16th International Conference on Advanced Computational Intelligence

ICACI2024 Final Program

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Welcome Messages

On behalf of the Organizing Committee, we sincerely welcome you to join us at the 16th International Conference on Advanced Computational Intelligence (ICACI 2024) being held in Zhangjiajie, China, during May 16-19, 2024. Through this conference, we intend to enhance the sharing and inspiring of individual experience and expertise advanced computational intelligence, neural network technology, on both theories and practical insights. The conference features plenary speeches given by world-renowned scholars and regular sessions with broad coverage and special topics.

ICACI 2024 attracted about one hundred submissions, addressing the state-of-the-art development and research covering topics related to data processing and analysis techniques, intelligent manufacturing technology, object detection and classification, intelligent optimization methods, neural network technology and its applications, robotics and autonomous systems. Based on the rigorous peer reviews by the Program Committee members and reviewers, 38 papers were selected to be presented in the conference and included in the conference proceedings.

The conference program is highlighted with three plenary talks. We would like to express our sincere appreciation and acknowledgement to the distinguished plenary speakers: Professor Fei-Yue Wang (IEEE Fellow, IFAC Fellow, ASME Fellow, AAAS Fellow), Professor Qinglong Han (IEEE Fellow), Professor Yongduan Song (IEEE Fellow, AAIA Fellow). Plenary talks are focused on computational intelligence, neural network technology.

Several organizations and many volunteers made great contributions toward the success of this conference. We would like to express our sincere gratitude to Jishou University for their sponsorship, Hunan University, Hunan Normal University, and City University of Hong Kong for their co-sponsorship, and IEEE Systems, Man and Cybernetics Society for its technical co-sponsorship. Special thanks are extended to Program Committee Chairs and members for their thorough reviews of all the submissions, and the Organizing Committee and volunteers for their warm and thoughtful service to all participants. We also would like to express our high appreciation and gratitude to all of the authors and participants. Without the contributions of the authors, the conference will be impossible.

We wish you to enjoy the conference and stay in Zhangjiajie both academically and socially!

Qisheng Li, Jun Wang, General Chairs
Hanxiong Li, Jianfeng Li, Bolin Liao, Lin Xiao, Organizing Chairs
Zhenyuan Guo, Long Jin, Yongming Li, Yong Wang, Program Chairs

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Zhanshan Wang	Xingyan Zheng	Zhiguo Tan
Zhiting Zhou	Zuowei Cai	

Program at a Glance

May 16, 2024 Thursday

Country Garden Phoenix Hotel Zhangjiajie	
10:30 ~ 17:00	On-site registration

May 17, 2024 Friday

Vancouver Hall, Country Garden Phoenix Hotel Zhangjiajie		
8:30 ~ 8:40	Opening Ceremony	
8:40 ~ 9:40	Keynote Speech I: Professor Fei-Yue Wang	
9:40 ~ 10:00	Coffee Break	
10:00 ~ 11:00	Keynote Speech II: Professor Qinglong Han	
11:00 ~ 12:00	Keynote Speech III: Professor Yongduan Song	
12:00 ~ 13:00	Lunch Break (Blanca Western Restaurant)	
	Parallel sessions (Chicago Room)	Parallel sessions (Morocco Room)
13:00 ~ 15:00	S1: Data Processing and Analysis Techniques	S2: Intelligent Manufacturing Technology
14:00 ~ 14:20	Coffee Break	
14:20 ~ 17:20	S3: Object Detection and Classification	S4: Intelligent Optimization Methods
18:00	Banquet (Feng Yue Xuan)	

May 18, 2024 Saturday

	Parallel sessions (Chicago Room)	Parallel sessions (Morocco Room)
9:00 ~ 11:40	S5: Neural Network Technologies and Applications	S6: Robotics and Autonomous Systems
12:00 ~ 13:00	Lunch Break (Blanca Western Restaurant)	

