Preface

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Biographical notes: Kevin Deng has been Professor of Jilin University since 2010. Prior to that, he worked for General Motors Global R&D Centre since 1996. He was a three-time recipient of the Charles McCuen Award by GM R&D Center, and twice a recipient of the Boss Kettering Award, the most prestigious award in GM for technical invention and innovation. He holds 22 US patents, with another 14 applications pending. He is the author of over 60 peer-reviewed papers in international journals and conferences. Currently, he serves as editor or associate editor for several international journals. His primary research interests are in vehicle control, intelligent and autonomous driving, and modelling and simulation technologies.

Qingrong (Annie) Zhao is a Senior Researcher at General Motors Global R&D Centre. Her research interests include vehicle dynamics, simulation, controls, and integration. She obtained her PhD in Electrical Engineering from the University of Cincinnati, Ohio, USA, in 2007. She is an author of a dozen peer-reviewed papers in international journals and conferences, and co-inventor of two US patents and has received numerous honours and awards. She is an Associate Editor of the International Journal of Vehicle Autonomous Systems.

2012 marks the 10th anniversary of IJVAS. Ten years ago, when autonomous vehicle technologies and systems were still in their infancy, IJVAS was launched with the goal of providing an international authoritative forum and referred reference to evaluate, disseminate, and promote technological advancements in this field. Over the years, a stringent peer review process, fast response time, and timely publication schedule have resulted in a respected journal that monitors the latest cutting-edge technologies.

To celebrate ten years of success, we are publishing two special anniversary issues that collect 10 articles from world-renowned scholars and researchers in the field and cover a wide spectrum of current research and future trends in vehicle autonomous technologies. This is the first issue, which provides an overview of some key enabling technologies for vehicle autonomous driving, in particular, the environmental sensing technologies. The second issue, IJVAS Vol 10 No 4, will discuss some core technologies for vehicle autonomous driving, such as vehicle controls.

This issue begins with an article entitled 'The VisLab intercontinental autonomous challenge: an extensive test for a platoon of intelligent vehicles', by Professor Alberto Broggi et al., which presents some innovative sensing and perception technologies that were applied in the intercontinental journey of an autonomous platoon from Parma to Shanghai.

The article entitled 'Towards characterising and classifying communication-based automotive applications from a wireless networking perspective', by Dr Fan Bai, presents a systematic classification of communication-based automotive applications from the perspective of wireless networking design. This provides a basis for application simulation and performance analysis, and helps to guide DSRC and VANET protocol research and development.

Dr. Bakhtiar Litkouhi contributes an article entitled 'Imaging sensor technology for intelligent vehicle active safety and driver assistant systems', which presents a comprehensive overview on imaging sensor technologies and their present and future applications on intelligent vehicles, such as active safety and driver assistant systems.

A novel GPS-based technology for autonomous vehicle navigation is proposed in the article 'Comparison of GPS-based autonomous vehicle following using global and relative positioning', by Professor David Bevly et al., which uses GPS for inter vehicle relative positioning and for vehicle odometry.

Finally, Professor Joerg Wallaschek et al. present an article entitled 'Autonomous vehicle frontlighting systems', with an overview on the development, system architectures, and available sensor and actuator technologies for intelligent vehicle forward lighting systems.

In summary, this special issue provides some insightful overviews by experts from both industry and academia on various key technologies that enable the research and development of autonomous driving, such as environment sensors, vehicle connectivity, and adaptive lightning techniques, etc. We are very much impressed by the quality of the articles that we received.

Although autonomous driving is no longer a dream, the path to reality is still full of technological barriers that must be overcome. Safety regulations, as well as social and market forces, will combine to accelerate the rapid development of autonomous driving technologies. IJVAS has been committed to providing a high-quality international forum and refereed reference and will continue to be at the forefront of covering new developments related to the advanced research and development of vehicle autonomous systems.

We would like to take this opportunity to express our heartfelt gratitude to the authors for their great contributions and to the editorial staff for their diligent efforts in making this happen. We would also like to thank you, our loyal readers, for being with us for the last ten years, and we look forward to your continued support in the future.