Guest editorial

Intelligent edge analytics and coordinated control for autonomous vehicles

Autonomous vehicles are widely researched topic by many leading industries with the main focus on safety, reliability and performance. Autonomous vehicle technologies find applications in self-driving cars, drones, underwater vehicles and security applications. Autonomous vehicles need to provide superior performance and they have to react to the real-world conditions very fast to ensure safety. Reliability and safety of autonomous systems are improved recently by deploying data analytics at the edge rather than cloud. Autonomous vehicle framework needs to have machine learning and deep learning-based intelligent edge analytics to deal with the data generated from sensors and cameras. To enhance reliability and safety of autonomous vehicles, numerous sensors and cameras are required in the system design. Intelligent sensors and camera of autonomous vehicles require deep learning algorithms to process signal, image and video in a better way than existing computational solutions.

This special issue focused on applying artificial intelligence and edge computing for autonomous vehicles. The first paper titled "An improved rank criterion-based NLOS node detection mechanism in VANETs" focuses on reliable warning message delivery in vehicular ad hoc networks. The second paper "Camouflage detection with texture statistical characterization in autonomous systems" detects camouflaged objects in autonomous system-based military applications and civilian applications such as detecting insects in paddy fields, identifying duplicate products in different texture environments. The third paper "Obstacle-avoiding intelligent algorithm for quad wheel robot path navigation" proposes quad wheel robot with path navigation using an intelligent novel algorithm named as obstacle-avoiding intelligent algorithm. The fourth paper "Skeleton-based STIP feature and discriminant sparse coding for human action recognition" focuses on development of a human action recognition system for the unmanned environments. The final paper "Low-cost IoT framework for irrigation monitoring and control" presents a threshold value algorithm to optimize power consumption and to control irrigation process.

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Dr Yu-Dong Zhang received his PhD degree from Southeast University at 2010. He worked as postdoc from 2010 to 2012 in Columbia University, USA, and an assistant research scientist from 2012 to 2013 at Research Foundation of Mental Hygiene (RFMH), USA. He served as a full professor from 2013 to 2017 in Nanjing Normal University, where he was the director and founder of Advanced Medical Image Processing Group in NJNU. Now he serves as Professor in Department of Informatics, University of Leicester, UK from June 2017. He was included in "Most Cited Chinese researchers (Computer Science)" from 2014 to 2017. He published over 160 papers, and 16 were included in "ESI Highly Cited Papers" and two were included in "ESI Hot Papers". His citation reached 9,286 in Google Scholar, and 4,943 in Web of Science. He is the Fellow of IET, and senior member of IEEE and ACM. He is the editor of Scientific Reports, IEEE Transactions on Circuits and Systems for Video Technology, etc. He served as the guest editor of Neural Networks, IEEE Transactions on Intelligent Transportation Systems, etc. He has conducted many successful academic grants and industrial projects.

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