CAIBDA 2025

第五届人工智能、大数据与算法国际学术会议

2025 5th International Conference on Artificial Intelligence, Big Data and Algorithms

Conference Manual

2025年6月13日-15日 | 中国·北京

- 主办单位：北京邮电大学
- 承办单位：北京邮电大学计算机学院（国家示范性软件学院）
- 协办单位：成都信息工程大学
- 支持单位：新加坡国立大学、南昆士兰大学、南昌航空大学软件学院、闽江学院、北京智谱华章科技股份有限公司

会议指南
Conference Guidelines

会议地点 Venue

地点：北京北邮科技大厦

Venue: Science and Technology Building, BUPT

地址：北京市海淀区西土城路10号

Address: No.10 Xitucheng Road, Haidian District, Beijing

会场地点 Conference Venue

主会场：四层多功能厅

分会场：四层第六会议室

交通指引 Direction

- 距北京首都国际机场 (Beijing Capital International Airport)：26.5km, 23mins
- 距北京北站(Beijing North Railway Station)：4km, 8mins
- 距北京西站(Beijing West Railway Station)：13.5km, 32mins

线上参会 Online Meeting

- 会议将通过线上及线下同步召开，线上参会请先下载 ZOOM 最新版。
  下载链接：https://zoom.us/download
- 参会者可通过以下任意一个方式进入线上会议室：(请将名称改为自己的姓名。)
  a. 输入对应的会议ID和密码，参见会议日程表格。
  b. 点击链接以启动ZOOM，直接进入会议室。
- 主会场链接: https://zoom.us/j/86516186188?pwd=26AeLxcWxba7XjjxMtm7TsPXXf0hgb.1
- 会议号: 865 1618 6188 密码: 250614
- 分会场链接: https://zoom.us/j/83592470322?pwd=JAUrgzYz9bZ6QbHPpfJQaab7k8Lxvn.1
- 会议号: 835 9247 0322 密码: 141414
- 参会期间如需提问，可待演讲完毕后，在对话框中发送“2”，主持人将会为您解除静音。
- The conference will be held on ZOOM Meeting. To participate online, please download the latest version of ZOOM first.
  Download link: https://zoom.us/download
- You can access the online conference room by either of the following two ways: (Please use your real name in the meeting room.)
  a. Input the ZOOM Meeting ID and the Password respectively, which is shown on the conference agenda.
  b. Click the link:
- Main Venue: https://zoom.us/j/86516186188?pwd=26AeLxcWxba7XjjxMtm7TsPXXf0hgb.1
- ID: 865 1618 6188 Password: 250614
- Parallel Sessions: https://zoom.us/j/83592470322?pwd=JAUrgzYz9bZ6QbHPpfJQaab7k8Lxvn.1
- ID: 835 9247 0322 Password: 141414
- During the conference, if you would like to ask questions to the speaker, please send number “2” in the chat box after the speech. The host will unmute you.

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01 会议简介

Conference Introduction

会议简介
Conference Introduction

2025 5th International Conference on Artificial Intelligence, Big Data and Algorithms (CAIBDA 2025) will be held on june 13-15, 2025 in Beijing, China. The conference is organized by Beijing University of Posts and Telecommunications (BUPT), hosted by School of Computer Science (National Pilot Software College), Beijing University of Posts and Telecommunications (BUPT), co-organized by Chengdu University of Information Technology (CUIT), supported by National University of Singapore (NUS), University of Southern Queensland (USQ), School of Software, Nanchang Hangkong University, Minjiang University, Beijing Zhipu Huazhang Technology Co., Ltd.. This conference focuses on the latest research of "artificial intelligence, big data and algorithms", to build a platform for domestic and foreign experts, scholars, scientists and other relevant personnel engaged in related fields to exchange and share the latest research results, in order to achieve the purpose of mutual promotion and common improvement. At the same time, the key challenges and research directions in this field are discussed in order to promote the development and application of theories and technologies in this field.
The purpose of this conference is to provide an authoritative international exchange platform for researchers in related fields, so as to promote good academic exchanges among scholars in related fields. It also provides global partners to establish business and scientific cooperation around the world. The main topics of the conference include: artificial intelligence algorithms, natural language processing, machine learning, big data analysis, algorithm optimization, neural networks, sorting algorithms, etc. **Welcome experts and scholars to the conference to exchange.**

“第五届人工智能、大数据与算法国际学术会议（CAIBDA 2025)”将于6月13-15日在中国北京举行。会议由北京邮电大学主办，北京邮电大学计算机学院（国家示范性软件学院）承办，成都信息工程大学协办，新加坡国立大学、南昆士兰大学、南昌航空大学软件学院、闽江学院、北京智谱华章科技股份有限公司作支持单位。本次会议围绕“人工智能、大数据与算法”的最新研究，为国内外从事相关领域的专家、学者、科学家及其他相关人员搭建一个交流、分享最新研究成果的平台，以达到相互促进、共同提高的目的。同时，讨论了该领域面临的主要挑战和研究方向，以期促进该领域理论和技术的发展和应用。

