Er Raqabi El Mehdi

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Employment

Laval University (ULaval)   Quebec, Canada
Incoming Assistant Professor   *2026*

- Faculty: Faculty of Business Administration (FSA)
- Department: Operations and Decision Systems (DSO)
- Labs: Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation (CIRRELT) and Group for Research in Decision Analysis (GERAD)
- Roles: Research, Teaching, Service

Georgia Institute of Technology (GaTech)   Atlanta, USA
Postdoctoral Fellow   *2025*

- Faculty: H. Milton Stewart School of Industrial & Systems Engineering (ISyE)
- Lab: The NSF AI Research Institute for Advances in Optimization (AI4OPT)
- Mentor: Prof. Pascal Van Hentenryck
- Roles: Research (from designing methodology and supervising students to publishing papers), Industry (from visiting partners and designing SOWs to transferring the technology), Teaching (from high school to graduate students), Service (from popularizing science to mentoring students)

Education

Polytechnique Montreal (Poly)   Montreal, Canada
Doctor of Philosophy in Operations Research   *2020 - 2024*

- Research Topic: Primal Methods For Very Large-Scale Optimization
- Advisors: Profs. Issmaïl El Hallaoui and François Soumis
- Relevant Coursework: Mathematical Programming (A^*), Integer Programming (A^*), Graph and Network Theory (A^*), Modeling in Operations Research (A^*), Decomposition Methods and Real-Time Optimization (A^*)
- Thesis recommended by the jury for the *Best Thesis Prize* at Polytechnique Montreal
- Top 1% (**GPA: 4.0/4.0**)

International University of Japan (IUJ)   Niigata, Japan
Master of Business Administration   *2017 - 2019*

- Research Topic: Design of Electric Vehicles Charging Station Network
- Advisor: Prof. Wenkai Li
- Relevant Coursework: Operations Management (A^*), Supply Chain Management (A^*), Applied Statistics (A^*), Computer-based Decision Modeling (A^*), Infrastructure Planning and Management (A^*)
- Valedictorian (**GPA: 3.9/4.0**)

Ecole Mohammadia d'Ingénieurs (EMI)   Rabat, Morocco
Master of Engineering in Industrial Engineering   *2013 - 2016*

- Entry based on a competitive national exam following two years of intensive maths and physics courses
- Relevant Coursework: Operations Research (A), Applied Mathematics (A^*), Probabilities and Statistics (A^*), Data Science (A), Lean Manufacturing (A^*)
- With Honors (**GPA: 3.8/4.0**)

Awards

- **GERAD 2024 Best Thesis Competition**, *$3000*, GERAD, 2025
- **MAGI 2024 Best Thesis Prize**, Polytechnique Montreal, 2025
- **EURO Excellence in Practice Award**, *Winner*, *$4500*, EURO, 2024
- **MITACS Accelerate Fellowship**, *$30,000*, MITACS, 2023
- **IFORS Prize for OR in Development**, *Finalist*, IFORS, 2023
- **GERAD Competition for Doctoral Fellowships 'Conference Fees'**, *$1,750*, GERAD, 2022
- **FRQNT Ph.D. Merit Scholarship**, *$84,000*, FRQNT, 2021
- **IVADO Ph.D. Excellence Scholarship**, *$75,000*, IVADO Institute, 2021
- **Vanier Canada Graduate Scholarship**, *Finalist*, Government of Canada, 2021
- **OCP Group Fellowship**, *$32,000*, OCP Group, 2020

- **Increased Tuition Fees Exemption**, *$25,000*, Polytechnique Montreal, 2020
- **James Brian Quinn Scholar**, *MBA Batch Valedictorian*, IUJ, 2019
- **Beta Gamma Sigma Academic Honor Society**, *Top 1% MBA Batch*, IUJ, 2019
- **Valedictorian Speech**, *IUJ Graduation Ceremony*, IUJ, 2019
- **Dean's List**, *Academic Terms Distinction* ($\times$3), IUJ, 2017-2019
- **First Year Special Recognition**, *Top 1% MBA Batch*, IUJ, 2018
- **ABE Initiative Scholarship**, *$120,000*, Japan International Cooperation Agency, 2017
- **Third Year Valedictorian**, *Distinction*, EMI, 2016

