

AIFM 2024

2024 International Conference on
Artificial Intelligence and Foundation Model

2024年人工智能与大模型国际学术会议

Conference Manual
会议手册

January 19-21, 2024 | Online, China



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Conference Agenda

Plenary session 全体会议 Saturday, January 20, 2024 / 2024 年 1 月 20 日	
腾讯会议号： 233-656-910 密码： 0120 加入会议： https://meeting.tencent.com/dm/kTD0GoZe0Hyk	
08:45-08:50	Open Ceremony & Group Photo Session /开幕式&合影环节 Moderator/主持人 Prof. Jianjun Ni, Hohai University, China 倪建军教授, 河海大学
08:50-09:25	Keynote Speech/报告专家: Prof. Zhiwen Yu, South China University of Technology, China 余志文教授, 华南理工大学 Title: Ensemble Learning and its applications
09:25-10:00	Keynote Speech/报告专家: Prof. Jianjun Ni, Hohai University, China 倪建军教授, 河海大学 Title: Advances in UAV target detection based on deep learning
10:00-10:10	Break & Poster Session/休息&海报展示
10:10-10:45	Keynote Speech/报告专家: Prof. Weishan Zhang, China University of Petroleum, China 张卫山教授, 中国石油大学 Title: Brain-like Cognition Driven Model Factory for Fault Analysis by Combining LLMs with Small Models
10:45-11:20	Keynote Speech/报告专家: Prof. Lu Leng, Nanchang Hangkong University, China 冷璐教授, 南昌航空大学 Title: Advanced Applications of Computer Vision in Multiple Fields
11:20-12:00	Round-Table Workshop /圆桌讨论: 议题: Development and Application of Artificial Intelligence and Large Models 人工智能与大模型的发展与应用

Plenary Session (08:45—11:10)

08:45-08:50 Opening Ceremony

08:50-09:25 Keynote Speech 1



Prof. Zhiwen Yu

余志文 教授

South China University of Technology

华南理工大学

Zhiwen Yu is a Professor in School of Computer Science and Engineering, South China University of Technology, China. He received the Ph.D. degree from the City University of Hong Kong, Hong Kong, in 2008. Dr. Yu has authored or coauthored more than 190 refereed journal articles and international conference papers, including 68 articles in the journals of IEEE Transactions, h-index 42, i10-index 141, Google citation 8178. He is an Associate Editor of the IEEE Transactions on systems, man, and cybernetics: systems. Dr. Yu is in charge of or take part in more than 30 research projects, such as the National Natural Science Foundation of China (the Key Program, the General Program and the Youth Program), National Natural Science Foundation of China for Excellent Young Scientists, the Key R&D Program of Guang Dong Province, and so on. He is a senior member of IEEE and ACM, a Member of the Council of China Computer Federation from 2016 to 2023 (CCF).

Speech Title: Ensemble Learning and its applications

Abstract: Ensemble learning refers to the technique of combining multiple individual machine learning models to make predictions or decisions. In this presentation, we provide an overview of the research advancements in mainstream ensemble learning approaches at first. These ensemble learning approaches are categorized based on their distinct characteristics. Then, the challenges and the potential research directions associated with each mainstream ensemble learning approach are discussed. In the following, we will explore the integration of ensemble learning with other popular machine learning methodologies, such as deep learning and broad learning system. Finally, we will introduce an incremental weighted ensemble broad learning system approach and a transfer clustering ensemble approach in detail.

09:25-10:00 Keynote Speech 2



Prof. Jianjun Ni
倪建军 教授
Hohai University, China
河海大学

Jianjun Ni received the Ph.D. degree from the School of Information and Electrical Engineering, China University of Mining and Technology, Xuzhou, China, in 2005. He was a Visiting Professor with the Advanced Robotics and Intelligent Systems (ARIS) Laboratory, University of Guelph, Guelph, ON, Canada, from November 2009 to October 2010. He is currently a Professor with the College of Internet of Things Engineering, Hohai University, Changzhou, China. He has published over 100 papers in related international conferences and journals. His research interests include control systems, neural networks, robotics, machine intelligence, and multiagent systems. Dr. Ni also serves as an associate editor and a reviewer for a number of international journals.

Speech Title: Advances in UAV target detection based on deep learning

Abstract: With the rapid development of object detection technology for unmanned aerial vehicles (UAVs), it is convenient to collect data from UAV aerial photographs. They have a wide range of applications in several fields, such as monitoring, geological exploration, precision agriculture, and disaster early warning. In recent years, significant progress has been achieved in the area of deep-learning-based UAV object detection. Thus, this report will present the advances of recent research on deep-learning-based UAV object detection. This report provides an overview of the development of UAVs and summarizes the deep-learning-based methods in object detection for UAVs. In addition, the key issues in UAV object detection are analyzed, such as small object detection, object detection under complex backgrounds, object rotation, scale change, and category imbalance problems. Then, some representative solutions based on deep learning for these issues are summarized. Finally, future research directions in the field of UAV object detection are discussed.