本次会议主要是为相关领域的研究人员提供一个具有权威性的国际交流平台，以促进相关领域的学者们进行良好的学术交流，同时也为世界各地在建立商业以及科研方面的合作提供了来自全球的合作伙伴。会议的主要议题包括:人工智能算法、自然语言处理、机器学习、大数据分析、算法优化、神经网络、排序算法等。**欢迎广大专家学者与会交流。**

02 组织单位

Organization

组织单位
Organization

主办单位

北京邮电大学

Beijing University of Posts and Telecommunications

承办单位

北京邮电大学计算机学院（国家示范性软件学院）

School of Computer Science (National Pilot Software College), Beijing University of Posts and Telecommunications (BUPT)

协办单位

成都信息工程大学

Chengdu University of Information Technology

支持单位

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National University of Singapore (NUS)

南昆士兰大学

University of Southern Queensland (USQ)

南昌航空大学软件学院

School of Software, Nanchang Hangkong University

闽江学院

Minjiang University

北京智谱华章科技股份有限公司

Beijing Zhipu Huazhang Technology Co., Ltd.

03 会议组委

Conference Committee

会议组委
Conference Committee

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Prof. Junping Du, IEEE Fellow, Beijing University of Posts and Telecommunications, China

Publication Chairs

Prof. Fuquan Zhang, Minjiang University, China
Prof. Shaojie Qiao, Chengdu University of Information Technology, China
Assoc. Prof. Jie Chen, Peking University, China
Assist. Prof. Kaize Shi, University of Southern Queensland, Australia

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Prof. Zhe Xue, Beijing University of Posts and Telecommunications, China
Assoc. Prof. Yifan Zhu, IEEE Member, CCF Member, CAAI Member, Beijing University of Posts and Telecommunications, China

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会议组委
Conference Committee

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Prof. Chuyuan Wei, Beijing University of Civil Engineering & Architecture, China

Prof. Dong Zhao, Beijing University of Posts and Telecommunications, China

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Assoc. Prof. Linmei Hu, Beijing Institute of Technology, China

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Dr. Yu Qiu, Zhipu AI, China

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Special Session Chair

Dr. Tao Feng, Tsinghua University, China

Communication Chair

Lecturer Lu Jiang, Dalian Maritime University, China

会议组委
Conference Committee

Committee Members

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Prof. Xiang Bai (IEEE Senior Member), Huazhong University of Science and Technology, China
Prof. Ross Murch, Hong Kong University of Science and Technology, China
Prof. Jack Qiu, City University of Hong Kong, China
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Lecturer Jiwei Zhang, Beijing University of Posts and Telecommunications, China
Dr. Qian Li, Beijing University of Posts and Telecommunications, China
Dr. Wei Fan, University of Oxford, UK
Dr. Guijin Li, University of Toronto, Canada
Dr. Arkaitz Zubiaga, Queen Mary University of London, UK
Dr. Samuel Lukas, Universitas Pelita Harapan, Indonesia
Dr. Muhammad Azeem Akbar, LUT University, Finland

04 会议议程

Conference Agenda

Date/时间: June 13, 2025/2025年6月13日	
Address/地点: 1st floor, Science and Technology Building, BUPT 北京北邮科技大厦一楼大厅	
13:00-17:00	Registration/签到&领取资料
Date/时间: June 14, 2025/2025年6月14日	
Address/地点: 4F Multifunction Hall, Science and Technology Building, BUPT 北京北邮科技大厦-四层多功能厅 Zoom Meeting ID/会议号: 865 1618 6188 Password/密码: 250614	
08:30-09:00	Registration/签到&领取资料
09:00-09:05	Opening Ceremony/开幕式
09:05-09:15	Opening Address/开幕式致辞
09:15-09:20	Group Photo Session/合影环节
09:20-09:55	**Keynote Speech 1/大会报告** 王国胤教授，重庆师范大学 Prof. Guoyin Wang, Chongqing Normal University, China Title: Brain Cognition Inspired Artificial Intelligence
09:55-10:30	**Keynote Speech 2/大会报告** 鲁继文教授，清华大学，中国 Prof. Jiwen Lu, Tsinghua University, China Title: Embodied Intelligence Perception and Manipulation
10:30-10:50	Tea Break & Poster Session/ 茶歇 & 海报展示
10:50-11:25	**Keynote Speech 3/大会报告** 何良华教授，同济大学 Prof. Lianghua He, Tongji University, China Title: Intelligent Analysis of Medical Images
11:25-12:00	**Keynote Speech 4/大会报告** 方玉明教授，江西财经大学 Prof. Yuming Fang, Jiangxi University of Finance and Economics, China Title: Computational Modeling for Visual Quality Assessment
12:00-12:10	Awarding Ceremony (Best Paper)/颁奖典礼(最佳论文)
12:10-14:00	Lunch/午餐

