

CAIT2026 Special Session III

Special Session Basic Information:

Session Title	中文：基于人工智能的云-边缘物联网网络优化与管理 英文：AI-based Optimization and Management in Cloud-Edge IoT Networks
Introduction and topics	
<p>中文： 特别专题论坛简介：在 5G/6G 时代以及物联网（IoT）的发展背景下，如可穿戴设备、自动系统和无人机等应用不断涌现，未来边缘网络的设计、规划与优化需要融合人工智能（AI）技术。特别是，新兴的深度学习框架可以成为广泛场景中实现智能处理的关键推动因素。现代深度学习和强化学习为云-边缘网络中的网络优化、资源管理、路由、传输协议设计和机制设计提供了新的机遇。例如，来自多种来源的大量数据，包括网络测量数据、物联网传感器、无人机和监控图像等，可用于呈现网络中海量设备的全面运行视图。</p> <p>主题：</p> <ol style="list-style-type: none">1. 使用 AI 技术进行资源与网络优化。2. 现实云-边缘网络中的分布式机器学习算法。3. 面向新兴通信系统和应用的 AI，如无人机系统、物联网、边缘计算、缓存、智慧城市和车联网。4. 面向信息中心网络和数据挖掘的 AI 技术。5. 有线/无线通信系统中 AI 技术的性能分析与评估。6. 物联网网络中的安全 AI。 <p>英文： Brief Description of the Session: In the era of 5G/6G and the development of the Internet of Things (IoT), such as wearable devices, autonomous systems, and drones, there is a need to integrate artificial intelligence (AI) technologies into the design, planning, and optimization of future edge networks. Notably, the emerging framework of deep learning can be a crucial enabler for intelligent processing in a broad range of scenarios. Modern deep learning and reinforcement learning provide opportunities for network optimization, resource management, routing, transport protocol design, and mechanism design in Cloud-Edge Networks. For example, the massive amounts of data generated from multiple sources, ranging from network measurements to IoT sensors, drones, and surveillance images, can be used to show the comprehensive operational view of the massive number of devices within the network.</p> <p>Topics:</p> <ol style="list-style-type: none">1. Resource and network optimization using AI techniques.2. Distributed machine learning algorithms over realistic cloud-edge networks.3. AI for emerging communication systems and applications, such as drone systems, IoT, edge computing, caching, smart cities, and vehicular networks.4. AI techniques for information-centric networks and data mining.5. Performance analysis and evaluation of AI techniques in wired/wireless communication systems.6. Secure AI over IoT networks.	

Special Session Chair(s):

	姓名 Name	Jianxiong Guo
	职称 Prefix	Associate Professor
	部门 Department	Advanced Institute of Natural Science
	单位 Organization	Beijing Normal University
	城市/地区 City/Region	Zhuhai, Guangdong
	Email	jianxionguo@bnu.edu.cn

Organizer's Brief Biography

中文：郭剑雄现任北京师范大学自然科学高等研究院副教授，博导；大数据云边智能协同教育部工程研究中心副主任。于 2021 年在美国德克萨斯大学达拉斯分校计算机科学系获得博士学位，导师为堵丁柱教授。他的主要研究方向包括面向人工智能的网络、边缘智能与云边协同、分布式机器学习，以及网络大数据分析利用。近年来，他已在计算机网络、数据科学和理论计算机科学等领域发表 130 余篇学术论文，其中 CCF-A 类论文 25 余篇，并以第一作者/通讯作者身份在 IEEE/ACM Transactions 期刊发表论文 40 余篇。主持或参与了多项国家级项目，包括国家自然科学基金项目和国家重点研发计划项目，并担任多个顶级国际会议学术委员会委员及国际期刊审稿人。

英文：Jianxiong Guo is an associate professor with the Advanced Institute of Natural Science, Beijing Normal University, and vice director of the Engineering Research Center of Cloud-Edge Intelligent Collaboration on Big Data, Ministry of Education. He received his Ph.D. from the Department of Computer Science, University of Texas at Dallas, in 2021, supervised by Dr. Ding-Zhu Du. He is mainly engaged in the research of Networking for AI, Edge Intelligence & Cloud-edge Collaboration, Distributed Machine Learning, and Analysis & Utilization of Network Big Data. In recent years, he has published more than 130 academic papers in computer networks, data science, and theoretical computer science, among which more than 25 papers are CCF-A and more than 40 papers have been published in IEEE/ACM Transactions as the first/corresponding author. He presided over or participated in several national projects, including NSFC and National Key R&D program of China, and served as a member of academic committees of many top international conferences and a reviewer of international journals.