Keynote Speech I

Title: The SKL for Management and Control of Complex

Professor Fei-Yue Wang, IEEE Fellow, IFAC Fellow, ASME Fellow, AAAS Fellow

Abstract: This presentation will address issues in a new paradigm for parallel computing: instead of the traditional thinking rooted in dividing and conquering in CPS, our new thinking is augmented and solved in CPSS through an integrated and living (or intelligent adaptive evolution) actual/artificial ecological system of systems intelligence based Karl Popper's World Model and Foundation/Infrastructure Intelligence, specifically Foundation/Infrastructure Models based ACP approach, i.e., Artificial Societies for representation and description, Computational Experiments for Evaluation and Prediction, and Parallel Execution for Governance and Prescription. The concepts of Digital, Robotical, Biological Humans are introduced and deployed for a new architecture and platform to support our new parallel computing philosophy and technology.

Biosketch: Fei-Yue Wang received his Ph.D. degree in computer and systems engineering from the Rensselaer Polytechnic Institute, Troy, NY, USA, in 1990. He joined The University of Arizona in 1990 and became a Professor and the Director of the Robotics and Automation Laboratory and the Program in Advanced Research for Complex Systems. In 1999, he founded the Intelligent Control and Systems Engineering Center at the Institute of Automation, Chinese Academy of Sciences (CAS), Beijing, China, under the support of the Outstanding Chinese Talents Program from the State Planning Council, and in 2002, was appointed as the Director of the Key Laboratory of Complex Systems and Intelligence Science, CAS, and Vice President of Institute of Automation, CAS in 2006. He found CAS Center for Social Computing and Parallel Management in 2008, and became the State Specially Appointed Expert and the Founding Director of the State Key Laboratory for Management and Control of Complex Systems in 2011.

His current research focuses on methods and applications for parallel intelligence, social computing, and knowledge automation. He is a Fellow of INCOSE, IFAC, ASME, and AAAS. In 2007, he received the National Prize in Natural Sciences of China, numerous best papers awards from IEEE Transactions, and became an Outstanding Scientist of ACM for his work in intelligent control and social computing. He received the IEEE ITS Outstanding Application and Research Awards in 2009, 2011, and 2015, respectively, the IEEE SMC Norbert Wiener Award in 2014, and became the IFAC Pavel J. Nowacki Distinguished Lecturer in 2021.

Since 1997, he has been serving as the General or Program Chair of over 30 IEEE, INFORMS, IFAC, ACM, and ASME conferences. He was the President of the IEEE

ITS Society from 2005 to 2007, the IEEE Council of RFID from 2019 to 2021, the Chinese Association for Science and Technology, USA, in 2005, the American Zhu Kezhen Education Foundation from 2007 to 2008, the Vice President of the ACM China Council from 2010 to 2011, the Vice President and the Secretary General of the Chinese Association of Automation from 2008 to 2018, the Vice President of IEEE Systems, Man, and Cybernetics Society from 2019 to 2021. He was the Founding Editor-in-Chief (EiC) of the International Journal of Intelligent Control and Systems from 1995 to 2000, IEEE ITS Magazine from 2006 to 2007, IEEE/CAA JOURNAL OF AUTOMATICA SINICA from 2014-2017, China's Journal of Command and Control from 2015-2021, and China's Journal of Intelligent Science and Technology from 2019 to 2021. He was the EiC of the IEEE Intelligent Systems from 2009 to 2012, IEEE TRANSACTIONS on Intelligent Transportation Systems from 2009 to 2016, IEEE TRANSACTIONS ON COMPUTATIONAL Social Systems from 2017 to 2020. Currently, he is the President of CAA's Supervision Council, and the EiC of IEEE Trans. on Intelligent Vehicles.