Address/地点: 4F Multifunction Hall, Science and Technology Building, BUPT 北京北邮科技大厦-四层多功能厅 Zoom MeetingID/会议号: 865 1618 6188 Password/密码: 250614	
14:00-14:35	**Invited Speech 5/特邀报告** 白璐教授，北京师范大学 Prof. Lu Bai, Beijing Normal University Title: Structural Pattern Recognition and Graph Machine Learning: Evolution and Future Perspectives
14:35-15:10	**Invited Speech 6/特邀报告** 刘雨帆副研究员，中科院自动化所 Asst. Res. Yufan Liu, Institute of Automation Chinese Academy of Sciences Title: Building Trustworthy AI: From Efficient Models to Secure Deployment
15:10-15:45	**Invited Speech 7/特邀报告** 张奥千副研究员，北京理工大学 Assoc. Prof. Aoqian Zhang, Beijing Institute of Technology Title: Multivariate Time Series Cleaning under Speed Constraints
15:45-16:20	**Invited Speech 8/特邀报告** 杨珍助理研究员，清华大学 Asst. Res. Zhen Yang, Tsinghua University Title: CogVLM: A Multimodal Model Integrating Visual Exper
16:20-16:30	Tea Break & Poster Session/ 茶歇 & 海报展示
Oral Presentation	
16:30-16:40	Oral Presentation 1: Quantifying Cross-sectoral Discrepancies and Geodemographic Information Analysis in the UK: A report from PRIME Wei Pang (庞巍), Heriot-Watt University
16:40-16:50	Oral Presentation 2: AI-Driven Warehouse Networks: Integrating Probabilistic Forecasting with Dynamic Allocation Yifan Wu (吴依凡), Dalian University of Finance and Economics
16:50-17:00	Oral Presentation 3: MoFeDTA: A Dual-Channel Drug-Target Affinity Prediction Network Integrating Morgan Fingerprints and Transformer-TextCNN Protein Modeling Tong Zhao (赵通), Beijing Institute of Petrochemical Technology
17:00-17:10	Oral Presentation 4: Bearing fault diagnosis model based on ALA-MDLS Xinyu Li (李新雨), Shenyang Normal University

17:10-17:20	Oral Presentation 5: Fuzzy Active Disturbance Rejection Control for a Pneumatic 6-DOF Platform Hanpu Tang (唐含璞), Beijing Institute of Petrochemical Technology
17:20-17:30	Oral Presentation 6: Application of Large Language Model Text Analysis in the Study of Urban Image Zishan Xue (薛紫杉), University of International Relations
17:30-17:40	Closing Ceremony & Awarding Ceremony (Excellent Oral)/ 闭幕式暨颁奖典礼（优秀口头）

Parallel Sessions Oral Presentation	
Address/地点: 6th Meeting Room, 4F, Science and Technology Building, BUPT **北京北邮科技大厦-四层第六会议室** **Zoom MeetingID/会议号: 835 9247 0322 | Password/密码: 141414**	
14:00-14:10	Oral Presentation 1: Multimodal Crisis Tweets Classification Enhanced by MLLMs and Dual-Channel Cross-Attention Tong Bie (别桐), Beijing University of Technology
14:10-14:20	Oral Presentation 2: Research on AI Agent-Based Method for Automated Terminal Testing Yu Guo (郭宇), China Academy of Information and Communications Technology
14:20-14:30	Oral Presentation 3: Model structure adaptability and performance analysis of medical image denoising under multimodal data Linfei Xiao (肖林飞), Harbin Institute of Technology
14:30-14:40	Oral Presentation 4: Available Service Life Analysis of Surge Arrester Based on Cross-Provincial Decommission Records Yundong Gu (谷云东), North China Electric Power University
14:40-14:50	Oral Presentation 5: Research on the Framework Design of an AI-IoT Integrated Evaluation Large Language Model Focused on Children's Health and Disease Prevention at High Altitude Xuan Hua (华暄), Dalian University of Technology
14:50-15:00	Oral Presentation 6: Architectural Design of Quantum Convolutional Neural Network for Multi-Class Image Classification Shichen Song (宋诗晨), Changchun University of Science and Technology
15:00-15:10	Oral Presentation 7: CS-DiffFormer: A Change-Sensitive Transformer for Remote Sensing Change Detection Zhikai Shang(商智凯), ShangShenyang Jianzhu University
15:10-15:20	Oral Presentation 8: Dual-Mechanism Enhanced Sparrow Search Optimization for UAV Path Planning Xiuna Xie (谢修娜), Zhongyuan University Of Technology
15:20-15:30	Oral Presentation 9: An Interactive Application Study of AI Image Generation System Based on Stable Diffusion under the Visual Logic of Surrealism Haiyu Yuan (袁海宇), The University of Edinburgh
15:30-15:40	Oral Presentation 10: A Reinforcement Learning and Hyper-heuristic Guided Hierarchical Learning Algorithm for Steel Production Multi-stage Scheduling Problem Bin Song (宋彬), Lanzhou Petrochemical Research Center, PetroChina Company Limited
15:40-15:50	Oral Presentation 11: Exploring YOLOv8 and Multimodal Fusion Strategies for Small Object Detection in Inland Waters Chaofan Sun (孙超凡), Graduate School of China Aeronautical Establishment

