Yingcong Tan, PhD

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Contact Information

https://yingcongtan.github.io/ Google Scholar/Yingcong Tan Github/Yingcong Tan

Education

Postdoctoral Fellow in Artificial Intelligence and Operations Research 2022-2023
University of Toronto, Toronto, Ontario, Canada
Advisor: Dr. Christopher Beck

Postdoctoral Fellow in Inverse Optimization and Active Learning 2021-2022
Concordia University, Montréal, Québec, Canada
Advisor: Dr. Daria Terekhov, Dr. Andrew Delong

Ph.D. in Industrial Engineering 2017-2021
Concordia University, Montréal, Québec, Canada
Advisor: Dr. Daria Terekhov, Dr. Andrew Delong
Thesis: *Learning Linear Programs: Inverse Optimization as a Form of Machine Learning*
Honour: Concordia Accelerator Award, Concordia Merit Scholarship

M.Eng. in Industrial Engineering 2015 - 2016
Concordia University, Montréal, Québec, Canada
Honour: The F.A. Gerard Prize, Power Corporation of Canada Graduate Fellowship

Bachelor of Applied Science in Engineering Science 2007 - 2012
University of Toronto, Toronto, Ontario, Canada

Professional Experience

Senior Product Developer in Operations Research Sept. 2023 - Present
IBS Software, Montréal, Québec, Canada

Research Intern Apr. - Aug. 2021
Zhejiang Lab, Zhejiang, China
Advisor: Zhouchen Lin, Peking University

Project Coordinator Feb. 2013 - Aug. 2014
Cardiovascular Rehabilitation and Prevention Program
Toronto Rehabilitation Institute, Toronto, Ontario, Canada

Engineering Intern Sep. 2010 - Aug. 2011
Dept. of Telecommunication Engineering
Hydro One Inc., Toronto, Ontario, Canada

Refereed Conference Proceedings

Tan, Y.*, Delong, A., & Terekhov, D. (2020). *Learning Linear Programs from Optimal Decisions.* In Neural Information Processing Systems (Spotlight paper, top 20% of the accepted papers, top 5% of the submitted papers).

Tan, Y.*, Delong, A., & Terekhov, D. (2019). *Deep Inverse Optimization.* Integration of Constraint Programming, Artificial Intelligence, and Operations Research, CPAIOR 2019, Thessaloniki, Greece, June 4-7 2019, (pp. 540-556).

Tan, Y.*, & Terekhov, D. (2018). *Logic-Based Benders Decomposition for Two-Stage Flexible Flow Shop Scheduling with Unrelated Parallel Machines.* In Advances in Artificial Intelligence: 31st Canadian Conference on Artificial Intelligence, CAI2018, Toronto, ON, Canada, May 8-11, 2018, (pp. 60-71).

Tan, Y.* (2018). *Automated Scheduling: Reinforcement Learning Approach to Algorithm Policy Learning.* Extended Abstract. In Advances in Artificial Intelligence: 31st Canadian Conference on Artificial Intelligence, Canadian AI 2018, Toronto, ON, Canada, May 8-11, 2018, (pp. 335-338).

Refereed Journal

Marzolini, S.*, Swardfager, W., Alter, D. A., Oh, P. I., **Tan, Y.**, & Goodman, J. M. (2015). *Quality of Life and Psychosocial Measures Influenced by Exercise Modality in Patients with Coronary Artery Disease.* European Journal of Physical and Rehabilitation Medicine, 51(3), 291-299.

Working Papers

Tan, Y.*, Delong, A., & Terekhov, D.. *A Comparison of Duality-Based Models for Inverse Linear Optimization.* (Submitted to Operational Research - An International Journal (ORIJ), **under review**)

Bianco, G. L.*, Zhang, J., **Tan, Y.**, & Beck, C.. *Solving Vehicle Routing Problems with QUBO Hardware.* (Submitted to Information Systems and Operational Research, **under review**).