Keynote Speech II

Title: Distributed Coordinated Control and Energy Management in Smart Grids

Professor Qinglong Han, IEEE Fellow, IFAC Fellow

Abstract: To deal with the exhaustion of traditional energy resources (e.g., coal, fossil oil, gas) and environmental deterioration, a smart grid has been established to realize the integration of renewable distributed energy sources, leading to some new theoretical and technical issues in control and power management. In this talk, distributed coordinated control and energy management strategies for smart grids will be presented, mainly focusing on i) distributed finite-time secondary control of AC microgrids, ii) distributed resilient secondary control of multiple battery energy storage systems under DoS attacks, and iii) distributed energy management of smart grids. It is shown that the proposed methods have strong abilities in improving efficiency and reliability of smart grids.

Biosketch: Distinguished Professor Qing-Long Han is Swinburne's Pro Vice-Chancellor (Research Quality). He is a Fellow of IEEE and a Fellow of The Institution of Engineers Australia. He has served as an AdCom Member of IEEE Industrial Electronics Society (IES) and a Member of IEEE IES Fellows Committee.

Professor Han is a Highly Cited Researcher by Clarivate Analytics (Thomson Reuters) in 2014-2016, 2018-2020. He is one of Australia's Top 5 Lifetime Achievers (Research Superstars) in Engineering and Computer Science in The Australian's Research Magazine in 2019 and 2020. He is ranked No. 320 in the world ranking in the 6th Edition of the 2020 Ranking of Top 1000 Scientists in the field of Computer Science and Electronics and No. 5 in Australia in the field of Computer Science and Electronics according to Guide2Research.

Professor Han received The 2020 IEEE Systems, Man, and Cybernetics (SMC) Society Andrew P. Sage Best Transactions Paper Award (IEEE Transactions on Systems, Man, and Cybernetics: Systems), The 2020 IEEE Industrial Electronics Society IEEE Transactions on Industrial Informatics Best Paper Award, and The 2019 IEEE Systems, Man, and Cybernetics (SMC) Society Andrew P. Sage Best Transactions Paper Award (IEEE Transactions on Cybernetics).

Professor Han has served as an Associate Editor for 12 international journals including IEEE Transactions on Industrial Electronics, IEEE Transactions on Industrial Informatics, IEEE Industrial Electronics Magazine, IEEE Transactions on Cybernetics, Control Engineering Practice, Information Sciences, and a Guest Editor for 13 Special Issues.

Keynote Speech III

Title: Trustworthy Neural Network (NN) Driven Control

Professor Yongduan Song, IEEE Fellow, AAIA Fellow

Abstract: Neural networks and related learning algorithms are crucial components of artificial intelligence. The utilization of neural networks combined with learning algorithms for controller design has become a mainstream direction in the field of intelligent control. This talk will examine the typical NN driven design approaches and expose several critical issues related to trustworthiness and effectiveness of the NN based control methods.

Biosketch: Yongduan Song is a Fellow of IEEE, Fellow of AAIA, Fellow of International Eurasian Academy of Sciences, and Fellow of Chinese Automation Association. He was one of the six Langley Distinguished Professors at National Institute of Aerospace (NIA), USA and register professional engineer (USA). He is currently the dean of Research Institute of Artificial Intelligence at Chongqing University. Professor Song is the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems (TNNLS) and the founding Editor-in-Chief of the International Journal of Automation and Intelligence.

May 17, 2024 Friday

Opening Ceremony & Plenary Lectures

Room: Vancouver Hall

8:30 ~ 8:40	**Opening Ceremony**
8:40 ~ 9:40	**Keynote Speech I: Prof. Fei-Yue Wang -** The SKL for Management and Control of Complex
9:40~ 10:00	Coffee Break
10:00 ~ 11:00	**Keynote Speech II: Prof. Qinglong Han -** Distributed Coordinated Control and Energy Management in Smart Grids
11:00 ~ 12:00	**Keynote Speech III: Prof. Yongduan Song -** Trustworthy Neural Network (NN) Driven Control
12:00 ~ 13:00	Lunch Break