Oral Presentation	
15:50-16:00	Oral Presentation 12: CodeBiFusion-CNNGRU: A Dual-Channel Attention Based Model with IPSO Optimization for PHP WebShell Detection Zheng Sun (孙正), Shihezi University
16:00-16:10	Oral Presentation 13: Evaluating the Impact of Multimodal Cognitive and Informational Interventions on Rumor Detection in Large Language Models: A DeepSeek Case Study Lichao Lin (林立朝), Minjiang University
16:10-16:20	Oral Presentation 14: Robust 3D gaussian splatting using a hybrid image restoration network Chuwei Luo (罗楚微), Zhejiang Shuren University
16:20-16:30	Tea Break & Poster Session/ 茶歇 & 海报展示
16:30-16:40	Oral Presentation 15: Integration of Geoscientific Data Mining and GBM Hyperparameter Optimization to Improve the Accuracy of Landslide Hazard Prediction Kartika Constantia Yasin, Master Program in Physics (Geoscience–Geophysics), Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada
16:40-16:50	Oral Presentation 16: Intelligent Manufacturing Policy and Enterprise Digital Transformation Jiaxin Zhou (周嘉欣), Chongqing University
16:50-17:00	Oral Presentation 17: Enhancing LLMs Interactions For Python Nouman Ahmad, Northeastern University, China
17:00-17:10	Oral Presentation 18: Comparative Study of Classifier-Guided, Conditionaland Classifier-Free Diffusion Models for MinecraftScene Generation Xuanchen Lu (陆宣辰), Hong Kong Baptist University
17:10-17:20	Oral Presentation 19: DDAT-Net: Dual Dynamic Agent Transformer Network for Audio-Visual Event Localization Hui Jiang (姜慧), China United Network Communications Group Corporation Limited, China
17:20-17:30	Oral Presentation 20: Author Name Disambiguation Based on Multi Relationship Fusion and Representation Learning Qian Huang (黄倩), Shandong University of Science and Technology
17:30-17:40	Oral Presentation 21: KSCAMa: A Lightweight Mamba Network Enhanced with Dual Attention for Image Tampering Localization Kefei Wu (吴柯非), Jimei University
17:40-17:50	Closing Ceremony & Awarding Ceremony (Excellent Oral)/ 闭幕式暨颁奖典礼（优秀口头）

05 主讲报告&特邀报告

Keynote Speech & Invited Speech

主讲报告
Keynote Speaker

王国胤教授，重庆师范大学（国家级人才）

Prof. Guoyin Wang, Chongqing Normal University, China

Biography/个人简介： Guoyin Wang received the B.S., M.S., and Ph.D. degrees from Xi'an Jiaotong University, Xian, China, in 1992, 1994, and 1996, respectively. He worked at the University of North Texas, and the University of Regina, Canada, as a visiting scholar during 1998-1999. He had worked at the Chongqing University of Posts and Telecommunications during 1996-2024, where he was a professor, the Vice-President of the University, the director of the Chongqing Key Laboratory of Computational Intelligence, the director of the Key Laboratory of Cyberspace Big Data Intelligent Security of the Ministry of Education, the director of Tourism Multi-source Data Perception and Decision Technology of the Ministry of Culture and Tourism, and the director of the Sichuan-Chongqing Joint Key Laboratory of Digital Economy Intelligence and Security. He was the director of the Institute of Electronic Information Technology, Chongqing Institute of Green and Intelligent Technology, CAS, China, 2011-2017. He has been serving as the President of Chongqing Normal University since June 2024. He is the author of over 20 books, the editor of dozens of proceedings of international and national conferences and has more than 400 reviewed research publications. His research interests include rough sets, granular computing, machine learning, knowledge technology, data mining, neural network, cognitive computing, etc. Dr. Wang was the President of International Rough Set Society (IRSS) 2014-2017, a Vice-President of the Chinese Association for Artificial Intelligence (CAAI) 2014-2025, and a council member of the China Computer Federation (CCF) 2008-2023. He is currently a Supervisor of CAAI, and the President of Chongqing Association for Artificial Intelligence (CQAAI). He is a Fellow of IRSS, AAIA, WIA, I2CICC, CAAI and CCF. He is the recipient of the Technology Contribution Award in the Wu Wenjun Artificial Intelligence Science and Technology Award. He has received over 10 awards for teaching and research achievements.

