Department of Civil Engineering
The University of Hong Kong

Distinguished Public Lecture

Large-scale Modeling and Perimeter Control for Congested Transport Networks

📅 Date: December 12, 2024 (Thursday)

🕐 Time: 4:30 p.m. to 5:30 p.m.

📍 Venue: LG1/F - KKLG109,
K.K. Leung Building, Main Campus, HKU

Professor Nikolaos Geroliminis
EPFL Lausanne, Switzerland

Abstract

Human mobility in congested city centers is a complex dynamical system with high density of population, many transport modes to compete for limited available space and many operators that try to efficiently manage different parts of this system. The primary motivation of this talk is to study the spatiotemporal relation of congested links in large networks, develop new advancements in the Macroscopic Fundamental Diagram, observe congestion propagation from a macroscopic perspective, identify the effect of multimodal interactions in network capacity and finally design network-level control strategies to improve multimodal mobility. Investigating the clustering problem over time help us reveal the hidden information during the process of congestion formation and dissolution. In this framework, we will be able to chase where congestion originates and how traffic management systems affect its formation and the time it finishes. Different control strategies are developed based on principles of optimization and control theory.

About the Speaker

Professor Nikolas Geroliminis is a Full Professor at EPFL and the head of the Urban Transport Systems Laboratory (LUTS). Before joining EPFL he was an Assistant Professor on the faculty of the Department of Civil Engineering at the University of Minnesota. He has a diploma in Civil Engineering from the National Technical University of Athens (NTUA) and a MSc and Ph.D. in civil engineering from University of California, Berkeley. His research interests focus primarily on urban transportation systems, traffic flow theory and control, public transportation and on-demand transport, car sharing, Optimization and Large Scale Networks. Among his recent initiatives is the creation of an open-science large-scale dataset of naturalistic urban trajectories of half a million vehicles that have been collected by one-of-a-kind experiment by a swarm of drones (https://open-traffic.epfl.ch/). Among other editorial responsibilities, he is currently the Editor-In-Chief of Transportation Research part C: Emerging Technologies.

An attendance of certificate will be issued to participants after the public lecture

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