

Call for Papers for Special Issue on Collaborative Sensing, Mapping and Driving

Scope

Connected vehicles and automated vehicles represent different approaches to improve vehicle safety on the road. The former leverages wireless communication technologies to enhance mutual awareness among traffic participants. The latter ramps up individual vehicles' capability of perception and control to achieve better decision making in the complex driving environment. On the surface, the two technologies seem complementary. Information shared by different traffic entities can be added to a vehicle's dynamic map, extending its perception horizon, and uncovering None-Line-Of-Sight situations which otherwise would not be available via its own onboard sensors. In return, the vehicle can send what it observes through onboard sensors, which might help recipients avoid previously unaware safety hazard. Furthermore, as reported in the state-of-art research, individual vehicles may navigate themselves more efficiently with global information gathered from others on the same road, generating improved driving safety and efficiency.

However, the aforementioned complementary natures of vehicle connectivity and automation do not assure the completed integration of these technologies into vehicles and their interactions. There are questions about the cost, benefits, timeline, performance, hardware/software requirement and interface design of such an integrated system. Many of these questions are nontrivial to answer as it needs joint efforts from numerous technology areas. Fortunately, many scholars and research groups have started to explore these questions, paving the road for a cohesive integration of vehicle connectivity with vehicle automation system.

This special issue focuses on the most recent advancements in modeling, wireless communications, vehicle perception, mapping and localization technologies, which can improve the collaboration among individual automated, human-driven, or autonomous vehicles and enable novel vehicular cooperative applications. The goal is to bring together state-of-art efforts in this interdisciplinary domain that analyzes and addresses the challenges in enabling Collaborative Sensing, Mapping and Driving (CSMD).

Topics of Interests

- 1) V2X (e.g., DSRC, LTE V2X, 5G NR V2X), V2N and V2C protocol design, optimization, testing and evaluation for CSMD
- 2) Standards related to CSMD, including V2X, V2N and V2C communication, semantics & ontologies, and IoT.

- 3) Wireless infrastructure (e.g, Edge Computing) development for CSMD
- 4) Innovative incentives for fair, safe & secure collaborative strategies for CSMD
- 5) Infrastructure development
- 6) Data-driven and AI-enabled mechanisms for CSMD
- 7) CSMD modeling, simulation/validation platform & data sets
- 8) CSMD oriented use cases development, including report on international and trans-border initiatives for CSMD.
- 9) High-fidelity connected vehicle collaboration in perception, localization/mapping, tele-monitoring/operation and driving assistance
- 10) Real-time collaborative ADAS system modeling and implementation
- 11) Field deployment of CSMD
- 12) V2X, V2N and V2C enabled collaborative mobility services

Manuscript Submission Guidelines

Manuscripts must follow the author instructions available at: <https://vtsociety.org/ojvt-author-instructions/>.

Manuscripts must be submitted via Manuscript Central: <https://mc.manuscriptcentral.com/ojvt>). Please select “Special Issue” in the first submission page under the pop-up menu “Manuscript Type” and select the correct title in the special issue topic list.

Accepted manuscripts will be published under the full/gold open access model subject to an Article Processing Charge (APC) of USD \$1,750 per article. IEEE members will benefit from 10% discount; members of the IEEE Vehicular Technology Society (VTS) will receive 30% discount. The journal has no page limits and no mandatory or over-length page charges.

Important Dates

Manuscript submission: 1 May 2022

First review notifications: 15 June 2022

Revised manuscript due: 15 July 2022

Final editorial decisions: 1 August 2022

Final manuscript due: 15 August 2022

Publication date: 4rd Quarter 2022

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