2024 International Conference on Neuromorphic Computing (ICNC 2024)

Chongqing, China
13-15 December 2024

IEEE Catalog Number: CFP24AE0-POD
ISBN: 979-8-3315-0867-8

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:	CFP24AE0-POD
ISBN (Print-On-Demand):	979-8-3315-0867-8
ISBN (Online):	979-8-3315-0866-1

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

Handling stability hierarchical control of distributed drive electric vehicle based on adaptive dynamic programming 1
Yidi Deng, Lan Zhou, Jinjun Wu, Zhu Zhang, Wenbin Xiao

Attack time consensus control for 3D multi-missile systems based on adaptive dynamic programming 7
Fenglan Sun, Xinwei Yang, Jiashuo Su, Jiaoyan Zhu

Emolip: An Affective Computing Way Based on Image-Language Pre-trained Model 11
Dayu Wu, Junjian Huang, Zhenquan Tang

Predefined-time Consensus of Leader-Following Multi-agent Systems under Sliding Mode Control with External Disturbances 15
Junpeng Zhu, Xuehui Mei, Haijun Jiang, Zhiyong Yu, Yitao Sun, Yuqing Zhou

PFACO: Potential Field Ant Colony Optimization for Mobile Robot Path Planning 22
Hao Wei, Huiwei Wang

Design and Analysis of Many-to-Many Associative Memory Driven by External Input 28
Qiang Fang, Hao Zhang

A Deep Learning-Based Approach to Arm-Hand Robot Learning from Demonstration 32
Kun Zheng, Xiucai Huang

Controllability and Synchronizability of Structural Brain Networks in Alzheimer's Disease 38
Ruoyan Li, Rui Cai

Event-triggered Practical Consensus of DC Microgrid Secondary control with Prescribed Performance 43
Hang Zhou, Haijun Jiang, Zhiyong Yu

Neural Network-based Control for Nonlinear Multi-Agent Systems via Dynamic Event-Triggered Mechanism 50
Yu Huang, Huiyan Zhang, Jiangyan Zou, Huichao Wang

Stability Criteria for Neural Networks With Stochastic Impulsive Intensity and Impulsive Density 55
Hao Deng, Jingxin Liu, Jun Peng, Yingxu Wang, Fei Chang

Fixed/Predefined Time Intra-layer Synchronization in Multi-layer Networks 61
Hongsen He, Shiju Yang, Tingting Huang, Yiting Tang, Yuti Li

Using Memoryless Dual Observers for Tracking Consensus in Multi-Agent Systems with Input and Output Delays 65
Hanbin Li, Wei Zhang, Han Xiao

DiffPPO: Reinforcement Learning Fine-Tuning of Diffusion Models for Text-to-Image Generation 69
Zhuo Xiao, Ping Jiang, Mingjie Zhou, Junzi Zhang, Zijian Huang, Jianfeng Yang

Distributed Event-Triggered Nash Equilibrium Seeking under Hybrid Attacks and Dead-Zone Inputs: A Topology Reconstruction Approach 74
Xiao Lu, Shuting Chen, Ying Wan, Junjie Fu, Tingwen Huang

Cooperative Output Regulation of Heterogeneous Fractional-order Multi-Agent Systems 80
Beiyu Cheng, Cheng Hu

A Bionic Circuit for Emotion Associative Memory Based on Memristive Neural Networks 86
Yuejia Zhou, Zhirui Chen, Kaiwen Hu, Zhixia Ding, Le Yang, Sai Li

Reinforcement Learning-based Adaptive Fault-tolerant Optimal Control with Time Delays for Discrete-Time Multi-agent Systems 92
Hongyu Chen, Lihua Tan, Xin Wang, Chen Zhao

Dynamic analysis of a stochastic rumor model with media coverage and whistleblowing mechanism 96
Jingjie He, Haijun Jiang, Xinru Tong, Xuehui Mei

The Analysis of Social Power Evolution in Cooperation Networks Based on the Interval Reflected Appraisals 103
Jianhua Cao, Shuping Wang, Hong-Xiang Hu

Bidirectional Dynamic Spatiotemporal Graph Recurrent Neural Network for Traffic Flow Forecasting 109
Xingyan Wang, Dawen Xia, Zhan Lin, Mingyue Huang, Yang Hu, Huaqing Li

Mixture Random Features Spaces for Robust Adaptive Filtering 116
Mingjing Cui, Dongyuan Lin, Yunfei Zheng, Yunxiang Jiang, Shiyuan Wang

Capacity optimization configuration of wind-solar hydrogen production hybrid energy storage system 120
Chengyi Yue, Chaojie Li, Haoxin Dong

