Séminaire-Webinaire conjoint avec / Joint Seminar-Webinar with
Chaire de recherche SCALE AI sur les chaînes d'approvisionnement pilotées par les données / SCALE-AI Chair in Data-Driven Supply Chains

SCALE|AI

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SINGLE-PERIOD WASTE COLLECTION WITH SENSORS

Zoom Link: https://polymtl-ca.zoom.us/j/9098098533

Abstract: We investigate the problem of allocating sensors in a single-period waste collection setting. Our model allows for measurement errors of the sensors, and correlation is assumed between pairs of bins. We derive theoretical properties, including several counter-intuitive results that contribute to the difficulty of optimization. Given a senor allocation, we develop an algorithm to approximate the expected routing cost, embedding an exact algorithm for the vehicle routing problem with stochastic demands. Using this algorithm, we investigate the effectiveness of several sensor allocation rules in numerical experiments. In the case of exact sensors, the allocation rule of placing sensors at bins with maximal variance yields the most savings. For sensors that suffer from measurement errors, we find that even with highly inaccurate sensors we can still achieve moderate cost savings, and the relative performance of the allocation rules is stable when sensors become increasingly inaccurate.

Bio: Ymro Hoogendoorn is a PhD student at the Erasmus University Rotterdam in the Netherlands. His research focuses on exact algorithm design and improvements for solving variants of the vehicle routing problem. His research includes both deterministic and stochastic optimization, as well as some data-driven approaches

MARDI / TUESDAY

22 novembre 2022, 11h00
November 22nd 2022, 11:00

Pavillon André-Aisenstadt
Room 5441

Zoom

Ouvert à tous / Open to all

Responsable / Organizer

Thibaut Vidal