Grants

- **Learning Decompositions: A Smart Approach to Large Problems**, Fonds de Recherche du Québec – Nature et Technologies (FRQNT), Principal Investigator, *$84,000*, 2021-2025
- **Decomposition Learning: An Intelligent Framework For Large Scale Optimization Problems**, Institute for Data Valorization (IVADO), Principal Investigator, *$75,000*, 2021-2024

Publications

Published & Accepted

[1] **Er Raqabi El Mehdi**, Beljadid Ahmed, Bennouna Mohammed Ali, Bennouna Rania, Boussaadi Latifa, El Hachemi Nizar, El Hallaoui Issmaïl, Fenders Michel, Jamali Mohamed Anouar, Si Hammou Nabil and Soumis Francois (2025). OCP Optimizes its Supply Chain for Africa. ***INFORMS Journal on Applied Analytics***, 55(3):1-20.

- Winner at the EURO Excellence in Practice Award 2024 and Finalist at the IFORS Prize for OR in Development 2023

[2] **Er Raqabi El Mehdi**, Bani Abderrahman, Morabit Mouad, Blondin Massé Alexandre, Besner Alexandre, Fournier Julien and El Hallaoui Issmaïl. A Decomposition Matheuristic for the Transient Stability Constrained Unit Commitment at Hydro-Quebec. ***IEEE Transactions on Power Systems***, 1-11.

[3] **Er Raqabi El Mehdi** (2025). Primal Methods For Very Large-scale Optimization. ***Ph.D. Thesis***, Polytechnique Montreal.

[4] **Er Raqabi El Mehdi**, Wu Yong, El Hallaoui Issmaïl and Soumis François (2024). Towards Resilience: Primal Large-scale Re-optimization. ***Transportation Research Part E: Logistics and Transportation Review***, 192, 103819.

[5] **Er Raqabi El Mehdi**, Himmich Ilyas, El Hachemi Nizar, El Hallaoui Issmaïl and Soumis François (2023). Incremental LNS Framework for Integrated Production, Inventory, and Vessel Scheduling: Application to a Global Supply Chain. ***Omega***, 116, 102821.

[6] Himmich Ilyas, **Er Raqabi El Mehdi**, El Hachemi Nizar, El Hallaoui Issmaïl, Metrane Abdelmoutalib and Soumis François (2023). MPILS: An Automatic Tuner for MILP Solvers. ***Computers & Operations Research***, 159, 106344.

[7] **Er Raqabi El Mehdi** and Li Wenkai (2023). An Electric Vehicle Migration Framework for Public Fleet Planning. ***Transportation Research Part D: Transport and Environment***, 118, 103732.

[8] **Er Raqabi El Mehdi** (2019). Design of Electric Vehicles Charging Station Network. ***Master's Thesis***, International University of Japan.

Under Review

[9] **Er Raqabi El Mehdi**, El Hallaoui Issmaïl and Soumis François. The Primal Benders Decomposition. *Under Review.*

[10] Mohan Ved, **Er Raqabi El Mehdi** and Van Hentenryck Pascal. A Fair OR–ML Framework for Resource Substitution in Large-Scale Networks. *Under Review.*

[11] Cai Junyang, **Er Raqabi El Mehdi**, Van Hentenryck Pascal and Dilkina Bistra. ID-PaS: Identity-Aware Predict-and-Search for General Mixed-Integer Linear Programs. *Under Review.*

[12] Bani Abderrahman, **Er Raqabi El Mehdi**, El Hallaoui Issmaïl and Corréa Ayoub Insa. A Benders-based Branch-Price-and-Cut Algorithm for the Multi-Period Petrol Station Replenishment Problem. *Under Review.*

[13] Bani Abderrahman, **Er Raqabi El Mehdi**, El Hallaoui Issmaïl and Corréa Ayoub Insa. The Petrol Station Replenishment Problem: A Case Study from West Africa. *Under Review.*