S1: Data Processing and Analysis Techniques

Chairs: Choo Yee Ting, Yang Shi
Room: Chicago Room

13:00~13:20	*Hierarchical Neural Network Ensemble Modeling Based on Parallel and Serial Structure* Jie Li, Degang Wang
13:20~13:40	*Factors of Pre-University Study in Influencing Graduate on Time* Theng Jia Law, Choo Yee Ting, Hui Ngo Goh, Hu Ng, Quek Albert
13:40~14:00	*Power Load Interval Prediction Based on Selective Ensemble of EEMD-ROCKET* Fan Wang, Yanyu Zhang, Caijia Lei, Yun Zhao, Yuxin Lu, Wei Pan
14:00~14:20	*Spatiotemporal BEV Pyramid Networks for Future Instance Prediction of Autonomous Driving* Wenxuan Wu, Xiang Dong, Hui Zhang, Ziwen Zhao, Biao Yu, Hao Xu
14:20~14:40	*Progressive Fusion Network with Mixture of Experts for Multimodal Sentiment Analysis* Dahuang Liu, Zhenguo Yang, Zhiwei Guo
14:40~15:00	*Newly Listed Stocks Return Forecasting via ADARNN Trained with Mixed Historical Data* Lieping Zhang, Chen Peng, Zhengping Liu, Hailing He
15:00 ~ 15:20	Coffee Break

S2: Intelligent Manufacturing Technology

Chairs: Weibing Li, Jie Jin
Room: Morocco Room

13:00~13:20	*A Temporal-Spatial Attention based Dynamic Correction Method for Geological Model of Coal Seam* Yuanbo Lv, Shibo Wang
13:20~13:40	*Multi-fidelity Surrogate Nodel Based Wind Tunnel Structure Design Optimization* Yisheng Yang, Zeyuan Yang, Xiqiang Yan, Sijie Yan, Bowen Liu, Han Ding
13:40~14:00	*WOA-VMD and SVM Rolling Bearing Failure Diagnosis* Yawen Zhang, Guici Chen, Wenbo Wang
14:00~14:20	*Multisource Remote Sensing Fusion for Marine Aquaculture Information Extraction* Zhuo Wang, Xinzhe Wang, Jie Dong, Jianchao Fan
14:20~14:40	*The Decision of Freshness and Service Levels in A Dual-Channel Unified-Pricing Fresh E-commerce* Zhongxuan Gu, Xiaotong Guo, Zhuoman Ma
14:40~15:00	*Motion Sickness Alleviation Based on A Mindfulness Brain-Computer Interface* Jiawei Zhu, Xiaoyu Bao, Qiyun Huang, Tao Wang, Li Huang, Yupeng Han, Kendi Li, Di Chen, Kailin Xu, Zijian Wang, Ya Jiang, Yuanqing Li
15:00 ~ 15:20	Coffee Break

S3: Object Detection and Classification

Chairs: Jianchao Fan, Dechao Chen
Room: Chicago Room

15:20~15:40	*Enhanced Small Target Recognition with Lightweight YOLOv5 in Low-Res Images* Jingjing Wang, Hucheng Wang, Aming Wu
15:40~16:00	*Dense Metric with Meta-Classifier for Few-Shot Image Classification* Yong Wang, Kaitong Li, Xiaoyu He
16:00~16:20	*Rumor Detection Based on Cross-Modal Information-Enhanced Fusion Network* Zhiwei Guo, Zhenguo Yang, Dahuang Liu
16:20~16:40	*Detection of Idiopathic Pulmonary Fibrosis Lesion Area Based on Transfer Learning* Jielin Xue, Tian Pu, Lu Guo, Zhenming Peng

16:40~17:00 *Spectrum Sensing Based on Stochastic Resonance and SOM Neural Network*

Jing He, Bingfeng Zheng, Yonghua Wang

17:00~17:20 *Crash Causing Information Extraction via Text Mining Techniques: Implementation of the Chinese State-related Crash Narratives*
Neng Xiong, Hanchu Zhou

