

# Call for Workshop Paper

## Advanced Techniques in Synergetic Digital Twins and Pervasive Intelligence for ISAC in Next-Gen Vehicular Networks

### General Co-Chair

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As vehicles become increasingly autonomous and connected, integrated sensing and communication (ISAC) architectures are important for real-time responsiveness and coordination in vehicular networks. These networks must handle challenges including dynamic environments, V2X signal interference, and low-latency requirements for applications like platooning and collision avoidance. Digital twins (DTs) serve as virtual replicas of vehicular systems, enabling simulation and optimization. Combined with Pervasive Intelligence utilizing AI/ML across edge devices, this enables proactive resource management and self-healing capabilities. However, key challenges include integrating diverse sensor data streams, optimizing edge computing efficiency, and managing computational resources. These require robust frameworks for reliable physical and virtual operations. The integration of DTs and pervasive intelligence enhances vehicular networks beyond basic communication functions.

This workshop aims to explore the integration of DTs and pervasive intelligence to drive advancements in next-generation vehicular networks, focusing on enhancing energy efficiency, ultra-reliable communications, and ultra-low latency. By addressing key challenges and presenting innovative solutions, it offers a platform for experts to collaborate on accelerating digital transformation in the Internet of Vehicles (IoV) and intelligent transportation systems. Topics of interest include, but are not limited to:

- Scalable Architectures for Digital Twin Deployment in Vehicular Networks
- Advanced AI/ML Solutions for Automated Vehicular Network Management
- Digital Twin-Driven Intelligence for Real-Time Vehicular Network Optimization
- Pervasive Intelligence in Self-Organizing and Adaptive Vehicular Systems
- Sustainable Vehicular Network Designs Leveraging Digital Twin Frameworks
- Enhanced Security and Privacy Mechanisms for DT-Based Vehicular Architectures
- Interoperability Standards for Harmonizing DT and AI Technologies in Transportation
- Novel Applications and Personalized Services Powered by DT in Connected Vehicles
- Predictive Maintenance and Fault Detection Using DTs in Automotive Systems
- IoT-Driven Applications of Digital Twins in Intelligent Transportation Systems
- Big Data Management and Analytics for Digital Twin Integration in Vehicular Contexts
- Virtualized Network Slicing for Customized Digital Twin Services for Vehicles
- Intelligent Drone/UAV-Enabled Traffic Monitoring Powered by DT and AI
- Cross-Domain Innovations Enabled by DT in Smart Mobility and Beyond

Paper submission: Papers must be formatted in the standard IEEE two-column format that is used by the VTC 2025 main conference, and must not exceed six pages in length (including references). All submitted papers will go through a peer review process.



### Publicity Co-Chair

**Junling Li**

Southeast University, China

**Haixia Peng**

Xi'an Jiaotong University, China

### IMPORTANT DATES

**Paper Submission Deadline**

24 May 2025

**Acceptance Notification**

15 July 2025

**Final Paper Submission**

29 July 2025

### VTS Link

[events.vtsociety.org/vtc2025-fall](https://events.vtsociety.org/vtc2025-fall)

Paper Submission is open

<https://vtc2025fall.trackchair.com/>