Speech Title/报告题目： Brain Cognition Inspired Artificial Intelligence

Abstact/摘要： Artificial intelligence (AI) has made breakthrough progress in surpassing some key human intelligence abilities such as visual intelligence, auditory intelligence, decision intelligence, and language intelligence in recent years. However, AI systems surpass certain human intelligence abilities in a statistical sense as a whole only. They are not true realization of these human intelligence abilities and behaviors. This talk reviews the role of cognitive science in inspiring the development of the three mainstream academic branches of AI based on Marr's three-layer framework, explores and analyses the limitations of the current development of AI. Eight important future research directions and their scientific issues that need to be focused on in brain-inspired AI research are further discussed.

主讲报告
Keynote Speaker

鲁继文教授，清华大学，中国（国家级人才）

Prof. Jiwen Lu, Tsinghua University, China

IEEE Fellow, IAPR Fellow, AAIA Fellow

Biography/个人简介： Jiwen Lu is a professor in the Department of Automation at Tsinghua University, the deputy director of a National Key Laboratory, and a Fellow of IEEE/IAPR. His primary research areas include computer vision, pattern recognition, embodied intelligence, and artificial intelligence safety. He has published over 150 papers in IEEE Transactions journals (including 42 in IEEE T-PAMI) and over 150 papers at CVPR/ICCV/ECCV. He holds over 60 authorized national invention patents and has led numerous major research projects, including two projects supported by the National Science Foundation for Young Scholars, three Key Programs of the National Science Foundation, one National Key R&D Program project, and two Beijing Municipal Key Projects. His accolades include the second prize of National Teaching Achievement Award, the first prize of the Ministry of Public Security Science and Technology Award, and two first prizes of the Natural Science Award from the Chinese Institute of Electronics. He serves as a council member of the China Simulation Federation and Director of its Visual Computing and Simulation Committee, vice chair of the Visual Cognition and Computing Committee of the Chinese Society of Image and Graphics, and vice chair of the Expert Advisory Committee of the Chinese Association of Automation. He is the Editor-in-Chief of Pattern Recognition Letters and an editorial board member for several IEEE journals, including T-IP, T-MM, T-CSVT, and T-BIOM. Under his mentorship, seven of his doctoral students have received outstanding doctoral dissertation awards from national academic societies and Beijing government.

Speech Title/报告题目：Embodied Intelligence Perception and Manipulation

Abstact/摘要： Embodied Intelligence is a hot and important research topic in the fields of artificial intelligence and unmanned systems, with significant application prospective in manufacturing, agriculture, and service industries. This talk will present recent major advancements in embodied intelligence perception and manipulation, covering methodologies and technologies such as online scene perception, unknown environment navigation, autonomous mobile manipulation, and lightweight model deployment. It will also explore applications in areas like modern services, industrial manufacturing, deep-sea exploration, and low-altitude security, concluding with an outlook on future development trends.

主讲报告
Keynote Speaker

何良华教授，同济大学（国家级人才）

Prof. Lianghua He, Tongji University, China

Biography/个人简介： Lianghua He is a Professor at the School of Computer Science and Technology, Tongji University, and has been selected for the national high-level talent reward program. His research interests include medical image analysis and brain cognitive computing. He has led more than 20 projects, including key joint projects of the National Natural Science Foundation and key research and development programs of the Ministry of Science and Technology. He has published over 100 papers in total, including at conferences and journals such as CVPR, ICCV, IJCAI, AAAI, IEEE TNNLS, TIP, and TIFS. As the first contributor, he has received one First Prize of Science and Technology Progress Award of Shanghai and one Second Prize of Science and Technology Progress Award of the Ministry of Education. He has also participated in projects that won three provincial-level first prizes and two second prizes.