Working

[14] **Er Raqabi El Mehdi**, Dalmeijer Kevin and Van Hentenryck Pascal. A Rolling-Space Branch-and-Price Algorithm for the Multi-Compartment Vehicle Routing Problem with Multiple Time Windows. *Soon to be submitted.*

[15] Arnovi Moinuddin, **Er Raqabi El Mehdi** and Van Hentenryck Pascal. Scheduling and Routing in the Flexible Job Shop with Heterogeneous Transbots: A Constraint Programming Approach. *Working Paper.*

[16] Tinghan Ye, Ved Mohan, **Er Raqabi El Mehdi** and Van Hentenryck Pascal. When the LLM becomes the OR Expert: A Framework for Primal Large-Scale Re-optimization. *Working Paper.*

Research Experience

AI Research Institute for Advances in Optimization (NSF AI4OPT)   **Atlanta, USA**
Research Scientist   *2025*
- Mentor: Prof. Pascal Van Hentenryck
- Research Areas: Operations Research, Machine Learning, Optimization Proxies, Logistics, Large-Scale Optimization, Mathematical Programming
- Applications: Transportation, Production, Manufacturing, Operations and Supply Chain Management
- Collaborations with more than 10 Leading US Companies

Katholieke Universiteit Leuven (KU Leuven)   **Leuven, Belgium**
Visiting Scholar   *2024*
- Advisor: Prof. Roel Leus
- Research Areas: Operations Research, L-shaped Method, Improved Primal Simplex, Large-Scale Optimization
- Applications: Transportation, Mining, Operations and Supply Chain Management
- Collaborations with OCP and UM6P

Griffith University (Griff)   **Queensland, Australia**
Visiting Scholar   *2023*
- Advisor: Prof. Yong Wu
- Research Areas: Operations Research, Re-optimization, Resilience, Supply Chain Management, Machine Learning for Operations Research
- Applications: Mining, Operations and Supply Chain Management
- Collaborations with OCP and UM6P

Groupe d'Etudes et de Recherche en Analyse des Décisions (GERAD)   **Montreal, Canada**
Research Assistant   *2020 - 2025*
- Advisors: Profs. Issmaïl El Hallaoui and François Soumis
- Research Areas: Operations Research, Large-Scale Optimization, Decompositions, Metaheuristics, Solvers, Data Science, Machine Learning for Operations Research
- Applications: Airline, Mining, Transportation, Operations and Supply Chain Management
- Collaborations with OCP, UM6P, Laminaar, Hydro Québec, and IVADO

International University of Japan (IUJ)   **Niigata, Japan**
Research Project   *2018 - 2019*
- Advisor: Prof. Wenkai Li
- Developed an Electric Vehicles Migration Framework for Developing Countries

Teaching Experience

Laval University (ULaval)   **Quebec, Canada**
Instructor   *2026*
- GSO1000 - Operations and Logistics, 4 hours/week for 15 weeks, Undergraduate (Winter 2026)

Polytechnique Montreal (Poly)   **Montreal, Canada**
Teaching Assistant   *2021 - 2024*
- MTH6406 - Modeling in Operations Research, 4 hours/week for 13 weeks, Masters and Ph.D. (Winter 2021, Winter 2022, Winter 2023, Winter 2024)
- Stats: Winter 2021 Average Class GPA: 3.70/4, Winter 2022 Average Class GPA: 3.73/4, Winter 2023 Average Class GPA: 3.81/4, Winter 2024 Average GPA: 3.75/4
- Feedback: *'The corrections of homework were very clear, and I am honestly impressed with Mehdi's responsiveness given he was in Australia during the course', 'I think Mehdi was great! He was quick to respond and always available to answer questions.', 'Mehdi introduced me to a classmate I can work with. It was quite helpful and enjoyable.'*

Griffith University (Griff) — Queensland, Australia
Teaching Assistant — 2023
- 7108IBA - Supply Chain Modelling, Postgraduate (Trimester 1 2023)
- 7102IBA - Strategic Supply Chain Management, Postgraduate (Trimester 1 2023)

