



COMBINATORIAL OPTIMIZATION AND INTERPRETABLE MACHINE LEARNING

Abstract: The use of machine learning algorithms in finance, medicine, and many other domains can profoundly impact human lives. Consequently, extensive efforts have been made to improve machine learning pipelines, making them more accurate, robust, and interpretable. In this seminar, we explore the synergy between combinatorial optimization algorithms and the machine learning domain. We focus on tree ensembles (including random forests and gradient boosting), a popular family of models with good empirical performance which is often used as a more transparent replacement to neural networks. We revisit important tasks related to model training, compression and explanation from combinatorial optimization lenses, harnessing solution techniques such as dynamic programming and mixed integer programming. Finally, we conclude the talk with other research perspectives connected to the application of combinatorial optimization techniques in interpretable machine learning.

Bio: Thibaut Vidal holds the SCALE-AI Chair in Data-Driven Supply Chains and is professor at the Department of Mathematics and Industrial Engineering (MAGI) of Polytechnique Montréal, Canada. He is also a member of CIRRELT and an adjunct professor at the Pontifical Catholic University of Rio de Janeiro, Brazil. His main domains of expertise relate to combinatorial optimization, heuristic search and interpretable machine learning, with applications to logistics and supply chain management, production management, resource allocation and information processing.

Zoom: <https://polymtl-ca.zoom.us/j/86286573575?pwd=YTNLc1drU0ttKzJONEdIVEliSkkwZz09>

JEUDI / THURSDAY

12 mai 2022, 10h30
May 12th, 2022, 10:30

Salle / Room 5441
Pavillon André-Aisenstadt
Université de Montréal
ou/or Lien Zoom

Ouvert à tous / Open to all

Responsable / Organizer

Martin Trépanier