

Call for Papers
IEEE Signal Processing Society
IEEE Signal Processing Magazine
Special Issue on Autonomous Driving

The integration of advanced sensing, signal processing, artificial intelligence, and controls technologies into vehicles is enabling intelligent automated vehicles that can navigate autonomously in various environments. In particular, autonomous driving and, more generally, automated driving is receiving a growing attention with significantly increasing resources being deployed to enable safe, reliable, and efficient automated mobility in complex uncontrolled real-world environments and for various applications ranging from automated transportation, and farming to public safety and environmental exploration. Signal processing is a critical component of automated driving. Some of the needed enabling technologies include affordable sensing platforms that can acquire useful data under varying environmental conditions, reliable simultaneous localization and mapping, machine learning that can effectively handle varying real-world conditions and unforeseen events, “machine-learning friendly” signal processing to enable more effective classification and decision making, hardware and software co-design for efficient real-time performance, resilient and robust platforms that can withstand adversarial attacks and failures, and end-to-end system integration of sensing, signal processing, machine learning, and controls.

The aim of this special issue is to provide researchers and professionals with high-quality tutorial-style papers addressing the latest advances in the design, development, and deployment of signal processing technologies and systems integrating signal processing components for autonomous and automated driving. A special emphasis will also be devoted to not only cover the current state-of-the-art, but also new and emerging trends. Prospective authors are invited to submit tutorial-style papers on topics related to autonomous and automated driving including but not limited to the following:

- Current and emerging signal processing technologies for automated driving
- Sensing, perception, and vision
- Machine learning, predictive analytics, and decision-making under uncertainty
- Signal processing for enhanced safety, robustness, and fault-tolerance
- Validation, verification, and performance assessment methodologies of sensing and signal processing/computer vision algorithms for autonomous driving
- Cyber-security and privacy-preserving signal processing technologies
- Applications to automated mobility, pick-up and delivery systems, agriculture, energy efficiency and sustainability, and other domains.

Prospective authors should submit white papers at <https://mc.manuscriptcentral.com/spmag-ieee> according to the timetable below. White papers should include a title, list of authors, motivation and significance of the topic to be addressed, a brief summary, an outline of the content and the key references. White papers should be no more than 2 pages in the IEEE single-space double-column format. IEEE article templates can be downloaded at <https://ieeauthorcenter.ieee.org/create-your-ieee-article/use-authoring-tools-and-ieee-article-templates/>.

Schedule:

White paper due: June 1, 2019
Invitation notification: July 1, 2019
Full-length manuscript due: September 1, 2019
First review to authors: November 1, 2019
Revised manuscript due: January 1, 2020
Final acceptance notification: March 1, 2020
Final manuscript due: April 1, 2020
Publication date: July 2020

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