Speech Title/报告题目：Intelligent Analysis of Medical Images

Abstact/摘要： In the era of precision medicine, medical imaging, as a crucial basis for diagnosis and treatment, is becoming increasingly important. With the rapid advancement of intelligent technologies, intelligent analysis of medical images has emerged as a cutting-edge focus in the medical field. This report is based on the developmental trends of multimodal imaging acquisition, omics-based analysis, and intelligent modeling. It directly addresses industry challenges such as large deformations in images, scarcity of small-sample data, and poor model interpretability, and conducts an in-depth analysis of medical image analysis models.

主讲报告
Keynote Speaker

方玉明教授，江西财经大学（国家级人才）

Prof. Yuming Fang, Jiangxi University of Finance and Economics, China

Biography/个人简介： Yuming Fang is a professor with the department of Computer Science, Jiangxi University of Finance and Economics, Nanchang, China. He received the Ph.D. degree in Computer Engineering from Nanyang Technological University, Singapore, 2013. His research interests include multimedia processing, computer vision,etc. He is associate editor of IEEE Transaction on Multimedia. He is also a TPC Co-Chair for IEEE ICME 2023, IEEE ICIP 2027,etc.

Speech Title/报告题目：Computational Modeling for Visual Quality Assessment

Abstact/摘要： This talk will introduce the basic theories and methods for visual quality assessment. It will further introduce the computational models of quality assessment for smartphone photography and Virtual Reality images/videos. These works will cover subjective and objective quality assessment. Also, this talk will introduce the feature-driven and data-driven methods of visual quality assessment proposed by us in recent years.

特邀报告
Invited Speaker

白璐教授，北京师范大学

Prof. Lu Bai, Beijing Normal University

Biography/个人简介： Professor Lulu Bai is a Professor and PhD Supervisor at the School of Artificial Intelligence, Beijing Normal University, and Deputy Director of the Ministry of Education Engineering Research Center for Intelligent Technology and Educational Applications. She holds the titles of National Outstanding Youth Fund recipient (NSFC), National Excellent Self-funded Overseas Student (Ministry of Education), and Baidu Global Chinese AI Young Scholar. Selected as "Next Generation Scientist" in the IAPR Newsletter, she earned her PhD in 2015 from the University of York under the supervision of Edwin R. Hancock, FRS (UK Royal Academy of Engineering). Her research focuses on structural pattern recognition, graph machine learning, financial AI, and intelligent education. She has authored/co-authored over 120 publications in top-tier journals/conferences including TPAMI, TKDE, ICML, and NeurIPS, with notable achievements including: 8 ESI Hot Papers/Highly Cited Papers, 2 Best Paper Awards from IAPR and its Italian branch GIRPR, 1 IEEM Distinguished Paper Award from IEEE Management Conference, and 1 Outstanding Poster Award at CCF's First China Digital Finance Conference. She serves on the editorial boards of TNNLS, PR, and Neural Networks journals, and previously guest-edited PR's first special issue on financial AI. Her research outcomes have been implemented in practical applications at iFlytek, China Telecom, and others, with select reports formally adopted by the National Development and Reform Commission.

Speech Title/报告题目： Structural Pattern Recognition and Graph Machine Learning: Evolution and Future Perspectives

Abstact/ 摘 要 ： Graphs serve as crucial structural data for modeling inter-entity relationships in complex systems, presenting unprecedented challenges to traditional pattern recognition and machine learning due to their inherent complexity. Structural Pattern Recognition (SPR), which effectively excavates and learns complex relational patterns and structural information embedded in graph data, has gained extensive applications across computer vision, finance, social networks, and other domains. Consequently, the development of new theories and methodologies related to SPR has become a highly area in contemporary pattern recognition and machine learning. This report systematically reviews the 40-year evolution of structural pattern recognition, analyzes theoretical characteristics across different research phases, and provides in-depth discussions on two pivotal directions: "Graph Kernel Functions" and "Graph Neural Networks." It elaborates on their theoretical connections, current interdisciplinary research frontiers, and proposes preliminary perspectives for future investigations.

特邀报告
Invited Speaker

刘雨帆副研究员，中科院自动化所

Asst. Res. Yufan Liu, Institute of Automation Chinese Academy of Sciences

Biography/个人简介： Yufan Liu, Assistant Researcher at the Institute of Automation, Chinese Academy of Sciences, Beijing Outstanding Youth, selected for the Youth Talent Support Program, has long been dedicated to the research on efficient content security of massive network multimedia. In theoretical research, she has published over 20 papers as the first author (corresponding author) in international authoritative journals and conferences including TPAMI, IJCV, and CVPR, and has won the Best Application Paper Award at ACCV and the President's Award of the Chinese Academy of Sciences. In terms of the application and transformation of research achievements, she has been granted over 10 invention patents and 3 standards. Her team won the championship in the New Audio-Visual Media Innovation Competition held by the National Radio and Television Administration. She has led more than 20 scientific and technological tasks including sub-projects of the National Key Research and Development Program of China, the Natural Science Foundation of China, the National 242 information security projects, the projects of Cyberspace Administration of China, and the projects of China State Railway Group. The related products and systems she has led have been deployed and applied in enterprises and institutions including the National Computer Network Emergency Response Technical Team/ Coordination Center of China, the Cyberspace Administration of China, China State Railway Group, State Grid, etc.

