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LEXICOGRAPHIC OR MULTI-OBJECTIVE OPTIMIZATION IN PRACTICE

Abstract: Multi-objective problems often arise in practice. It consists of optimizing several objectives f(1), f(2), ..., f(n) that are generally in conflict (e.g., increase quality, reduce cost, save time). A common way to tackle such problems is to give the same importance to each objective, and to optimize their values. This approach is referred to as Pareto optimization. Such a way of simultaneously optimizing all objectives ultimately leaves the involved decision makers with a set of tradeoff solutions, and they have then to select the most appropriate one for the company. Unfortunately, from a practical standpoint, this selection process among the possible tradeoff solutions could be complicated and finally abandoned. With lexicographic optimization, the managerial sensitive discussion occurs before the optimization is performed (i.e., without being in front of solutions). More precisely, the decision makers have to initially formulate preferences in order to rank the competing objectives (formally, f(1) > f(2) > ... > f(n)). Such an approach has many advantages: it reduces the conflicts within the company; it allows using more appropriate optimization tools; it has more chance to be finally used. In this presentation, we highlight the legitimacy of adopting a lexicographic optimization framework for multi-objective problems arising in various industrial contexts (e.g., production, transportation, supply chain management). The talk will be either in English or in French, depending on the audience. Moreover, this seminar is tailored for mathematicians and non-mathematicians alike, with a view to help 1) future decision makers; 2) graduate students; and 3) faculty working on framing and solving issues that involve managerial problems in various fields and industries.

Note: Nicolas Zufferey is a full professor of operations management at the University of Geneva in Switzerland, since 2008. His research activity focuses on designing solution methods for difficult and large optimization problems, with applications mainly in transportation, scheduling, production, inventory management, network design, supply chain management and telecommunications. He is member of the CIRRELT transportation and logistics research center (www.cirrelt.ca) and of the GERAD decision analysis research center (www.gerad.ca). He received his BSc and MSc degrees in Mathematics at EPFL (Swiss Federal Institute of Technology at Lausanne), as well as his PhD degree in operations research (2002). He was then successively a post-doctoral trainee at the University of Calgary (2003 – 2004) and an assistant professor at Laval University (2004 – 2007). He is the (co)author of more than 110 publications (papers in professional journals, proceedings of conferences, and book chapters) and has reviewed papers for 45 international journals. With 55 coauthors, he has had research activities with 22 Universities in Europe and America, as well as with 21 private companies.

MARDI / TUESDAY

6 août 2019 /
August 6th, 2019
15h00

Salle / Room 4488
Pavillon André-Aisenstadt
Université de Montréal

Ouvert à tous / Open to all

**Organisateurs / Organizers
Matthieu Gruson,
Rosemarie Santa González**

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