International University of Japan (IUJ) — Niigata, Japan
Teaching Assistant — 2018 - 2019
- OPR1010 - Operations Management, 3 hours/week for 12 weeks, Average Class GPA: 3.72/4, Masters (Winter 2019)
- QIS1070 - Computer-based Decision Modeling, 3 hours/week for 12 weeks, Average Class GPA: 3.65/4, Masters (Fall 2019)
- QIS1020 - Applied Statistics, 3 hours/week for 12 weeks, Average Class GPA: 3.68/4, Masters (Fall 2019)
- Feedback: *'I could obtain B^+ for statistics because of Mehdi's TA sessions', 'Too sad that we do not have any other TA session. I really enjoyed every session', 'Thank you very much Mehdi for being are a good instructor'*

JDS Tutor — 2017 - 2018
- Tutor for MBA students under the Graduate School of International Management. Topics: QIS1020 - Applied Statistics, QIS1070 - Computer Based Decision Making, ACT1010 - Financial Accounting, FIN1010 - Corporate Finance, ECN1010 - Managerial Economics, 2 hours/week for 48 weeks
- Stats: 6 out of 7 tutored students reached the lowest GPA level required for continuing studies and graduation
- Feedback: *'As for Mehdi, it is above all the way he delivers the message with all the energy he exudes, but also the relevance of his advice. If today I am comfortable in the MBA program, it is partly thanks to his guidance'*

Industry Experience

Hydro Québec — Varennes, Canada
Operations Research Consultant (Part-Time) — 2023 - 2024
- Tackling Hydro Québec's specific Unit Commitment Problem (UCP) using efficient large-scale optimization algorithms
- Collaborating closely with researchers from the Hydro Québec Research Institute (IREQ)

Fostergy Technologies Inc. — Niigata, Japan
Operations Researcher & Data Scientist (Part-Time) — 2017 - 2019
- Designing an efficient and effective selection of the appropriate electric vehicle components and prediction of its behavior over different kinds of routes/duty cycles and over a huge number of parameters' choices
- Enhancing user's simulation capability and reducing development time many folds

ProQuest — Yokohama, Japan
Systems Engineering Intern (Part-Time) — 2018
- Promoting the online ProQuest's product training
- Planning, Designing, and Implementing the use of databases and the conduct of research within IUJ Library

Induproj — El Jadida, Morocco
Quality & Safety Manager (Full-Time) — 2016 - 2017
- Leading quality management through the international standard ISO 9001, quality control of the work done on the construction sites, and quality assurance into which I was dealing with customers' requirements and seeking their satisfaction
- Leading safety management through the standard OHSAS 18001 and safety control of all the work done on the construction sites. Achieved the main safety KPI of 0 accident

Bombardier — Casablanca, Morocco
Operations Management Intern (Full-Time) — 2016
- Designing and implementing an Automated Production System (APS) for assembly lines monitoring
- Introducing Data mining for knowledge extraction

Managem Group — Tinghir, Morocco
Industrial Challenge (Full-Time) — 2015
- Modeling and Simulating the Silver Treatment Plant at SMI
- Mapping of Ag rocks flows at SMI

Advising

Current Ph.D. Students
- Ved Mohan (Advisor: Pascal Van Hentenryck)
- Moinuddin Arnovi (Advisor: Pascal Van Hentenryck)
- Ye Joe (Advisor: Pascal Van Hentenryck)

Former Ph.D. Interns
- Junyang Cai (AI4OPT, Gatech, April 2025)

Former Undergraduate Interns
- Chetan Reddy Bojja (ISyE & AI4OPT, GaTech, March-June 2025)
- Ryan J Rodriguez (ISyE & AI4OPT, GaTech, February-May 2025)

Selected Talks

A Fair OR–ML Framework for Resource Substitution in Large-Scale Networks
- INFORMS Annual Meeting, Atlanta, USA, 2025

OCP Optimizes its Supply Chain for Africa and The World
- EURO Excellence in Practice Award, Copenhagen, Denmark, 2024
- GERAD Day, Montreal, Canada, 2024

The Primal Benders Decomposition
- Joint Seminar CIRRELT & OSD Department, Quebec, Canada, 2025
- 33rd European Conference on Operational Research, Copenhagen, Denmark, 2024

