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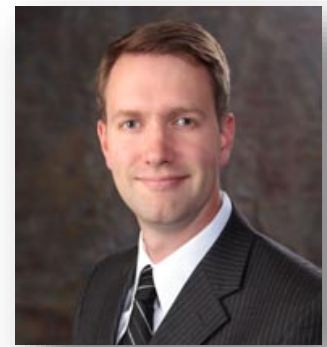Chaire de logistique et de transport et Chaire de recherche du Canada en distributique/
Chair in Logistics and Transportation and Canada Research Chair in Distribution Management

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DYNAMIC VEHICLE ROUTING: REVIEW & MODELING FRAMEWORK

Abstract: We present a literature review of and modeling framework for dynamic vehicle routing problems (DVRPs). Our review yields two key findings. First, DVRP papers often lack models of the underlying stochastic and dynamic problems that they study. Second, the overwhelming majority of DVRP solution methods employ route plans, a potential course of action to follow for future decision-making, e.g., a path through a set of realized service requests or a customer sequence coupled with various quantities required to implement heuristic decisionmaking methods. Essentially, the DVRP literature lacks models that connect real-world applicationswith solution methods. To bridge this gap, we introduce a route-based MDP model that extends the conventional MDP model for dynamic and stochastic optimization problems by redefining the conventional action space to operate on route plans. Under an easily satisfiable condition, we show route-based MDPs are equivalent to the conventional MDP model. We anticipate route-based MDPs will facilitate more scientific rigor in DVRP studies, provide researchers with a common modeling language, allow for better inquiry, and improve classification and description of solution methods. Using examples from the literature, we illustrate the value of connecting application and solution methodology via route-based MDPs.

Bio: Justin Goodson is an Associate Professor in the Department of Operations & Information Technology Management at Saint Louis University's Richard A. Chaifetz School of Business. He obtained a Ph.D. in Management Sciences from the University of Iowa, B.S. and M.S. degrees in Industrial and Manufacturing Systems Engineering from the University of Missouri-Columbia, and an MBA from the University of Missouri-Columbia. Dr. Goodson's research interests center on sequential decision problems with uncertain information, focusing largely on problems arising in transportation and logistics. Dr. Goodson teaches and consults in the areas of operations and supply chain analytics. http://www.slu.edu/~goodson/

LUNDI / MONDAY

10 décembre 2018 /
December 10th, 2018
10h30

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