FRMAdam-iTransformer KAN: A Fractional Order RMS Momentum Adam Optimized iTransformer with KAN for EEG and ECG Prediction 124
Xinrui Zhang, Jiejie Chen, Xuewen Zhou, Ping Jiang

Weed recognition method based on a lightweight YOLOv5 128
Yong Pan, Haonan Zhang, Ziye Hou, Jiang Xiong

Intelligent Monitoring and Analysis of Sports Data in the Context of Rural Revitalization Based on Federated Learning 133
Qiuxian Li, Quanxing Zhou

Trigonometric Expansion based Random Fourier Feature Algorithm for Nonlinear Adaptive Filtering 139
Qiangqiang Zhang, Shunran Xiang, Wei Zhang, Shiyuan Wang, Dongyuan Lin, Hongjuan Wu

Research on Key Technologies of Object Detection in Autonomous Driving Environments Based on Deep Learning 143
Quanxing Zhou, Qiuxian Li

Robust Lattice Kalman Filter Under False Data Injection Attacks and Measurement Data Loss 150
Sanshan Liu, Shiyuan Wang, Dongyuan Lin

MamAM:A Novel Deep Reinforcement Learning Architecture for Multi-Robot Task Allocation 154
Chao Zhong, Hong Chen, Dingxin He

Geomagnetic/Inertial Fusion Indoor Navigation System Based on an Improved WD-UKF 160
Zhiyi Zhou, Dongzhuo Liu

Region Attractivity Analysis for Multi-Modality Data Driven Recurrent Neural Networks 164
Gang Bao, and Kun Yu

Passivity analysis of reaction-diffusion FCNNs with general boundary conditions and impulsive effects 170
Xiaona Zhao, Chuandong Li, Mingchen Huan

Neural Network SLAM Algorithms for Dynamic Object Removal in Complex Environments 177
Ren Zhang, Jingxin Liu, Jinmingwu Jiang, Pengfei Zhang, Seyedali Mirjalili

KAN Convolution for Image Classification 182
Mengjuan Li, Wenming Cao, Lei Zhang, Man Li, Mingming Yang

OSA-Net: A Deep Learning Approach for Obstructive Sleep Apnea Classification Using ECG Scalograms 186
Xielan Tang, Yamei Li, Qingqing Yang, Lu Luo

EMDepth: Self-supervised Event-based Monocular Depth Estimation 190
Lifeng Lin, KeYuan Li, Lu Yang, TieShan Li

Saturated Impulsive Distributed Filtering for Target Estimation over Sensor Networks 194
Yuan Tian, Zhenyu Ao, Qi Han, Qiao Yuan, Wenlong Fu, Ruonan Cui

A Multi-Scale CNN-LSTM Network with Squeeze and Excitation Block for Leg Movement Detection during Sleep 198
Qingqing Yang, Yamei Li, Xielan Tang, Lu Luo

Hound tracking optimization algorithm used to PSS, UPFC-POD controller parameter optimization to enhance stability of WPTB system 203
Guolong Zeng, Jiahao Xu, Mengjie Zhu, Peng Liu, Junwei Sun

Non-Autonomous ReLU-Type Hopfield Neural Network Model 209
Chengjie Chen, Bin Gao, Yang Yu, Lei Zhu, Shuang Zhao, and Sen Zhang

HLSM-UNet:Hybrid Local Spatial Mamba UNet for Medical Image Segmentation 214
Xude Zhang, Yumin Tang, Xiaoping Wu, Dihong Luo, Changzhen Zhang, Houbing Tang

Bumpless transfer synchronization of delayed chaotic neural networks by intermittent control 219
Chao Liu, Haohan Ma, Jiayu Yang

Design and Verification of an Adversarial Training Defense Algorithm for Network Traffic 223
Xiuqing Mao, Lei Sun

Cluster Synchronization for Coupled Neural Networks with Mixed Couplings via Pinning Partial Impulsive Strategy 227
Xinle Wang, Xiaoyu Zhang, Hongfei Li

Secure Synchronization of Neural Networks by Pinning Partial Impulsive Control 231
Xinle Wang , Xiaoyu Zhang, Hongfei Li

Study and Analysis of DTN Routing Algorithms Based on Mobility Speed Statistics in Unconventional Networks 235
Wanxin Yang, Lu Yang

A Novel Distributed Prescribed-time Convergence Acceleration Algorithm with Time Rescaling 241
Pengrui Zhang, Xuehui Mei, Haijun Jiang, Zhiyong Yu

Distributed Optimization via Mixing ADAM and Quasi-Newton Methods 248
Zhiyao Pan, Ting Li, Zhongyi Chang, Shaofu Yang

