



Séminaire-Webinaire conjoint avec / Joint Seminar-Webinar with
Chaire en Planification des systèmes intelligents de logistique et de transport /
Chair on Intelligent Logistics and Transportation Systems Planning



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MODELING ROUTING PROBLEMS OVER LAYERED GRAPHS: CHALLENGES AND OPPORTUNITIES
Joint the seminar by Zoom: <https://uqam.zoom.us/j/85128793107> / Meeting ID: 851 2879 3107

Abstract: Layered graph models have been recently shown to be a successful modeling option for complex combinatorial optimization problems. They associate information with nodes and arcs along one or multiple dimensions, extending the concept of time expanded networks. In this talk, we present the application of this modeling framework for different class of routing problems where the use of layered graphs might be particularly beneficial, providing an overview on models and solution methods designed to successfully solve the resulting large-scale, extended formulations. In particular, we will focus on different variants of the cumulative vehicle routing problem, with single depot and multiple depots both in deterministic and stochastic settings. We will also show how layered graphs can be used to model complex dependencies (arising for instance in routing problems with electric vehicles and drones) relatively easily, avoiding the use of complicated nonlinear formulations. The promising computational results show the effectiveness of this approach, which outperforms existing models in nearly all cases, but also open a discussion on how some of the proposed approaches can be extended for other relevant problem classes and how they could be integrated and exploited into efficient solution methods.

Bio: Maria Elena Bruni is Associate Professor in Operations Research at the University of Calabria since 2006. She received a Ph.D in Operations Research at the University of Calabria and a M.S. in Public Economy from the University of Sapienza (Rome). Her research activity focuses on designing solution methods for combinatorial problems under uncertainty and risk, with applications mainly in scheduling, routing and healthcare. She is co-author of more than 60 papers accepted in refereed journals and author of two book chapters. She received the best paper prize of the IMA Journal of Management mathematics journal in 2016. She is visiting CIRRELT and work with Prs Teodor Gabriel Crainic, Walter Rei and Guido Perboli.

MERCREDI / WEDNESDAY

27 juillet 2022, 10h30
July 27th, 2022, 10:30

Pavillon André-Aisenstadt
Room 5441

Ouvert à tous / Open to all

Responsable / Organizer

Teodor Gabriel Crainic