ID de Contribution: **167** Type: **Invited talk**

Learning optimal prescriptive trees robust to distribution shifts

mercredi 30 juillet 2025 11:15 (30 minutes)

In domains such as personalized medicine, historical data is used to learn what treatments to prescribe to maximize positive outcomes. Previous studies have proposed methods for creating prescriptive trees: human-interpretable diagrams that indicate what type of treatment an individual should get based on their measurements. However, a remaining problem is that the models perform worse over time when there is a shift in the data collection process or when data from a different source is used during the training and prediction phases. To solve this problem, we propose a method that considers data uncertainty by optimizing distributionally robust prescriptive trees. We formulate a linear-time algorithm to find the worst-case distribution shift within a given Wasserstein distance around the dataset and use it as a subroutine within the main problem. Our algorithm does not depend on any specific causal effect estimator and can, therefore, be applied in various contexts.

Authors: VOS, Daniël (Delft University of Technology); JUSTIN, Nathan (University of Southern California); VAYANOS, Phebe (University of Southern California)

Orateur: VOS, Daniël (Delft University of Technology)

Classification de Session: ML

Classification de thématique: Stochastic Programming