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IEEE ITS Special Issue
Block Chain and Big Data-enabled Intelligent Vehicular Communication

In the last decade, the number of vehicles worldwide has increased every year, and this growth is projected to continue unabated. Thus, the congestions, incidents, and environmental pollution which are caused by the increasing number of road vehicles and traffics have resulted in hundreds of millions of losses and become a major challenge to the sustainable development of recent human society. Both academia and industry have already reached a consensus that vehicular communication is a vital element to extend the sensing ability of vehicles for ensuring safety driving. Unfortunately, current vehicular communication cannot meet the security, reliability, and effectiveness and other needs of ITS. The industry needs a more intelligent vehicular communication to support secure and reliable transmission of data. Therefore, the research community has to focus more on enhanced and completely new communication techniques.

With the security threats and underutilization of vehicular data, intelligent vehicular communication appears more and more to be one of the key enabling technologies needed to address the bottlenecks of the currently vehicular communication networks. Novel techniques and technologies are needed to provide the necessary intelligence and adaptation for information security and cooperation of the more and more different existing vehicular communication systems. Under the so-called big data and blockchain technologies, the large volume of vehicular data can be well exploited to improve vehicular communication and the information can be managed in a more secure way. The blockchain infrastructure provides the ability for transaction records not to be tampered with or modified in vehicular communication. The technology of big data is conducive to real-time monitoring of vehicle status, road emergency prediction and road planning applications. In other applications, using big data to identify driver's driving habits and develop usage-based insurance as well as personalized recommend vehicle maintenance services. While some initial steps toward the implementation of intelligent vehicular communication concepts have already been taken, there are still big challenges that need to be tackled, before the full potential of vehicular communication techniques can be achieved.

This special issue will solicit high quality papers reporting on new theoretical results and applications of intelligent vehicular communication. Particularly, the principal technical areas could be:

- Innovative architecture, infrastructure, techniques and testbeds for intelligent vehicular communication
- Secure key management and blockchain verification for intelligent vehicular communication
- Consensus and mining algorithms suited for resource-limited intelligent vehicular communication
- Mobility management throughput blockchain for intelligent vehicular communication
- Secure and private blockchains for intelligent vehicular communication
- Data-driven resource allocation and mobility management for intelligent vehicular communication
- Machine learning, AI and other innovative approaches for intelligent vehicular communication
- Model adaptation and learning techniques over nonstationary data streams for intelligent vehicular communication
- Multi-modal information fusion, contextual data management and in-depth knowledge discovery for intelligent vehicular communication
• Novel V2I, V2V, and V2P architectures, protocols, and techniques based on blockchain and big data
• Computing architecture and optimization for intelligent vehicular communication

IMPORTANT DATES

• First submission deadline: 30 January 2020
• Notification of first decision: 30 April 2020
• First revision submission deadline: 30 June 2020
• Notification of final decision: 30 October 2020
• Final manuscript (camera ready) deadline: 30 November 2020
• Issue of Publication: December 2020

SUBMISSIONS

Authors must follow the submission web site: http://mc.manuscriptcentral.com/t-its

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