

Special Session title

Smart and Proactive Traffic Safety Management in Smart Cities and Rural Areas

Special Session proposer(s)

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Abstract

Traffic crashes in both rural and urban areas are long-standing threats to public safety worldwide. Despite the growing concerns and efforts, the surface transportation systems are still tolling more than one million lives each year, let alone the alarming statistics of injuries and economic loss. The pressing safety problem and the rapid pace of technological development in the transportation industry and relevant fields demand timely actions to enhance the safety performance of our evolving transportation systems, especially in the context of Smart Cities as well as rural areas with technological gaps.

Although promising, one cannot expect that the recent transformative technologies such as connected and automated vehicles (CAVs), big data analytics, and artificial intelligence (AI) can dramatically and immediately reduce vehicular traffic related injuries. There is still a long journey to prove they can do so in both less-connected rural areas and populated urban environments. Nevertheless, some of the technology breakthroughs have been shown to be conducive for assisting or augmenting many existing safety practices and solutions for transportation systems. In particular, a major leap is to leverage the technological progress for smarter and proactive safety management. Intelligent and proactive management in emerging Smart Cities and rural areas can greatly help mitigate crashes and injuries and/or reduce their severity. A growing number of safety research efforts have been turning their attention towards this area. Thus, this special session aims to provide a forum to discuss and share the recent research progress and lessons in smart and proactive safety management across countries. The focus of this special session is to solicit the latest innovations and technological solutions for supporting more intelligent decision making and proactive countermeasures for addressing different types of traffic safety issues both in emerging Smart Cities and rural areas.

Keywords

- Incident Management
- Roadside and On-board Safety Monitoring
- Other Theories, Applications, and Technologies

Topics of interest

- Technology- and data-driven traffic safety monitoring and safety oversight in Smart Cities and rural areas (e.g., computer vision applications in conflict detection; social media data analytics for sentiment sensing; naturalistic driving data mining; real-time crash risk prediction, etc.)
- Safety impact of disruptive technologies (e.g., shared-mobility; CAVs; advanced driver-assistance systems (ADAS), etc.)



- Real-time traffic hazard identification and risk assessment methods (e.g., advanced algorithms and modelling; artificial intelligence applications; case studies on real-world applications, etc.)
- Safety improvement for complex/multi-modal traffic conditions (e.g., smart signals for pedestrian protection)
- Technology-aided traffic safety training for personnel (e.g., AR/VR for work zone staff training)
- Development of advanced data collection solutions for safety purposes (e.g., large-scale and automated safety data collection through LiDAR, image processing, smartphone applications, drones, internet of things (IoT), etc.)
- Advances in simulation-based safety studies (e.g., development of new surrogate safety measures; large-scale simulation model calibration, etc.)
- Risk analysis of micro-mobility systems (e.g., electric scooter safety, e-bikes, etc.)
- Advanced safety solutions for vulnerable and disadvantaged users (e.g., intelligent control systems; intrusion warning, etc.)
- Proactive solutions for reducing crashes in adverse weather conditions (e.g., antiicing systems)
- Progress in driving simulation (e.g., information impact on driving; driver-ped interactions; human autonomous vehicles interactions, etc.)
- Technology advancements at work zone locations (e.g., autonomous truck mounted attenuators; smart temporary traffic control devices; zipper merge, etc.)