

Robust & Efficient Vision Techniques for Intelligent Vehicles

In recent years, intelligent vehicles have been a hot topic for both research and industry communities. Since the whole system is a comprehensive integration of many advanced techniques, their respective development and improvement become fundamentally important. Among these, vision based technique is the most critical one that has attracted wide attention. For example, many world famous companies such as Google, Tesla and Mobileye are all developing this direction for their own products and numerous researchers publish papers about vision tasks for intelligent functions of vehicles each year. For these vision techniques, the primary concern is robustness and efficiency. Since the intelligent vehicles will undergo a variety of driving environments, it must be assured that they can handle all the expected and unexpected conditions robustly and efficiently. For this purpose, traditional hand-designed and machine learning (especially deep learning) based paradigms are all deeply explored especially in the past few years.

Nevertheless, there are still problems that need to be solved. For example, how to detect and track the desired targets in a real-time and stable way? How to adapt the original machine learning prototypes to the ever-changing driving environment? How to compromise between the processing speed and effect? And many others, which stay as the main challenges in the intelligent vehicle design, have fostered new efforts and developments to achieve better performance.

This proposal for a special issue on “Robust & Efficient Vision Techniques for Intelligent Vehicles” just targets on these topics. We hope to invite original submissions reporting recent advances in the robust & efficient approaches towards analyzing and understanding the driving environment of intelligent vehicles, and foster an increased attention to this field.

This special issue will emphasize the usage of traditional hand-designed and state-of-the-art machine learning techniques for tackling the vision tasks of intelligent vehicles. Particularly, it will solicit submissions focusing on the robust and efficient algorithm and system design.

Potential topics include, but are not limited to:

- Feature engineering/learning for the vision functions of intelligent vehicles;
- Target detection, segmentation, tracking and classification;
- Event and activity analysis;
- Understanding of dynamic driving environment;
- Data sets and systems for autonomous driving and driver-assistance systems.

Manuscript Submission & Publication Important Dates

Prospective authors are invited to submit contributions reporting on their current research on the above topics. Each paper will be analyzed by at least three reviewers of IEEE T-ITS in order to assess its technical quality, relevance, results and contributions. Manuscripts must be submitted electronically at <http://mc.manuscriptcentral.com/t-its> by selecting "Special Issue on Robust & Efficient Vision Techniques for Intelligent Vehicles".

Important Dates:

Tentative schedule for the Special Issue is as follows:

- First submission deadline: February 28, 2017.
- Notification of first decision: April 30, 2017.
- First revision submission deadline: June 30, 2017.
- Notification of final decision: September 30, 2017.
- Final manuscript (camera ready) submission deadline: October 15, 2017.
- Issue of Publication: November 2017.

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