An External Knowledge-Based Sentiment Classification Method for Chinese Short Texts 252
Zhaoxun Li, Huaqing Li, Huiwei Wang

Contrastive Learning Deraining Network Based on Multi-Scale CycleGAN Architecture 258
Han Xiao, Wei Zhang, Qinglei Cui, Jiangtao Qi

Memristive bionic circuit design of episodic memory generation and recall related to olfaction 262
Yiming Jiang, Xiaoping Wang, Mingxuan Jiang

Unsupervised Order-Enabled Contrastive Learning-based Dual Autoencoder Fault Detection for Variable Speed Bearing 268
Ruonan Lu, Qinmin Yang, Da Zheng, Weiwei Cao

KM-Prompt: A Prompt-based CNN for Continual Learning 274
Junwei Chen, Zhigang Zeng

Preassigned-Time Stabilization of Memristive Chaotic Circuit via Switching Control 281
Qiming Wang, Leimin Wang, Wenzhao Qin

Finite-Time Control for Nonlinear Multi-agent Systems with Input Dead Zones 286
Qinglei Cui, Han Xiao, Wei Zhang

Dynamic Event-Based Asymptotically Tracking Control for Multi-Agent Systems 291
Shuhan Zhang, Zhengqi Sui, Simian Guo, Guangliang Liu

Comparative Analysis of High-Order Rotor Hopfield Neural Networks and Dense Associative Memory: Structural Similarities and Functional Differences 295
Bingxuan Chen, Hao Zhang

A Spatio-temporal Associative Memory Architecture Using Chaotic Masking Technique for Complex Sequence Storage and Retrieval 300
Zilong Yan Hao Zhang, Rui Cai

Accelerated Projection Neurodynamic Approach for Convex Optimization with Affine Equality and Inequality Constraints 304
You Zhao, Xing He, Hangjun Che, and Huaqing Li

Community Energy Management System Based on Deep Learning and Lagrangian Programming Neural Network 308
Shuying Xu, Xing He

Mean-Square Exponential Stability of Stochastic Complex-Valued Neural Networks with Impulses 312
Yuefei Yuan, Xiaobin Wu, Zhaowei Zeng

DEGAN: A Deep Learning Model for SAR Image Segmentation in Aquacultural Raft Monitoring 316
Shuo Lian, Jun Wang, Min Han, Jianchao Fan

Violence Detection Using EfficientNet-B0 and SA Separable Convolutional LSTM 320
Zhenjiang Fu，Junjian Huang，Luting Zhang

Dual Asynchronous Event-Triggered Control for Semi-Markov Jump Systems and Its Application 324
Yiteng Zhang, Linchuang Zhang

Edge Detection Circuit Based on Memristive Crossbar Array with Adaptive Thresholding and Morphological Processing 328
Hongyan Tao, Qihang Xu, Qiang Chen, Ling Chen

Neuroscience-Inspired Neural Network Exhibits More Human-Like Face Processing Abilities 332
Jiayu Bao, Zhenhua Zhao, Haojiang Ying

An Improved YOLOv8-Based Pest Identification Method for Farmland 336
Liling Zhang, Huanhuan Peng, Xueqian Du

Decentralized Online Dual Averaging Optimization Ensuring Differential Privacy and Expected Regret 340
Huqiang Cheng, Qingguo Lü, Jinhui Hu, Zhengran Cao, Huaqing Li

Context Understanding in Real time Video Analysis Based on Convolutional Neural Networks 344
Xiaoming Pan, Yinjun Zhang

Q-HIRL: A Q-Network Representation-Based Request Framework for Human-in-the-Loop Reinforcement Learning 348
Bo Niu, Biao Luo

Emotion-Driven Memcapacitor Biomimetic Circuit for Reinforcement Learning 354
Haotong Zhou, Kefan Tao, Junwei Sun, Yanfeng Wang, Peng Liu

EV load forecasting method based on data reconstruction of GRU-WGAN and BiLSTM network 358
Xinke Lv, Ping Bi, Lei Xiong, Min Zhang, Bingquan Li, Zongju Jiao, Yue Zhang, Wei Xu, Jian Sun

Discriminative Features Learning for Fine-Grained Nuclear Cataract classification in AS-OCT Images with Supervised Contrastive Learning 362
Wei Song, Xiaoming Liu, Ying Zhang, Guohuan Wu

Memristor-Based Neural Network Circuit of Emotional Grading in Intelligence Decision System 366
Kefan Tao, Haotong Zhou, Yanfeng Wang, Junwei Sun, Peng Liu

Integrated Wavelet Decomposition and Multi-Model Approach with Fractional-Order Sparrow Search Optimization for ECG Classification 370

