

CAIT2026 Special Session XIX

Special Session Basic Information:

Session Title

中文：面向智慧城市的人工智能
英文：Artificial Intelligence for Smart City

Introduction and topics

智慧城市（Smart City）是数字技术、人工智能与城市复杂系统深度融合的重要载体。人工智能作为推动智慧城市演进的核心技术，正加快融入城市感知、数据治理、算力调度、模拟推演、决策优化和运行控制等环节。当前，人工智能在智慧城市中的应用已从单一场景识别与辅助分析，逐步拓展至城市级数字孪生、算网与算力协同、城市时空计算大模型、具身智能、智能体协同和虚实联动控制等方向，成为提升城市治理科学化、精细化和智能化水平的重要驱动力。

尽管人工智能及相关数字技术日益成熟，其在城市级应用中仍面临诸多挑战：如何融合跨领域、跨层级、跨时空尺度的异构数据，形成统一可信的城市数据与知识底座？如何优化城市算网资源配置，实现异构算力的高效调度与智能服务的低成本供给？如何通过城市时空计算大模型理解城市运行规律并开展实时预测、模拟推演和决策优化？如何推动机器人、无人机、无人车等具身智能装备与城市基础设施协同运行？如何兼顾模型精度、实时响应、计算能效、安全可信与规模化应用？为此，亟需探索鲁棒、高效、可信、绿色且可扩展的智慧城市人工智能理论、技术体系与应用模式。本专题旨在汇聚学界与产业界力量，分享面向智慧城市的人工智能前沿进展、核心挑战、关键技术与创新实践，推动人工智能与城市规划、建设、治理、服务和运行管理的深度融合。

本专题（包括但不限于）：

- 城市多源异构数据的智能融合、语义理解与知识组织
- 城市物联网、感知网络与边缘智能技术
- 城市算网融合、异构算力调度与算力资源优化
- 面向智慧城市的云—边—端协同计算与绿色计算
- 城市时空计算大模型及其训练、推理与场景应用
- 面向城市治理的多模态大模型与行业大模型
- 城市智能体、多智能体协同与自主决策技术
- 机器人、无人机、无人车等具身智能的城市级应用
- 人工智能驱动的城市数字孪生动态建模与模拟推演
- 基于人工智能的城市交通预测、仿真与协同优化
- 面向低碳城市的能源管理、碳排放核算与智能电网调度
- 城市洪涝、火灾、地震等灾害风险预测与应急推演
- 面向公共安全的智能监测、风险识别与联动处置
- 人工智能辅助的城市规划、城市更新与空间效益评估
- 虚实融合环境下的人机交互与沉浸式决策支持
- 人工智能驱动的城市环境、社会与治理模拟分析

Smart City serves as a crucial platform for the deep integration of digital technology, artificial intelligence (AI), and complex urban systems. As the core technology driving the evolution of smart cities, AI is rapidly integrating into various aspects such as urban perception, data governance, computing power scheduling, simulation and deduction, decision optimization, and operational control. Currently, the application of AI in smart cities has evolved from single-scene recognition and auxiliary analysis to directions such as city-level digital twins, computing network and computing power coordination, large-scale urban spatiotemporal computing models, embodied intelligence, intelligent agent coordination, and virtual-real linkage control. It has become a significant driving force for enhancing the scientific, refined, and intelligent level of urban governance.

Despite the increasing maturity of artificial intelligence (AI) and related digital technologies, they still face numerous

challenges in city-level applications: how to integrate heterogeneous data across domains, levels, and spatiotemporal scales to form a unified and credible foundation of urban data and knowledge? How to optimize the allocation of urban computing and network resources to achieve efficient scheduling of heterogeneous computing power and low-cost provision of intelligent services? How to understand urban operation patterns through large spatiotemporal computing models for real-time prediction, simulation deduction, and decision optimization? How to promote the coordinated operation of embodied intelligent equipment such as robots, drones, and autonomous vehicles with urban infrastructure? How to balance model accuracy, real-time response, computational efficiency, security and credibility, and large-scale application? To this end, there is an urgent need to explore robust, efficient, credible, green, and scalable AI theories, technological systems, and application models for smart cities. This special topic aims to bring together academic and industrial forces to share cutting-edge advancements, core challenges, key technologies, and innovative practices in AI for smart cities, promoting the deep integration of AI with urban planning, construction, governance, services, and operational management.

