CALL FOR APPLICATIONS (M. SC., PH.D. and POSTDOCTORAL RESEARCHER)
COMBINATORIAL OPTIMIZATION & TRUSTWORTHY MACHINE LEARNING

Details of the project. This announcement is part of the activities of the **SCALE-AI Research Chair in Data-Driven Supply Chains**, based at Polytechnique Montréal. This chair aims to explore the synergies between **operations research (OR**) and **trustworthy machine learning (ML)** to progress towards a new generation of decision-support systems with essential additional qualities, such as simplicity, accountability, robustness, and privacy. We consider areas of application where it is difficult to assess the impact of decisions due to sources of uncertainty or long planning horizons. We also conduct fundamental research on trustworthy machine learning algorithms [e.g., 1,2,3]. We conduct initial brainstorming sessions with each student to find a precise research subject along these lines that meets our respective interests.

Research environment. These research activities will be conducted under the supervision of Professor **Thibaut Vidal** (SCALE-AI Chair) and a co-director specifically identified for each research subject. The students will be affiliated with the Interuniversity Research Center on Enterprise Networks, Logistics, and Transport (CIRRELT) in Montreal. They will benefit from financial support in accordance with current practices at Polytechnique Montréal (currently a yearly scholarship of CA$ 21,500 and CA$ 25,000 at the master's and doctoral level, respectively, and an annual salary of CA$ 60,140 for postdoctoral fellows), technical and material support, as well as high performance computing resources via Calcul Québec.

Profiles sought. In addition to the qualities required for admission in the Department of Mathematics and Industrial Engineering (MAGI) of Polytechnique Montréal, candidates should have prior knowledge in one or more of the following areas: operations research, combinatorial optimization and machine learning, as well as good programming skills. Prior publication experience in international journals and conferences relevant to this research area is a significant asset for applications to postdoctoral positions.

Contact. Please contact us at the following address to apply or request additional information: chaire-scale-ai@polymtl.ca. Please attach the following mandatory information in your application: **CV, transcripts, motivation letter, research proposal (max 2 pages – only for PhD and postdoctoral positions), and two contacts of possible references**.

Our research team adheres to the principles of equity, diversity and inclusion promoted by Canada's Natural Sciences and Engineering Research Council. We are therefore very pleased to receive applications from women, members of visible minorities, and people with disabilities.

[1] Vidal, T., & Schiffer, M. (2020). Born-again tree ensembles. ICML'20. https://arxiv.org/pdf/2003.11132.pdf

[2] Forel, A., Parmentier, A., & Vidal, T. (2023). Explainable data-driven optimization: From context to decision and back again. ICML'23. https://arxiv.org/pdf/2301.10074.pdf

[3] Ferry, J., Fukasawa, R., Pascal, T., & Vidal, T. (2024). Trained random forests completely reveal your dataset. ICML'24. https://arxiv.org/pdf/2402.19232.pdf