Zhiwei Xiao, Jiejie Chen, Ping Jiang, Bin Wei

Scheduling Gain-Based Adaptive NN Control of Underactuated Bridge Crane 374
Jia-Ke Wang, Yang Liu, Ronghu Chi, Xuhui Bu, and Lijie Wang

NODE-Former: A Hybrid Approach for Robust Long-Term Time Series Forecasting 380
Bin Wei, Jiejie Chen, Ping Jiang, Zhiwei Xiao

A predefined-time adaptive algorithm for optimization problems 385
Haoze Li, Sitian Qin

NN-Based Prescribed-Time Control for Nonlinear Multiagent Systems with Switching Topologies 389
Yonghua Peng, Hongru Ren, Yang Liu, Hui Ma, Qi Zhou

Event-Based Prescribed-Time Adaptive Neural Network Control for Uncertain Nonlinear Systems 393
Yilin Chen, Yingnan Pan

Output synchronization of multi-layer networks with output coupling under dynamic event-triggered control 397
Wenyan Xi, Juan Yu, Cheng Hu

Anti-windup approach for time-delay saturated impulsive control system 403
Tianhu Yu, Huamin Wang

Detection of Power Transmission Lines Using an Improved RT-DETR Model 408
Jidong Tan, Wenbin Wang, Cheng Lian

Fixed-Time Passivity and Synchronization of Spatiotemporal Networks With Multiple Weights via Boundary Control 413
Yujie Ma, Cheng Hu

Apple grade classification based on convolutional neural network and machine learning 420
Lisong Yi, Jing Zhong

Tibetan Syllable Component Recognization with Memristor 425
Yutong Liu, Jiarun Shen, Yongbin Yu, BAN Ma-bao, Thupten Tsering, Xiangxiang Wang, Cheng Huang, Nyima Tashi

Estimating the Domain of Attraction in Saturated Constrained Linear Discrete-Time Impulsive Systems Based on an Improved Convex Hull Representation 431
Song Jiang, Xujun Yang, Lu Wang

Self-triggered impulsive control for quasi-synchronization of nonlinear systems with application to neural networks 436
Fei Chang, Chuandong Li, Wei Zhang

Backstepping-Based Adaptive Formation Control of Quadrotor UAVs With Multiple Disturbances 441
Chenyu Tian, Xilin Zhang, Jin Yang

Fire Detection Algorithm Based on Improved YOLOv8 446
Xue Qian Du, Jiang Xiong, Li Ling Zhang, Lang Liu

Asynchronous Iterative Q-Learning: Optimal Control for Nonlinear Discrete-Time Systems 451
Xin Qu, Rui He, Tao Dong, Ziwen Shen

Reinforcement Learning-Based Fixed-Time Control for Multiagent Systems with Actuator Faults 455
Yushan Cen, Qixia Shen, Liang Cao, Meng Zhao

Personalized Federated Learning With Multi-Server 459
Yunzi Huang, Haifeng Dai, Guanqiao Kong, Jing Nie

Bearing-Based Formation Control Using Reset Protocol 463
Armand Gires Fomekong Lontchi, Yinglun Mo, Wenfeng Hu

Event-Triggered Observer-Based Fixed-Time Consensus Control for Uncertain Nonlinear Multiagent Systems with Unknown States 467
Kewei Zhou, Ziming Wang, Zhihao Chen, Xin Wang

Images Encryption and Transmission for Neuromorphic Systems Based on Chaotic Dynamic Behaviors 474
Yucong Xia, Siyao Zhang, Huamin Wang

Adaptive Low-Rank Adaptation Based Parameter-efficient Tuning for Low-resource Zero-shot remote sensing image classification 479
Jianxin Duan, Peng Yang, Yingsheng Chen

A Greenhouse Tomato Irrigation System Based on Fuzzy PID Control 483
Li Liu, Yuming Feng, Weihong Jin, Guozhen Zhang, Xiang Liu

Dynamic prescribed group consensus of nonlinear multi-agent networks based on merging mechanism, hierarchical architecture, and impulsive control 489
Xiang Hu, Zufan Zhang, Yu Xiong, Hongwei Hu, Chuanjiang Li

Multi-Strategy Collaborative Improved Seagull Optimization Algorithm and Its Applications 494
Hua Yang, Lihao Yu, Yanjie Lv, Hao Xue, Siyi Wang, Tiancheng Zhang, Yunhan Huang, Taiyong Deng, Qing Zhao, Hao Shen

Electroencephalogram Emotion Classification Method Based on Spatial Hierarchical Attention Mechanism 499
Hongxiao Tan, Sheng Qin, Xuanyu Zhao, Jin Zeng

Author Index 505