Topics of this Track (include but not limited to):

- Intelligent fusion, semantic understanding, and knowledge organization of multi-source heterogeneous urban data
- Urban IoT, perception network, and edge intelligence technology
- Urban computing-network integration, heterogeneous computing power scheduling, and computing resource optimization
- Cloud-edge-device collaborative computing and green computing for smart cities
- Large urban spatio-temporal computing models, their training, inference, and scenario applications
- Multimodal large models and industry-specific large models for urban governance
- Urban intelligent agents, multi-agent collaboration, and autonomous decision-making technology
- City-level applications of embodied intelligence such as robots, drones, and autonomous vehicles
- AI-driven dynamic modeling and simulation deduction of urban digital twins
- AI-based urban traffic prediction, simulation, and collaborative optimization
- Energy management, carbon emission accounting, and smart grid scheduling for low-carbon cities
- Disaster risk prediction and emergency deduction for urban floods, fires, earthquakes, etc.
- Intelligent monitoring, risk identification, and joint response for public safety
- AI-assisted urban planning, urban renewal, and spatial benefit evaluation
- Human-computer interaction and immersive decision support in a virtual-real integrated environment
- AI-driven simulation analysis of urban environment, society, and governance

Special Session Chair(s):

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Organizer's Brief Biography

林大海，高级工程师，深圳市高层次人才优秀专家，广东省区块链标委会委员，CCF CTO Club 委员。现任深智城集团技术部副部长，人工智能首席专家。聚焦人工智能、区块链、大数据、云计算领域，主导或技术牵头多个国家和省市级科研项目技术攻关。先后发表论文 12 篇、发明专利 30 余项，曾获广东省科技进步一等奖、广东省科学技术奖三等奖、江西省高校科技进步奖二等奖。主持过多个千万到亿级软件产品研发和大型项目的架构设计与开发实现，研发成果覆盖全国 20+个省级机关与国家部委、涉及数千万用户规模。

Dahai Lin, Shenzhen SmartCity Technology Development Group Co.,Ltd, China

Dahai Lin, senior engineer, is an outstanding expert among high-level talents in Shenzhen, a member of the Guangdong Provincial Blockchain Standardization Committee, and a member of the CCF CTO Club. He currently serves

as the Deputy Director of the Technology Department at the Smart City Group and as the Chief Expert in Artificial Intelligence. Focusing on the fields of artificial intelligence, blockchain, big data, and cloud computing, he has led or technically spearheaded multiple national, provincial, and municipal scientific research projects and technological breakthroughs. He has published 12 papers and holds more than 30 invention patents. He has received the First Prize of Guangdong Provincial Science and Technology Progress Award, the Third Prize of Guangdong Provincial Science and Technology Award, and the Second Prize of Jiangxi Provincial University Science and Technology Progress Award. He has presided over the architecture design and development implementation of multiple software products ranging from tens of millions to billions of yuan, covering over 20 provincial-level authorities and national ministries across the country, involving tens of millions of users.



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洪伟杰，广东省多模态融合通信与物联感知工程技术研究中心主任、云计算标准与应用工业和信息化部重点实验室行业专家，现任深圳市智慧城市科技发展集团技术部副部长、深圳市智城算网科技有限公司副总经理。长期致力于智慧城市、智能计算、边缘计算、算力网络等领域技术研究和产业应用。先后获得第 50 届日内瓦国际发明展银奖、华夏建设科技奖一等奖、地理信息产业协会科学技术奖一等奖、中国公路学会科学技术奖二等奖、中国通信学会科技进步奖三等奖等奖项。主持和参与国家、省部级科研项目 7 项，发表学术论文 10 篇，获得专利 16 项。他在计算机、人工智能和算力基础设施领域拥有丰富的技术研发和工程实践经验，曾负责深圳市智慧城市算力统筹调度平台、鹏城极速光网络、深圳市国资国企专网、深圳市物联感知平台等城市级信息基础设施建设。

Weijie Hong, Shenzhen Smart City Technology Development Group Co., Ltd., China.

Weijie Hong serves as the Director of the Guangdong Provincial Engineering Research Center for Multimodal Fusion Communication and IoT Sensing Technology, as well as an industry expert at the Key Laboratory of Cloud Computing Standards and Applications under the Ministry of Industry and Information Technology. Currently, he holds the position of Deputy Director of the Technology Department at Shenzhen Smart City Technology Development Group and Deputy General Manager at Shenzhen SmartCity Cloud Computing Data Center Co., Ltd.

He has long been committed to technological research and industrial applications in the fields of smart cities, intelligent computing, edge computing, and computing power networks. He has successively won awards such as the Silver Medal at the 50th International Exhibition of Inventions of Geneva, the First Prize of the Huaxia Construction Technology Award, the First Prize of the Science and Technology Award of the Geographic Information Industry Association, the Second Prize of the Science and Technology Award of the China Highway Society, and the Third Prize of the Science and Technology Progress Award of the China Communications Society. He has presided over and participated in 7 national, provincial, and ministerial-level scientific research projects, published 10 academic papers, and obtained 16 patents. He possesses extensive technical research and engineering practical experience in the fields of computers, artificial intelligence, and computing infrastructure. He has been responsible for the construction of city-level information infrastructure such as the Shenzhen Smart City Computing Power Coordination and Scheduling Platform, Pengcheng High-Speed Optical Network, Shenzhen State-owned Enterprises Private Network, and Shenzhen IoT Sensing Platform.