IEEE Transactions on Vehicular Technology Special Issue on Immersive Virtual Reality simulation for Vehicular Technology

Call for Papers

In the last years, more and more research activities have focused on the application of Virtual Reality (VR) and related cutting-edge immersive technologies like Augmented Reality (AR) and Mixed Reality (MR) to vehicular systems for supporting the design of novel Human-Machine Interaction techniques, simulating the functioning of newly developed components, recreating hazardous test environments, establishing trust in Connected and Autonomous Vehicles (CAVs), etc. The benefits brought by immersive environments for supporting simulations in the field of vehicular technology have already been recognized by many companies and academic institutions worldwide, as confirmed by the huge investments and the large number of publications made in this field.

As we approach the time in which immersive simulations will become fundamental for a wide range of applications in the field of vehicular technology, the goal of Special Issue is to attract a collection of high-quality submissions reporting state-of-the-art research activities targeted to next-generation vehicles and related infrastructures, reporting the latest developments in standardization and regulation, as well as discussing services and applications envisaged for the considered domain.

The wide spectrum of possible applications will lead to interesting studies with both practical importance and theoretical impacts. For example, the use of immersive simulations could help to face important open-problems in vehicular technology, such as safety, accident prevention, and hazard detection/limitation. From the perspective of intelligent vehicles, the research in this field could help the design and implementation of novel and standardized testing protocols that could help to increase the users' acceptability. Moreover, approaches able to compare and evaluate the fidelity of the simulations will provide fundamental data to drive the development of next-generation vehicular technology.

The topics of interest for this Special Issue include, but are not limited to:

- VR-based, hardware-in-the-loop simulators for designing and testing next-gen. intelligent vehicles
- Authoring tools for simulating in-vehicle, driving and traffic scenarios in VR
- Methods for improving presence, immersion and user experience in immersive vehicular environments
- Techniques for studying HMI and ergonomics with simulated vehicles
- VR-based simulation of CAVs and smart vehicular infrastructures
- On-board entertainment and infotainment systems leveraging VR and related technology
- Solutions based on VR simulations for safety, accident prevention, and hazard detection/limitation
- Generation of datasets required to train machine and deep learning algorithms for smart vehicles in VR
- Testbeds, protocols and metrics for assessing the effectiveness of VR-based vehicular simulations
- Results from experiments, pilot studies and comparisons using VR in the field of vehicular simulations
- Vehicular applications and services based on VR and related technology

Submission Guidelines

Please submit your paper to Manuscript Central at: http://mc.manuscriptcentral.com/tvt-ieee. Author guides are available at: http://www.it.is.tohoku.ac.jp/~tvt/authors/information.html. The submissions must be original and not under consideration in any other venues.

Important Dates

- Manuscript Submission Due: October 7, 2021 (extended)
- First Notification Due: November 30, 2021
- Revised Submission Due: December 30, 2021
- Notification of Acceptance: January 30, 2022
- Final Papers Due: February 15, 2022
- Publication Date: April 2022

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