



Séminaire conjoint / Joint Seminar
Chaire de logistique et de transport et Chaire de recherche du Canada en distributique /
Chair in Logistics and Transportation and Canada Research Chair in Distribution Management

Claudia Bongiovanni

École Polytechnique Fédérale de Lausanne - EPFL, Suisse/Switzerland



THE ELECTRIC AUTONOMOUS DIAL-A-RIDE PROBLEM

Abstract: TheRide-sharing businesses are currently planning to expand their portfolio to include Dial-a-Ride Transit (DART) by the use of electric Autonomous Vehicles (AVs). This novel type of service introduces new operational challenges. First, as the vehicles are electric, battery management needs to be considered during route planning. Second, providing multiple depots becomes a crucial feature since autonomous vehicles can operate non-stop and need to continuously wait and relocate around the urban network. In this study, we present a new multi-objective Dial-a-Ride formulation for electric AVs (e-ADARP) which integrates tracking battery levels, decisions regarding detours to recharging stations, recharging times and decisions regarding destination depots with the classic Dial-a-Ride features. We formulate the problem as a Mixed Integer Linear Problem and devise a Branch-and-Cut algorithm with new valid inequalities derived from e-ADARP properties. Benchmark instances from literature as well as real data from Uber Technologies Inc. in San Francisco are employed for testing purposes.

Joint work with Mor Kaspi and Nikolas Geroliminis, EPFL

Note: Claudia Bongiovanni is a PhD student at the Urban Transport Systems Laboratory LUTS at EPFL. She is doing an internship at CIRRELT, under the supervision of Professor Jean-François Cordeau.

MARDI / TUESDAY

15 mai 2018 /
May 15th, 2018
10h30

Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

Organisateur / Organizer
Jean-François Cordeau