Zhang, J.*, **Tan, Y.***, Bianco, G. L., Takanaga Y., Takita Y., & Beck, C.. *Large Neighborhood Search and Route Schedule Decomposition for Solving the Pickup and Delivery Problem with Transfer Scheduling.* (Submitted to Journal of Constraints, **under review**).

Pichugina, O.*, **Tan, Y.***, & Beck, C.. *Deriving Compact QUBO Models via Multilevel Constraint Transformation.* (Submitted to the Journal of Global Optimization, **under review**).

Pichugina, O.*, **Tan, Y.***, Zheng L., & Beck, C.. *Quadratic Unconstraint Binary Optimization Models for Solving SAT Problems.* (Submitted to The 30th International Conference on Principles and Practice of Constraint Programming, **under review**)

Zheng L.*, **Tan, Y.**, & Beck, C.. *Learning the Discount Factor and Reward Function Parameters Jointly in Inverse Reinforcement Learning with an Application in the Animal Behaviour Study.* (In preparation).

Presentations

A Comparison of Duality-Based Models for Inverse Linear Optimization.
Presentation at CORS2023, Montréal, Québec, Canada, May 29-31, 2023.

Learning Linear Programs: Inverse Optimization as a Form of Machine Learning.
Presentation at IE Seminar series, University of Toronto, March 2023.

Learning Linear Programs from Optimal Decisions.
Presentation at NeurIPS, December 6-12, 2020.

Deep Inverse Optimization.
Presented at CPAIOR2019, Thessaloniki, Greece, June 4-7, 2019.
Presented at JOPT2019, Montréal, Québec, Canada, May 13-15, 2019.

Decomposition-Based Exact Algorithms for Two-Stage Flexible Flow Shop Scheduling with Unrelated Parallel Machines.
Presented at CORS2018, Halifax, Nova Scotia, Canada, June 4-7, 2018.
Presented at CAI2018, Toronto, ON, Canada, May 8-11, 2018.

Automated Scheduling: Reinforcement Learning Approach to Algorithm Policy Learning.
Presentation at CAI2018 (Student Symposium), Toronto, ON, Canada, May 8-11, 2018.

Selected Awards and Scholarships

Concordia Accelerator Award, *Concordia University* ($5,000)	2020
Concordia Merit Scholarship, *Concordia University* ($10,000)	2018-2019
Best Paper Award, *GERAD* (Scientific Writing Student Competition)	2018
Conference and Exposition Award, *Concordia University* ($3,000)	2018-2020
F.A. Gerard Prize, *Concordia University* (Graduation Prize)	2017
Power Corporation of Canada Grad. Fellowship, *Concordia University* ($5,000)	2017

Service

Academic Reviewer

Transportation Research Part b 2021
Journal of Computers & Operations Research 2019
International Journal of Production Research. 2017

Graduate Student Committee 2016 - 2020
Dept. of Mechanical, Industrial and Aerospace Engineer
Concordia University, Montréal, Quebec, Canada

Team Lead of Question Creation & Automation 2016 - 2019
The Operations Research Challenge (TORCH)
Concordia University, Montréal, Quebec, Canada

Clinic Exercise, & Research Volunteer 2010-2014
Cardiovascular Prevention and Rehabilitation Program
Toronto Rehabilitation Institute, Toronto, Ontario, Canada

Teaching Experience

Guest Lecturer 2021
Concordia University, Montréal, Québec, Canada
Course title: INDU6611 (Applied Industrial System Analytics).
Lecture title: *Neural Networks and Recent Research in the Integration of Neural Networks and Optimization Models.*

Teaching Assistant 2017-2020
Concordia University, Montréal, Québec, Canada
- INDU 480 Cases in Industrial Engineering
  Department of Mechanical, Industrial and Aerospace Engineering
- COMP6321 Machine Learning
  Department of Computer Science and Software Engineering
- INDU6231 Scheduling Theorem
  Department of MEechanical, Industrial and Aerospace Engineering

Teaching Certificates
- **Perspective Professor In Training Program** 2023
  University of Toronto, Toronto, Ontario, Canada
- **Graduate Seminar in University Teaching** 2022
  Concordia University, Montréal Québec, Canada