

IMPORTANT DATES

- Submission extended to
11 March 2022
- First Round Reviews
13 May 2022
- Second Round Submissions
30 June 2022
- Second Round Reviews /
Editorial Decisions
26 August 2022
- Final Articles Due
6 September 2022
- Publication
December 2022

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Recent Advances in Automated Driving Technologies

We live in the era of the advent of automated vehicles. These machines will bring dramatic changes to both the automotive industry and everyday life, revolutionizing the concept of passenger mobility. Perception is crucial for an autonomous vehicle, and presents important challenges, many of which are still to be addressed. The choice of sensors is pivotal, yet there is still no general consensus on what the “best” sensory equipment should consist of. Perception-related information is then used to make timely decisions on path planning and vehicle dynamics control, to ensure efficient and safe vehicle behavior. In this context, the importance of the role of machine learning algorithms is increasing quickly, in the generation of trajectories perceivable as “natural” by the car occupants for example, or in object recognition.

This Special Issue encourages researchers working in this field to share their latest developments on sensing and perception, path planning and decision making, machine learning and control using data-driven learning or physics-driven algorithms, focusing on technologies directly applicable to autonomous vehicles. The topics of interest include, but are not limited to:

- **Sensors**, including vision-related equipment such as cameras, radars, lidars, ultrasounds and digital image processing challenges, as well as inertial measurements for vehicle dynamics
- **Cooperative perception** technologies, sensor fusion techniques and their specific peculiarities, vehicular network technologies for data transmission
- **Motion planning** frameworks and technologies, including indoor and outdoor navigation, decision making, trajectory following
- **Artificial intelligence** techniques, including machine learning, deep learning, neural networks, training and robustness issues, algorithmic stability, safety and standardisation, challenges related to public trust and acceptance
- **Motion control algorithms**, including advanced control for longitudinal, lateral and vertical vehicle dynamics communications
- **Modeling and simulation methods** to assess vehicle automated driving functions, including virtual and experimental/field testing techniques and implementations in embedded systems
- **Diagnosis and fault estimation** of safety-critical vehicular sub-systems, actuators and sensors of automated vehicles
- **Connected vehicles**, exploiting connectivity with other vehicles and infrastructure in the design of vehicular control and estimation functions
- **Standardization** opportunities in vehicle automated driving, including analysis of existing standards and discussion of future standardization needs, such as safety metrics of automated vehicles
- **Application case-studies** in passenger cars, off-road vehicles, heavy-duty vehicles, buses, bikes, etc.

Submitted papers should contain state-of-the-art research material presented in a tutorial or survey style. All manuscripts should adhere to the IEEE VTM guidelines at <http://www.ieeevtc.org/vtmagazine/submission.php>. Authors should submit a PDF version of their complete manuscripts to <http://mc.manuscriptcentral.com/vtm-ieee>.