CALL FOR PAPERS

IEEE Open Journal of Vehicular Technology SI on

Current Research Trends and Open Challenges for 6G-enabled Vehicle-to-Everything Networks

The commercial deployment of 5G communications has built a foundation for vehicle-to-everything (V2X) networks. The variety of communication links, e.g., vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and vehicle-to-pedestrian (V2P), among others, potentially facilitates a significant improvement of efficiency and automation level for V2X. Yet, there are typical applications of V2X demanding better performance that is beyond 5G capabilities, such as ubiquitous connectivity, full intelligence, high-precision positioning and sensing, deterministic latency, robustness against complex and dynamic channel environments in V2X, and global coverage.

Based on 5G, 6G proposes a series of disruptive technologies and is ambitious to provide much enhanced communications performance. Focusing on the scenario of V2X, 6G will support intelligent and endogenous secure connections for vehicles, full integration of communication and sensing/positioning, artificial intelligence (AI) and big data-aided network slicing, and air-space-ground integrated architecture, among others. Overall, the new technologies and refined Key Performance Indicators (KPIs) of 6G are expected to pave the way for V2X applications and services.

The ambitious 6G vision gives us an appealing blueprint for future V2X networks. This special call aims to bring together world-renowned researchers to report their recent advances and portray future research directions, significantly prompting the research areas of 6G V2X communications. This special issue calls for submissions addressing the following topics (but not being limited to them):

- Information-theoretic foundations, algorithms, protocols, and systematic design of V2X communications.
- Network architecture designs for V2X, such air-space-ground integrated network and vehicle-edge-cloud orchestration.
- Orchestration of communication, sensing, positioning, computing and control for V2X.
- Intelligent antenna topologies and smart environments for V2X.
- Integration of V2X communications with the state-of-the-art wireless technologies (e.g., short block-length, semantic communications and unmanned aerial vehicle swarms).
- AI and big data aided V2X communications.
- Security, privacy, safety and corresponding V2X design.
- The interplay between time-deterministic design and other metrics, such as reliability, age-of-information, energy efficiency and scalability.
- Advanced communication techniques for multi-source perception and data fusion for V2X.
- Multidisciplinary designs among communications, automation control and computer vision.
- Experimental demonstrations and prototypes design for V2X.
- Integration of terrestrial and aerial networks (i.e., Non-Terrestrial Networks).
- Channel modeling for vehicular communications, with special emphasis on joint communications and sensing in vehicular environments.
- Study of novel frequency bands for 6G-enabled vehicular applications (e.g., mm Waves and THz).
- Waveform optimization for very-high speed vehicles and vehicular communications and sensing.

Submission Guidelines

Prospective authors should submit their manuscripts following the IEEE OJVT: https://vtsociety.org/publication/ieee-ojvt/author-instructions

Authors should submit a manuscript through
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Important Dates:

- Manuscript Submission Deadline: April 14, 2025
- Editorial Decision - 1st Round of Reviews: May 18, 2025
- Deadline for Resubmissions (for manuscripts with a Reject & Resubmit Editorial Decision): July 1, 2025
- Editorial Decision - 2nd Round of Reviews: August 6, 2025
- Final Manuscript Due: August 13, 2025
- Publication Date: Q4 2025

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