Towards Resilience: Primal Large-Scale Re-Optimization
- JOPT, Montreal, Canada, 2024

An Efficient Decomposition Matheuristic for the Unit Commitment Problem with Power Stability Constraints
- 38th Annual Conference of the Belgian Operational Research Society, Antwerp, Belgium, 2024

OCP Optimizes its Supply Chain for Africa
- IFORS Prize for OR in Development, Santiago, Chile, 2023
- Seminar 'Meet a GERAD Researcher!', Montreal, Canada, 2023

An Electric Vehicle Migration Framework for Public Fleet Planning
- International University of Japan, Niigata, Japan, 2023

Modeling for Strategic Supply Chain Management
- Griffith University Business School, Queensland, Australia, 2023

MPILS: An Automatic Tuner for MILP Solvers
- CORS/INFORMS International Conference, Vancouver, Canada, 2022
- JOPT, Montreal, Canada, 2022

Design of Electric Vehicle Charging Stations
- SLACJ 6th International Conference on Indo-Pacific Studies, Niigata, Japan, 2019

Achieving Traceability within Supply Chains through Data Science
- International Conference On Advances In Cloud Computing, Data Science And Big Data Analytics, Tokyo, Japan, 2019

Service & Engagement Activities

Leadership & Organizing
- *Science Popularization:* Bringing science to the general public, to disseminate scientific knowledge, foster experience sharing, and introduce research topics to students via Medium & LinkedIn, 2018-Present
- *Better Research Better Life:* Leading the organization and execution of the first Library Day in IUJ history. The initiative is still going on within more Japanese universities, 2019
- *Head of Houses:* Leading the social interaction among international students from around 70 countries through the House System. Motto is: "Honoring Our Unique Social Environment". The initiative is still going on, 2018

Outreach & Volunteering
- *OR@AFRICA Initiative:* Founder with Prof. Issmail El Hallaoui, following our participation in the IFORS Prize for OR in Development, Santiago, Chile, 2023. The initiative is still growing with more OR Professors and Researchers joining, 2023-2025
- *IVADO Student Intersectoral Committee:* Member of the IVADO Student Intersectoral Committee, 2023-2025
- *Canadian Operations Research Society:* Volunteer in the Montreal OR Student Chapter (MORSC), 2022
- *Industrial Seminars:* Speaker at seminars within the Industrial Engineering Department of EMI, 2019-Present
- *Tutor:* Academic orientation and schooling for Moroccan undergraduate and graduate students, 2017-Present
- *Snow Shoveling:* Volunteer in snow shoveling activities to support elderly citizens of Minamiuonuma City, 2018

Skills

- **Programming & Software:** C++, CPLEX, GUROBI, Python, LaTeX(Proficient), R, Git, VBA, SQL (Familiar)
- **Languages:** Arabic (Native), French, English (Bilingual)
- **Interests:** Football, Snowboarding, Swimming

Selected Media Coverage

- **El Mehdi Er Raqabi Wins The 2024 GERAD Best Thesis Competition**, GERAD, 2025
- **GERAD Team Wins The EURO Excellence in Practice Award 2024**, EURO, 2024
- **EURO Excellence in Practice Award 2024**, EURO, 2024
- **A GERAD Team Finalist for The EURO Excellence in Practice Award 2024**, GERAD, 2024
- **OCP Optimizes Its Supply Chain for Africa and The World**, EURO, 2024
- **OR IMPACT: Optimising OCP Group's Moroccan Phosphate Supply Chain**, IFORS, 2024
- **A GERAD Team Finalist for The IFORS Prize for OR in Development 2023**, GERAD, 2023
- **Six Finalists for The IFORS Prize for OR in Development 2023**, IFORS, 2023
- **IVADO Student Portraits - Er Raqabi El Mehdi**, IVADO Institute, 2022
- **IUJ Held Its 2019 Graduation Ceremony**, International University of Japan, 2019
- **GSIM's First Batch of BGS Lifetime Members**, International University of Japan, 2019
- **La coopération japonaise élargit son spectre**, Laformation News, 2017

References

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and Systems Engineering
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