Speech Title/报告题目： Building Trustworthy AI: From Efficient Models to Secure Deployment

Abstact/ 摘 要 ： With the rapid development of artificial intelligence and network communication technologies, both the volume of data and the scale of models have grown exponentially. In this context, how to enhance model performance while ensuring its efficiency and security has become a shared focus of concern for both academia and industry. The efficiency of a model determines "whether it can be practically applied", while its security determines "whether users are willing to use it."

This report first explores efficient model computation methods under resource-constrained conditions, such as model pruning and knowledge distillation. These techniques not only significantly improve the model's runtime speed and resource utilization, but also lay a solid foundation for subsequent enhancements in security.

However, pursuing efficiency alone is not sufficient; the security of the model must also be considered during the optimization process. To this end, the report further analyzes the major threats faced by large AI models and provides a detailed introduction to our latest research findings on the development of security evaluation tools and attack-defense mechanisms for large models. By constructing a trustworthy AI system that ensures both inference reliability and generation reliability, we aim to achieve a dual guarantee of efficiency and security.

特邀报告
Invited Speaker

张奥千副研究员，北京理工大学

Assoc. Prof. Aoqian Zhang, Beijing Institute of Technology

Biography/个人简介： Zhang Aoqian is an Associate Professor at the School of Computer Science & Technology, Beijing Institute of Technology. He received his Ph.D. from Tsinghua University in 2018 and primarily focuses on research in databases, data governance, and data mining. He has published over 10 papers in top-tier international computer science conferences and journals (CCF-A, including SIGMOD, VLDB, ICDE, VLDBJ, TKDE, and TODS). He has led one National Natural Science Foundation of China Youth Project and one sub-project under the National Key R&D Program "Blockchain Initiative." In 2024, he was awarded the ACM Beijing Chapter Rising Star Award.

Speech Title/报告题目：Multivariate Time Series Cleaning under Speed Constraints

Abstact/摘要： Errors are common in time series due to unreliable sensor measurements. Existing methods focus on univariate data but do not utilize the correlation between dimensions. Cleaning each dimension separately may lead to a less accurate result, as some errors can only be identified in the multivariate case. We also point out that the widely used minimum change principle is not always the best choice. Instead, we try to change the smallest number of data to avoid a significant change in the data distribution. In this paper, we propose MTCSC, the constraint-based method for cleaning multivariate time series. We formalize the repair problem, propose a linear-time method to employ online computing, and improve it by exploiting data trends. We also support adaptive speed constraint capturing. We analyze the properties of our proposals and compare them with SOTA methods in terms of effectiveness, efficiency versus error rates, data sizes, and applications such as classification. Experiments on real datasets show that MTCSC can have higher repair accuracy with less time consumption. Interestingly, it can be effective even when there are only weak or no correlations between the dimensions.

特邀报告
Invited Speaker

杨珍助理研究员，清华大学

Asst. Res. Zhen Yang, Tsinghua University

Biography/个人简介： Zhen Yang is an Assistant Researcher in the Department of Computer Science at Tsinghua University. During her Ph.D., she studied under Professor Jie Tang, focusing on large language model and multimodal model inference, as well as multimodal code understanding and generation. She has published eight papers in venues such as KDD, WWW, ICCV, and TPAMI, six of which list her as first author. Her total citations on Google Scholar now exceed 1,300.

Speech Title/报告题目： CogVLM: A Multimodal Model Integrating Visual Experts

Abstact/摘要： We introduce CogVLM, a powerful open-source visual language foundation model. Different from the popular shallow alignment method which maps image features into the input space of language model, CogVLM bridges the gap between the frozen pretrained language model and image encoder by a trainable visual expert module in the attention and FFN layers. As a result, CogVLM enables a deep fusion of vision language features without sacrificing any performance on NLP tasks. CogVLM-17B achieves state-of-the-art performance on 17 classic cross-modal benchmarks, including 1) image captioning datasets: NoCaps, Flicker30k, 2) VQA datasets: OKVQA, TextVQA, OCRVQA, ScienceQA, 3) LVLM benchmarks: MMVet, MMBench, SEED-Bench, LLaVABench, POPE, MMMU, MathVista, 4) visual grounding datasets: RefCOCO, RefCOCO+, RefCOCOg, Visual7W. Codes and checkpoints are available at https://github.com/THUDM/CogVLM.