S4: Intelligent Optimization Methods

Chairs: Dongsheng Guo, Mei Liu
Room: Morocco Room

15:20~15:40 *An Adaptive Neurodynamic Algorithm for Solving Matrix Valued Optimization Problem with Multiple Constraints*
Haoze Li, Qiang Wang, Sitian Qin, Xinrui Jiang

15:40~16:00 *A Knowledge-Guided Emergency Response Rule Mining Method with Improved Genetic Algorithm*
Xin Ye, Qinqin Zhou, Ying Wang, Yitao Wang, Xiaoyan Su, Lei Zhang, Yanhong Guo

16:00~16:20 *Path Finding via Shape Context Matching*

Yifeng Li, Zunyao Hou, Chuankai Yang, Yuancheng Lai

16:20~16:40 *Bayesian Optimized CNN-RNN Hybrid Model for Predicting Streamflow in Potomac River Basin*
Stephanie Rouamba, Gavin Robinson, Nian Zhang, Tolessa Deksissa

16:40~17:00 *Multi-Resource Network Slicing with Deep Reinforcement Learning for an Optimal QoS Satisfaction Ratio*
Yuancheng Lai, Huichu Yang, Chuankai Yang

17:00~17:20 *Multi-objective Demand Responsive Transit Scheduling in Smart City: A Multiple Populations Ant Colony System Approach*
Ke-jing Du, Jiaquan Yang, Hua Wang, Zhihui Zhan

May 18, 2024 Saturday

S5: Neural Network Technologies and Applications

Chairs: Sitian Qin, Zhiguo Tan
Room: Chicago Room

9:00 ~ 9:20 *Derivation and Numerics of Integral-aided Denoising Zhang Time Derivativers*
Yunong Zhang, Peng An, Wuyi Yang

9:20 ~ 9:40 *Design and Analysis of One-to-Many Associative Memory Driven by External Input*

Qiang Fang, Hao Zhang, Rui Cai

9:40 ~ 10:00 *Nonlinear Functions Activated Gradient-Based Neural Dynamics for Online Matrix Inversion*
Xuanjiao Lv, Jing Feng

10:00 ~ 10:20 *Zhang Extrapolation Formulas from Two Points Applied to Years 1944 and 1971 With 2025, 2052, 2079, and 2106 Predicted*
Yunong Zhang, Zhuoqun Li

10:20 ~ 10:40 *A RNN for Solving Discrete-Form Time-Varying Matrix Inversion: From Model Design to Parameter Analysis*
Ruicong Wang, Qiaowen Shi, Xijie Wang, Bo Peng, Wei Chong, Yang Shi

10:40 ~ 11:00 *Dual-Integral Structure Zeroing Neural Dynamics for Computing Dynamic Complex Matrix Inverse with Application to Chaotic Control*
Cheng Hua, Bolin Liao

11:00 ~ 11:20 *Dual Performance Zeroing Neural Dynamics for Calculating Ttime-Varying Linear Matrix Equations*
Jiamei Luo, Tengxiao Chen, Xiang Tan, Yihui Lei

11:20 ~ 11:40 *Solving Different Numerical Linear Algebra Problems with A New General Fast Neurodynamics*
Dimitrios Gerontitis, Panagiotis Tzekis, Yang Shi

S6: Robotics and Autonomous Systems

Chairs: Biao Luo, Lei Ding
Room: Morocco Room

9:00 ~ 9:20 *Optimizing Redundant Manipulator Performance: A Dual-Criteria Control Approach via Dynamic Neural Networks*
Yuheng Qian, Wentao Yue, Yuzhe Wang

9:20 ~ 9:40 *Research on Policy Conflict Detection Technology Based on Interdomain Interconnection*
Daqiu Wang, Liangyu Dong, Ziyi Wang, Peijun Chen, Weiruo Pu, Yixiang Li

9:40 ~ 10:00 *Adaptive Fuzzy Inverse Optimal Formation Control for Unmanned Surface Vehicle Systems*
Ying Liu, Yongming Li

