

IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS

Special Section on

Adaptive Learning and Control for Autonomous Vehicles

With the rapid development of autonomous vehicles such as ground, surface, underwater systems, incremental challenges in decision making, path following, collision avoidance, state estimation, trajectory tracking, *etc.*, are expected to be tackled in adaptive learning manners. Moreover, the utility of autonomous vehicles critically depends on the level of autonomy. In this context, it is strongly worth enabling autonomous vehicles to work in any unstructured or unpredictable environments without human intervention. Meanwhile, in the presence of complex unknowns including uncertainties, variations, disturbances, *etc.*, adaptive learning and control (ALC) technologies of an autonomous vehicle are still desirable to be comprehensively understood, and thereby contributing to advanced ALC mechanism in autonomous vehicles. Therefore, combining with artificial intelligence, machine learning, control techniques, data fusion, communication technologies, environment understanding/modeling, *etc.*, sufficiently emerging advances in the ALC technologies for autonomous vehicles are intensively pursued in this special issue.

This special issue will feature the most recent developments and the state-of-the-art ALC methodologies for autonomous vehicles. The targeted audience includes both academic researchers and industrial practitioners. It aims to provide a platform for sharing recent results and team experience in adaptive learning and control for autonomous vehicles. The topics of this special issue include, but are not limited to the following research areas:

- Adaptive learning-based modeling, optimization and control for autonomous vehicles;
- Deep learning control of autonomous vehicles;
- Reinforcement learning control of autonomous vehicles;
- Artificial intelligence application in resilient autonomous vehicles
- Deep reinforcement learning control of autonomous vehicles;
- Health monitoring and supervisory control of autonomous vehicles;
- Adaptive dynamic programming-based learning control of autonomous vehicles;
- Iterative/Repetitive learning control of autonomous vehicles;
- Adaptive learning-based location and navigation of autonomous vehicles;
- Adaptive learning-based decision making of autonomous vehicles;
- Adaptive learning-based cooperative control of multiple autonomous vehicles;
- Adaptive learning for perception and recognition of autonomous vehicles;
- Application studies.

IMPORTANT DATES

- 30 July, 2020 — Paper submission deadline
- 30 September, 2020 — Review comments to authors
- 30 November, 2020 — Revision submission deadline
- 30 January, 2021 — Final decisions to authors
- February, 2021 — Publication date

GUEST EDITORS

- Hamid Reza Karimi, Politecnico di Milano, Italy
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SUBMISSION INSTRUCTIONS

- Read the Information for Authors at <http://cis.ieee.org/tnnls>.
- Submit your manuscript at the TNNLS webpage (<http://mc.manuscriptcentral.com/tnnls>) and follow the submission procedure. Please, clearly indicate on the first page of the manuscript and in the cover letter that the manuscript is submitted to this special issue. Send an email to the leading guest editor Prof. Hamid Reza Karimi (hamidreza.karimi@polimi.it) with subject "TNNLS special issue submission" to notify about your submission.
- Early submissions are welcome. We will start the review process as soon as we receive your contributions.