10:00-10:10 Break & Poster Session

10:10-10:45 Keynote Speech 3



Prof. Weishan Zhang

张卫山 教授

China University of Petroleum, China

中国石油大学，中国

Weishan Zhang is a full professor at the School of Computer Science and Technology, China University of Petroleum (East China). He is the director of the Shandong Province Credible Artificial Intelligence Ecology Laboratory, Vice Chairman of the Federation Data and Federation Intelligence Committee of the China Association of Automation, and Chairman of the Qingdao Artificial Intelligence Society. He holds a bachelor, master, and doctoral degree from Northwestern Polytechnical University, and have worked at the National University of Singapore, Tongji University, University of Carlton in Canada, and Aarhus University in Denmark.

His research focuses on big data intelligent processing, trustworthy artificial intelligence, and neuromorphic intelligence. He has published nearly 200 related papers and have been granted nearly 20 invention patents. He serves as an Associate Editor for IEEE Transactions on Intelligent Vehicles, as well as a guest editors for top journals such as IEEE Internet of Things and IEEE Transactions on Computational Social Systems. He is the PI for a series of projects such as the National Natural Science Foundation of China, and cooperated deeply with Haier Group, Aerospace Science and Industry, China Electric Power, China National Petroleum Corporation, and other units.

For the excellent contributions to the research and applications of trustworthy artificial intelligence and big data intelligent processing, he is ranking first to won a series of awards, including the first prize of Qingdao Science and Technology Progress Award, the second prize of Shandong Science and Technology Progress Award, the third prize of Wu Wenjun Artificial Intelligence Science and Technology Progress Award, the third prize of Qingdao Technology Invention Award.

Speech Title: Brain-like Cognition Driven Model Factory for Fault Analysis by Combining LLMs with Small Models

Abstract: Traditional solutions for fault analysis fall short in a number of problems, including low accuracy and adaptabilities for new use cases, hard to fully make use of multimodal maintenance data, etc. Inspired by brain cognition and Large Language Models (LLMs), we propose a brain-like cognition driven model factory for fault analysis by combining LLMs with small scale models. A model factory is designed to generated appropriate small models for correponding data, guided by a LLM fine tuned with domain knowledge. Evaluations using Steel Plates Faults dataset, Electric Fault-Line Detection dataset, UCI Mechanical Analysis dataset, CWRU Bearing dataset, and a self-made Air-Conditioning data show that the proposed BC-MF approach has better performance for either LLM model, or small scale model itself. Additionally, this BC-MF apporoach can be a helpful systematic solution guide for resolving faults.

10:45-11:20 Keynote Speech 4



Prof. Lu Leng

冷璐 教授

Nanchang Hangkong University, China

南昌航空大学，中国

Lu Leng received his Ph.D degree from Southwest Jiaotong University, Chengdu, P. R. China, in 2012. He performed his postdoctoral research at Yonsei University, Seoul, South Korea, and Nanjing University of Aeronautics and Astronautics, Nanjing, P. R. China. He was a visiting scholar at West Virginia University, USA, and Yonsei University, South Korea. Currently, he is a full professor at Nanchang Hangkong University.

Prof. Leng has published more than 100 international journal and conference papers, including about 50 SCI papers and three highly cited papers. He has been granted several scholarships and funding projects, including five projects supported by National Natural Science Foundation of China (NSFC). He serves as a reviewer of more than 100 international journals and conferences. His research interests include computer vision, biometric template protection and biometric recognition.

Prof. Leng is an outstanding representative of "Innovation Talent" of Jiangxi Enterprise in "Science and Technology China" in 2021, received "Jiangxi Youth May Fourth Medal" in 2019, "Jiangxi Hundred-Thousand-Ten-thousand Talent Project" in 2018, "Jiangxi Voyage Project" in 2014, etc.

Speech Title: Advanced Applications of Computer Vision in Multiple Fields

Abstract: Computer Vision (CV) is the frontier field of artificial intelligence, which is a discipline on how to make computers understand and process multimedia data, such as images and videos. This speech will introduce the advanced application technologies of CV in three fields, including biometric recognition, smart healthcare, and data hiding.

Round-Table Workshop (11:20—12:00)

Workshop Topic/议题

Development and Application of Artificial Intelligence and Large Models

人工智能与大模型的发展与应用

Speakers



Prof. Jianjun Ni, Hohai University, China

- **Moderator** 主持人
- 倪建军教授，河海大学



Prof. Zhiwen Yu, South China University of Technology, China

- 余志文教授，华南理工大学



Prof. Weishan Zhang, China University of Petroleum, China

- 张卫山教授，中国石油大学



Assoc. Prof. Guangfu Wu, Jiangxi University of Science and Technology, China

- 巫光福副教授，江西理工大学

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