



MED 2021

29th Mediterranean Conference on Control and Automation

JUNE 22 – 25 2021, BARI, ITALY, <http://med2021.poliba.it>

Workshop Session at MED 2021 on

Modeling and Control Tools for Sustainable and Connected Mobility in Smart Cities

Abstract Emerging mobility systems, e.g., connected and automated vehicles (CAVs), shared mobility, truck platoons, electric mobility, provide the most intriguing opportunity for enabling users to better monitor transportation network conditions and make better operating decisions to improve safety and transportation efficiency. Emerging mobility systems are typical cyber-physical systems where the cyber component (e.g., data and shared information through vehicle-to-vehicle and vehicle-to-infrastructure communication) can aim at optimally controlling the physical entities (e.g., CAVs, non-CAVs). It seems clear that the availability of vehicle-to-vehicle communication has the potential to reduce congestion by enabling vehicles to more rapidly account for changes in their mutual environment. Likewise, vehicle-to-infrastructure communication, e.g., communication with traffic control centers, nearby buildings, and traffic lights, should allow for individual vehicle control systems to account for unpredictable changes in local infrastructure but also to receive guidance from the infrastructure. As transportation systems become increasingly complex with an expanded feature space, new modeling and control approaches are needed to understand the impact on system behavior that would result in improving safety, efficiency and sustainability.

The workshop intends to stimulate a discussion on modeling and control for emerging mobility systems that could be eventually realized in smart cities. This workshop is organized within the Technical Committee of the IEEE Control Systems Society on “Smart Cities”.

Duration Half day

Preferred mode of presentation (to be confirmed closer to the conference and depending on the pandemics evolution): [Insert here the preferred mode of presentation choosing among Online/In presence/Hybrid]

Organizers

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List of topics

Session 1: Sustainable and Connected Freeway Systems

Speakers:

- A. Ferrara, "Modeling and control of connected and automated vehicles in freeway traffic"
- K.H. Johansson, "Traffic state reconstruction and control using connected vehicles"
- J. Mårtensson, "Platoon coordination for trucks and the value of cross-fleet cooperation"
- P. Typaldos, "Optimization-based path-planning for connected and non-connected automated vehicles"

Session 2: Sustainable and Connected Urban Systems

Speakers:

- C. Canudas-de-Wit, "Modeling and Control of Large-Scale Traffic Urban Networks"
- J. Haddad, "Traffic flow modeling and feedback control for future urban air mobility"
- B. De Schutter, "Efficient model-based control methods for green urban traffic signal control"
- S. Siri, "Modelling electric and automated buses in urban and extra-urban areas"
- C. Cassandras, "Optimal Assignment Policies for Mobility-On-Demand Systems"
- A. Malikopoulos, "A Socially-Efficient Emerging Mobility Market"