Yanwei Liu, Wudi Liang	489
092-060	A Data Importance-Aware Migrations Strategy Design in Hybrid Storage System Lixu Lu, Jianxun Zhang, Shaojie Hu, Binghui Lin, Xinyu Qiao	495
093-071	An efficient container bin-packing method for large scale cloud-native clusters  zhou zhou, Yihao Si, Yuxia Cheng	500
094-109	A Trusted Access Scheme for Power Distribution Intelligent Sensing Equipment IoT based on Dynamic Token Pengcheng Xue, Min Huang, Qingyu Meng, Chao Li	505
095-112	Microservice Indicator Prediction Method Based on STE and CNN-BiLSTM Yunhao Yang, Ying Jiang	511
096-145	Cloud Instance Resources Prediction Based on Hidden Markov Model Rongting Li, Xiaogang Wang, Dun Xiao, Chao Huang	516

097-151	Packing of Cloud Computing  Guangyao Zhou, Wenhong Tian, Rajkumar Buyya	521
098-154	Image Aesthetics Assessment for Virtual Cinematography of Cloud-based Performing Arts Scenes Jianqin Wu, Xiaoyu Wu, Jucheng Qiu	526
	Session XI:Intelligent service in agriculture Wenbai Chen	
099-024	Knowledge-enhanced Pre-training large language model for depression diagnosis and treatment  Xiao Wang, Kai Liu, Chunlei Wang	532
100-080	Hybrid algorithm of invasive weeds and particle swarm optimization Xianjun Du, Zhuohang Li,	537
101-081	TCSE_BiLSTM: Spatial-Temporal Characteristics Extraction Using Deep Learning to Improve Tropical Cyclone Size Estimation from Infrared Satellite Imagery  Bingfan Geng, Changjiang Zhang, Chuanhui Zhang, Xiaojie Wang	542
102-085	Study on Soil Moisture Prediction based on the VMD-PCA-Informer Model Ziliang Jia, Yonghong Liu, Yiqun Wang, Wenbai Chen	547
103-086	A deep learning-based model for forecasting rice leaf folder Cnaphalocrocis medinalis  Jing Feng, Yiqun Wang, Wenbai Chen	552
104-102	Generation of Winter Wheat Irrigation Guarantee Capability Index Map Based on Deep Learning Wentao Chen, Xibao Wu, Qiong Liu, YiQun Wang, Yonghong Liu, Wenbai Chen	557
105-104	Knowledge System for Related Scholars of Specific Field Based on Collaborative Relationship  Shaochen Gao	562
106-124	A rapid method for removing complex backgrounds for potato early blight monitoring  Tong Zhu, Jingtao Li, Jingwen Chen, Jingxia Li, Guofeng Shu, Rui Liu, Jiawei Wu, Yanli Yang, Xia Liu, Xiaolong Zhou	568

107-146	Multi-task Tomato Fruit and Bunch Maturity Detection Approach Based on Improved YOLOv7  Mengchen Liu, Yiqun Wang, Xingxu Li, Wei Han, Wenbai Chen	573
108-172	DTMCA:A Digital Twin Model for Stripe Rust Based on Cellular Automata Peng Bi, Qili Chen, Wenbai Chen	578
109-173	A Multi-stage Prediction Framework for Pest Identification  Yanan Chen, Miao Chen, Minghui Guo, Fangfang Wang, Jianji Wang	583