



THE OPTIMISATION OF RECYCLABLE WASTE COLLECTION SERVICES

Abstract: Within the context of circular economies, sustainably recycling and treating waste has gained a lot of traction as of late. This resulted in an increase in the complexity of waste collection operations due to the multitude of available recycling-related technological features and configurations on waste collection vehicles. These technological features, along with the street types in the network and the collection pattern within each street, highly affect the efficiency of recyclable waste collection services. In this talk, I will present an overview of the technological features of collection vehicles, and discuss how these features affect the design of recyclable waste management systems. This overview is based on the analysis of the catalogue offerings of several garbage trucks manufacturers. Furthermore, I will demonstrate how these features and systems can be modelled as rich variants of the capacitated arc routing problem (CARP) in the context of curbside recyclable waste collection. Finally, I will showcase our proposed matheuristic algorithm for the Commodity-Split Multi-Compartment CARP with compression factors and commodity-dependent compartment capacities.

Bio: Hani Zbib is an assistant professor in Operations Management at the department of Analytics, Operations, and Information Technologies at UQAM. He holds a MSc in Engineering with a specialization in Transport and Logistics from the Technical University of Denmark, and a PhD in Economics and Business Economics from the University of Aarhus (Denmark). After completing his PhD, he became a postdoctoral fellow at the department of Logistics and Operations Management at HEC Montreal. His research interests revolve broadly around sustainable logistics and Operations Research. He focuses on modeling real-life sustainable applications in waste management, disaster operations management, and collaborative logistics, and developing innovative exact and heuristic algorithms to solve these models.

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Jacques Renaud