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Special Issue on Future Trends and Transition in Connected and Autonomous Transportation with Artificial Intelligence and Robotics

As the growing trends in technology continue to drive massive transformation throughout the automotive sector, connected and autonomous transportation has become the future vision. Since the advances in technology are expediting future-facing endeavours, the intelligent transportation sector is poised to make big strides in achieving the goals of self-driving cars. Many researchers and practitioners wonder how connected, and autonomous vehicles will affect future transportation. Hence, it is essential that the public transit services, parking facilities, and the need for roads should be designed to minimize the challenges and maximize the benefits of such technologies. This special section explores these issues in the transition towards autonomous vehicles and their future trends and developments with artificial intelligence (AI) and robotics. It explores the impacts of autonomous vehicles and their implications on future transportation systems. Most importantly, it briefly investigates how fastly such vehicles are likely to be developed innovatively with AI and robotics and can be deployed in coordination with previous technologies. Their potential benefits and challenges.

Recent research shows that currently, we are at level 4 automation of intelligent vehicles, and level 5 will be achieved soon in the next few years. However, at level 4, we have conditional autonomy to vehicles that are still reliant on human interventions to requests to deliver expected results. At the same time, level 5 autonomy facilitates complete autonomy to vehicles in all surfaces and environmental conditions. But, there is considerable uncertainty that concerns the development of autonomous vehicles in terms of travel impacts, cost, and consumer demand. Substantial progress is needed before autonomous and connected vehicles are implemented in extreme environments, mixed urban traffic, unpaved roads, and unreliable wireless access facilities. Artificial intelligence and robotics are the new-fangled technology that provides innovative services related to various aspects of connected and autonomous transportation systems. It makes the user better informed and makes synchronized, smarter and safer use of transportation networks. If used appropriately, it achieves traffic efficiency and reduces traffic congestion. These two technologies can widely accelerate autonomous vehicle development programs by enhancing the features such as vehicle availability, traffic, real-time running information, etc., to the users. It significantly reduces the travel time and increases the user's safety and comfort. There is no doubt that continuous advancements in AI and robotics can drive the disruption in transportation, and society can soon realize the benefits of autonomous

vehicles, which includes improved road safety, reduced emissions, better visibility, and greater efficiency. As we envisage a technology-driven future, the true transition in autonomous vehicles is expected to be more expensive and limited in performance. These issues will limit its development. To effectively address these concerns, this special issue researches two-cutting edge technologies AI and robotics, for the development of autonomous vehicles. Researchers and practitioners working in this background are requested to submit their novel and innovative contributions that fall within the scope. We solicit contributions from the following topics but not the same:

- Efficient use of AI and robotics in autonomous driving
- AI and robotics assisted autonomous vehicle operation models
- Achieving traffic safety and security with autonomous vehicles using AI
- Development and deployment predictions of autonomous and connected vehicles with AI technology
- Potential conflicts in development of autonomous vehicles and appropriate solutions with AI and robotics
- Trends that affect the transition towards autonomous vehicles with appropriate solutions
- Trends in deep learning and computer vision for autonomous and connected vehicles
- Effective ways of achieving energy efficiency with smart and autonomous vehicles using AI and robotics
- Role of natural language processing in autonomous vehicles
- AI-driven smart autonomous vehicle ecosystems
- Realizing the potential of connected vehicles with 5G and AI
- Enabling the transition from driving society to driverless society with AI and robotics
- Robotic process automation for intelligent vehicles
- Green intelligent transportation system with AI and robotics

Important Dates

• Paper submission deadline: 26, April 2022
• Completion of the first round review: 11, June 2022
• Completion of the second round review: 13, September 2022
• Final submission due: 14, October 2022
• Tentative publication date: Publication Date will be as per Journal Decision.

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Paper Submission

All papers are to be submitted through the IEEE's Manuscript Central for Transactions on Automation Science and Engineering http://mc.manuscriptcentral.com/t-ase. Please select the Manuscript Category "[Future Trends and Transition in Connected and Autonomous Transportation with Artificial Intelligence and Robotics] - Special Issue". **All manuscripts must be prepared according to the IEEE Transactions on Automation Science and Engineering publication guidelines** (http://www.ieee-ras.org/publications/t-ase)**.** Please address inquiries to nguyent@ieee.org.