10:00 ~ 10:20 *Generative Intelligence-Based Swarm Robots Control and Human-Robot Symbiotic Society*
Zhijun Zhang, Xingru Li, An Pan

10:20 ~ 10:40 *Event-triggered Adaptive Finite-time Control for Switched Cyberphysical Systems with Uncertain Deception Attacks*
Yuhao Zhou, Biao Luo

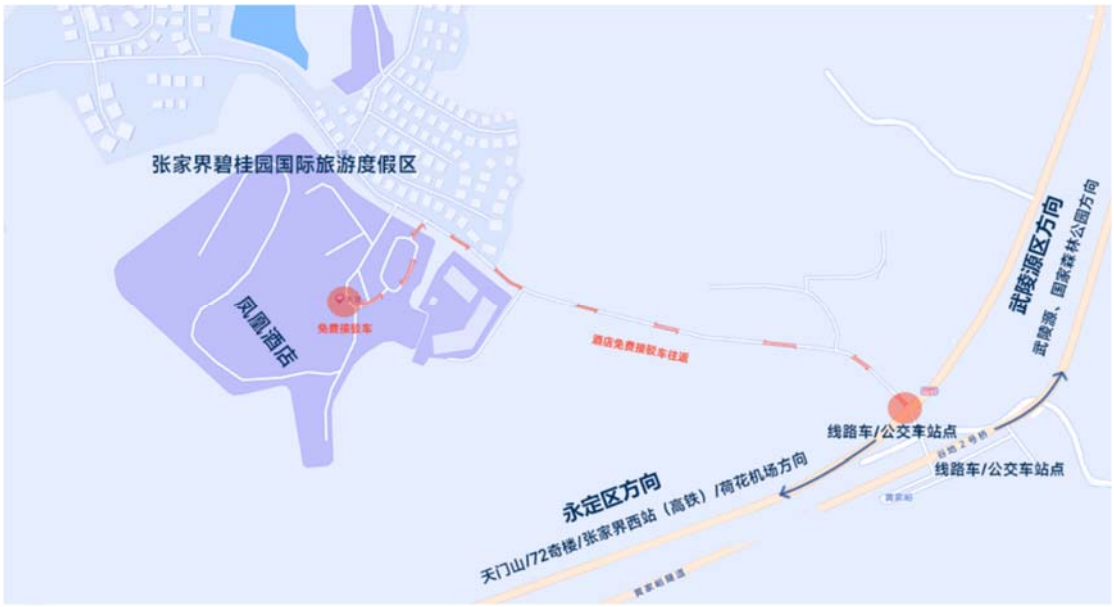
10:40 ~ 11:00 *Fuzzy Boundary Control for Nonlinear Delayed DPSs under Boundary*

Measurements

Xu Zhang, Biao Luo

11:00 ~ 11:20 *Distributed and Competitive Coordination of Multi-Robot Based on GD-kWTA Network under Noise-Free Condition*
Yuzhe Wang, Yuheng Qian, Wentao Yue, Jie Zeng, Chaoyuan Hao

11:20 ~ 11:40 *Synchronization of Neural Networks with Multiple Transmission Channels Subject to Denial-of-Service Attacks*
Shuqing Gong, Zhenyuan Guo



Conference registration： Country Garden Phoenix Hotel Zhangjiajie

Plenary lecture room： Vancouver Hall

Parallel sessions room： Chicago Room & Morocco Room

Lunch： Blanca Western Restaurant

Banquet： Feng Yue Xuan (Country Garden Phoenix Hotel Zhangjiajie)

Transportation：

1. From Zhangjiajie Hehua International Airport to the Hotel, it takes about 40 minutes by taxi
2. From Zhangjiajiexi Railway Station to the Hotel, it takes about 20 minutes by taxi

Registration contact： Yanliang Zhang (Tel. 13762173695)

Accommodation contact： Yanping Yang (Tel. 13974498179)