06 海报展示

Poster Presentation

海报展示
Poster Presentation

Author	Title
Jisong Iyu	SAN-GAT-RL：A Multimodal Drone and AI-Driven Framework for Enhanced Wheat Pest and Disease Detection in Dynamic Agricultural Environments
Wenxiao Li	Reconstruction of Accident Report of Autonomous Vehicle Based on Genetic Algorithm
Wenhua Lou	Quantum Simulations of GeC/SGaSnP Z-Scheme Heterojunctions for Photocatalytic Water Splitting
Liucheng Bao	Research on Semantic Segmentation Methods for High-Resolution Images by Fusing Transformer Structures
Zijian Cai	An Intelligent Approach to Point Cloud Segmentation based on Cross-attention in UAV-Based Substation Inspection
Pengfei Xu	Ordered Time-Sensitive Target Allocation Strategies Based on Deep Learning
Dong Wang	A Weighted Voting Stacking Ensemble for Complex Multi-Class Classification
Xun Liu	DDSC: Shallow Depthwise Separable Convolution Neural Network for Plant Leaf Diseases Classification
Hongqi Han	Identifying Professional Scholars in CPCN Research: A Spatial Analysis of Talent Density and Distribution Across Provinces in China
Aosheng Li	Improved Masking Strategy for Self-Supervised Skeleton-Based Action Recognition
Haiyang Sun	Based on YOLOv11 steel surface defect detection
Liangeng Wang	Reinforcement Learning for Emergency Materials Scheduling Based on Pointer Policy Network and Transformer Value Estimation
Yingjie Xu	DAKRec: Dynamic Noise Diffusion and Adaptive Embedding for Knowledge Graph-Based Recommendation
Zaixi Jia	Analysis of BERT-based Federated Learning in Text Classification: A Study on Data Distribution and Algorithm Selection
Junyao Wang	Construction and Application of a Multimodal Knowledge Graph for Social Media Opinion Analysis Based on Large Language Models
Huanzun Zhang	A Comparative Study of CNN and Transformer Models for Vehicle Recognition
Jinghuai Qiao	Edge-Guided and Feature-Aligned Coordinated Knowledge Distillation for Polyp Segmentation

海报展示
Poster Presentation

Author	Title
Zedao Wu	Dual Cost Volume Stereo Matching Method Based on Gated Cost Aggregation
Yunhai Cui	Low-light Image Enhancement Network with Adaptive Feature Fusion and Exposure Dynamic Control
Zenghuang Du	Remote sensing image registration
Yin Tian	JSONBench: A High-quality Benchmark for Diverse JSON-Oriented Tasks
Yehang Han	Research on the Restoration of Rainy Substation Meter Images Based on Semi-Supervised Learning
Jiaxin Zhang	Aggregation Zero Knowledge Proof Scheme Based on Blockchain Electronic Voting System
Duocai Jiang	CReformer：Convolutional Recurrent Embedding Transformer for Multivariate Long-Term Time Series Forecasting
Wanyi Yu	Optimizing YOLOv11s for Precision Dashboard Detection in UAV-based Inspection Tasks-Poster Display
Hailing Xiao	Parallel Prediction Model with Multilevel Attention Mechanism for Air Quality Index Forecasting
Roopam Choudhari	Building a Real-Time Identity Matching System Using Deep Learning and Graph Modeling
Ya-Peng Liu	Measurement of Drivers' Confidence Levels in Left-Turn Decisions Using Machine Learning
Yuxiao Zhang	Improved the PCB defect detection method based on YOLOv5s
Xianglun Cheng	Dynamic Path Planning of Robotic Arm Based on Repulsive Potential Field and Deep Reinforcement Learning
Haotian Su	MSF-DDN: A Multi-Modal Dynamic Fusion Framework for Robust Target Detection in Smoke-Degraded Environments
Zibo Huang	Research on Virtualized Cloud Computing Task Scheduling Based on Improved Ant Colony Algorithm
Bing Bai	Research on Risks and Governance Pathways of False and Harmful Information in the Application of Generative Artificial Intelligence
Longyu Li	RetiVas-MTNet:Multi-task learning based on retinal vasculature

海报展示
Poster Presentation

Author	Title
Yulin Shen	A Phenology-Enhanced Winter Wheat Dry-Fresh Weight Joint Prediction Multi-Output Random Forest Model
Peng Ye	EGQM: A Query Approach of English Gazetteer Based on the Character Features
Li Liu	Unsupervised Feature Metric-based Multimodal Anomaly Detection Method
TIingyi Liu	A Vision-Based Algorithm for Material Volume Estimation on Conveyor Belts Using Optical Flow and Vanishing

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