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5969OS Advanced Seminar Dynamical Systems

Speaker:
Prof. Dr. Joe Naoum-Sawaya
(Ivey Business School, Ontario, Canada)

Date:
Thursday, 25 April 2024, at 4:00 pm

Room:
(IM) SR 034

Title:
Optimization Models for Learning Consumer Preferences

Abstract:

In this talk, we will present new models for consumer preference learning which is a critical task in numerous marketing and operational decisions. A commonly used data-driven approach for consumer preference learning is based on eliciting consumer choice preferences and fitting a function that ultimately provides a utility score for each consumer choice. A major issue in this approach is the noise in choice data that is due to the natural "irrationality" of consumers in their decision-making which leads to inaccuracies in the learned models. We build upon ideas from machine learning and mathematical programming, and propose a robust preference elicitation model that guarantees robustness against feature noise (i.e., perturbations caused by consumer misconceptions) and label noise (i.e., response errors). For that, we present new optimization models that capture the specificity of consumer preference learning and discuss the results that show higher model accuracy as well as more detailed segmentation of consumers.