

# Guest Editorial

## Special Issue: The 21st IEEE International Conference on Intelligent Transportation Systems (ITSC 2018)

From November 4th to 7th, 2018, the IEEE Intelligent Transportation Systems Society (ITSS) sponsored the 21st IEEE International Conference on Intelligent Transportation Systems (ITSC2018), one of the most prestigious academic meetings on Intelligent Transportation Systems. The 2018 annual flagship conference of the IEEE ITS Society was held in Maui, Hawaii, reaching unprecedented numbers in terms of both submissions and presented papers.

The ITSC 2018 provided a very diverse technical program, with topics ranging from Intelligent Vehicles to Human Factors and Naturalistic Driving studies. There was also a special symposium organized by the Institute of Transportation Engineers (ITE), as well as a Data Mining Hackathon organized by one of the ITSS Technical Committees.

In this Special Issue, we are highlighting some of the most notable topics presented at the ITSC 2018 conference. Several top-rated ITSC 2018 papers were selected, asking their authors to submit extended versions of their published research, all of which passed through the rigorous IEEE ITS Transaction review process.

Nowadays, Intelligent Vehicles (Autonomous/Automated/Connected) continue to be one of the hottest topics in ITS. One of the most challenging research areas involves trajectory planning. In the paper titled “Disturbance observer based tracking controller for neural network driving policy transfer,” the authors describe a novel disturbance observer-based (DOB) robust tracking controller in order to reject the disturbances, improving the policy transfer performance with respect to previous efforts.

Another particularly interesting subfield of Intelligent Vehicles is platooning, where automated vehicles organize themselves in a tight formation for improvements in traffic flow and environmental sustainability. In the paper “Motion primitives representation, extraction and connection for automated vehicle motion planning applications,” a very interesting study is described on the extraction of a naturalistic driving styles based on motion primitives, paying special attention to their interdependence that can be later applied to platooning.

Dynamic Traffic Assignment and Vehicle Re-Routing is another important topic in ITS. In the paper titled “Safe

and sound: driver safety-aware vehicular re-routing based on spatiotemporal information,” cooperating re-routing is performed where novel features are included in the multicriteria optimization, in order to minimize the overall safety risk.

Another very important ITS topic nowadays is Mobility as a Service (MaaS), where automated vehicles will likely play an important role. In the paper “Intermodal autonomous mobility-on-demand (AMoD),” coordination policies and models are presented and tested for two scenarios, blending AMoD with different public transit modes with the goal of reaching a “social optimum.”

As automated vehicle technology is deployed, it is clear that there will always be a critical “coexistence” between humans and robotic vehicles in modern cities. Therefore, it is critical to understand and predict human behavior as much as possible. Robots (i.e., Autonomous Vehicles) behavior is easily predicted, but there will be humans around them, and that always carries a risk. In the paper “Enhancing data-driven algorithms for human pose estimation and action recognition through simulation,” advancements are described in predicting human pose and actions using a simulation framework and real-world data to validate results.

Another interesting challenge in ITS focuses on car sharing fleet management. It is important to develop methods to optimally allocate such fleet vehicles; this includes not only vehicle demand but also vehicle power management in the case of electric vehicle fleets. In the paper “Optimizing relocation cost in free-floating car-sharing systems,” the cost of relocation is evaluated for a fleet of carsharing vehicles, by optimizing the journey of an operator who goes through the fleet, moving them to their desired positions.

This Special Issue concludes with a theoretical framework described in the paper “Dynamic system optimum analysis of multi-region macroscopic fundamental diagram systems with state-dependent time-varying delays,” where dynamic routing and departure time assignment optimization are studied from a macroscopic traffic modeling perspective, aiming to achieve traffic system equilibrium.

All of these manuscripts exemplify the excellent work going on in Intelligent Transportation Systems, serving as highlights during the successful IEEE ITSC 2018 conference.

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