Journal of Advanced Transportation

Special Issue on
Machine Learning in Transportation

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Nation's economy and quality of life are influenced by a well-behaved transportation system. Yet, demands in transportation are ever increasing due to trends in population growth, emerging technologies, and the increased globalization of the economy which has kept pushing the system to its limits.

The scale of ingested data in the transportation system and even the interaction of various components of the system that generates the data have become a bottleneck for the traditional data analytics solutions. On the other hand, machine learning is a form of Artificial Intelligence (AI) and a data-driven solution that can cope with the new system requirements. Machine learning learns the latent patterns of historical data to model the behavior of a system and to respond accordingly in order to automate the analytical model building.

The availability of increased computational power and collection of the massive amount of data have redefined the value of the machine learning-based approaches for addressing the emerging demands and needs in transportation systems.

Machine learning solution has already begun its promising marks in the transportation industry where it is proved to even have a higher return on investment compared to the conventional solutions. However, the transportation problems are still rich in applying and leveraging machine learning techniques and need more consideration. The underlying goals for these solutions are to reduce congestion, improve safety and diminish human errors, mitigate unfavorable environmental impacts, optimize energy performance, and improve the productivity and efficiency of surface transportation.

This special issue aims at reporting on new models and algorithms related to the use of machine learning in the field of transportation and, furthermore, analysis of the reliability and robustness of the system.

Potential topics include but are not limited to the following:

- Machine learning applications for
  - Monitoring and managing transportation system performance
  - Autonomous vehicle and connected car
  - Freight transportation operations
  - Air traffic control
  - Predictive analytics for smart public transport
  - Anomalous event detection from surveillance video
  - Mobility services for data-driven transit planning, operations, and reporting
  - Vehicle safety monitoring
  - Passenger safety monitoring
  - Efficient carpooling and ride sharing
  - Object detection and traffic sign recognition
  - Analysis of traveler's behavior

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Submission Deadline
Friday, 5 October 2018

Publication Date
February 2019