UNIVERSITÀ DI TRENTO
Dipartimento di Ingegneria Industriale

DII Seminar

Optimization Models and Methods for Cyber-socio-technical Systems: From Electric Racing to Sustainable Urban Mobility (with a Pandemic Appetizer)

March 3rd 2023, h. 10:00

Girasole room, Polo Ferrari 2, Via Sommarive 9, Trento

Speaker: **Mauro Salazar, TU Eindhoven**

Nowadays mobility is facing challenges ranging from urban traffic to environmental pollution and noise. The advent of new cyber-physical technologies such as autonomous driving, wireless communications and powertrain electrification might provide us with promising opportunities to face these challenges. Yet how to successfully combine such technologies in order to design and deploy economically-viable, socially-inclusive and environmentally-friendly mobility solutions is still unclear.

In this context, this talk will show how we devised optimization models and methods for research projects ranging from the single-vehicle level to the transportation-system level. In particular, I will first present models and optimization algorithms to design and control fully-electric endurance race cars via convex optimization. Second, I will give an overview on our work on Intermodal Autonomous Mobility-on-Demand—namely, a mobility system whereby self-driving cars provide on-demand mobility jointly with public transit and active modes—including optimization models to analyse the societal benefits stemming from these new mobility paradigms, design methods, and incentive schemes to align the behavior of selfish users with the system optimum whilst guaranteeing fairness.

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