The 24th IEEE International Conference on
Intelligent Transportation Systems

Special Session Proposal

5th Special Session on Intelligent Public Transport

Duration

Half Day

Organizers

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Aim of the Special Session

Public transport plays a key role in maintaining sustainable mobility levels. Increased passenger demand and urbanization are expected to push public transportation operators to offer more reliable services and integrate their operations with micro-mobility options. Operations in public transportation systems are vulnerable to delays, disruptions, and other forms of uncertainty, such as the variation of passenger demand which is exacerbated due to the COVID-19 pandemic. Uncertainties related to traffic dynamics, operations, and passenger demand affect the reliability of the services and can lead to low passenger satisfaction and ridership loss. Although uncertainties are hard to predict, the influx of mobility-based data by intelligent sensors and real-time communication networks could be a *game changer*. The availability of data from smartphones, traffic light sensors, APC/AFC/AVL, and MaaS applications has already impacted how both Civil Engineering and Computer Science tackle public transportation problems.

The availability of data enables a whole new bunch of possibilities which are far from being fully explored. For instance, public transportation planning that does not consider historical mobility-based data regarding the operational uncertainty offers services that perform well on the average case. However, they are vulnerable to disruptions which can affect the entire spectrum of the public transport system (e.g., the service frequencies, timetables, vehicle/crew schedules, and transfer synchronizations). This special session will investigate this area and provide answers to pressing research questions, such as:

- Which are the current trends in using smart data for public transport planning?
- How can we explore these data to improve public transportation?
- How can we improve the planning and control of public transportation given the newly available information?
- How can we improve the efficiency of preventive maintenance?

Being at a crossroad of data science and civil engineering, this special session intends to provide a platform to bring together data and civil engineering scientists working on public transport to build up together the next generation of reliable Urban Mobility.

Topics of Interest

Topics of interest include (but are not limited to):
- Delay propagation and prediction;
- Scheduling efficient public transport services in the era of COVID-19;
- Measuring and quantifying reliability/robustness of public transportation systems;
- Public transportation planning under uncertainty, e.g., reliable/robust line planning, frequency setting, timetabling, rolling stock / crew scheduling;
- Intelligent real-time public transport control and operational management (bus bunching, stop-skipping, vehicle holding, transfer coordination, corrective actions);
- Artificial public transportation systems and simulation;
- Delay and disruption management;
- Data-driven preventive maintenance policies;
- Analysis of smartcard and mobility phone data;
- Agent-based models for public transport systems;
- Network theory applications in public transport;
- Automatic assessment and evaluation of the public transport reliability;
- Public transport scheduling in the era of Mobility-as-a-Service.

Expected attendance

This will be the 5th special session on Intelligent Public Transport. The first special session on Intelligent Public Transport took place in 2015 (Las Palmas de Gran Canarias, Spain) and continued until last year's virtual conference (Rhodes, Greece). The typical number of presentations is 4-13 which usually keep a full-room audience including interesting discussions.

Equipment

A projector and a screen.