Ryan Cory-Wright

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Academic Appointments

Imperial College London, Imperial Business School — *London, UK*
Assistant Professor of Analytics and Operations — *July 2023-present*

IBM Research — *Cambridge, MA*
Herman Goldstine Postdoctoral Fellow — *July 2022-June 2023*

Research Interests

- Optimization: integer, semidefinite, conic, polynomial, data-driven
- Machine learning and artificial intelligence: interpretability, scientific discovery, cross-validation, low-rank
- Applications: business analytics, energy (decarbonization, pricing schemes), finance

Education

Massachusetts Institute of Technology, Operations Research Center — *Cambridge, MA*
Ph.D. in Operations Research — *September 2017-May 2022*
Advisor: Dimitris Bertsimas | Thesis: Integer and matrix optimization: A nonlinear approach

University of Auckland, Faculty of Engineering — *Auckland, New Zealand*
B.E. (1st Class Honors) in Engineering Science — *February 2014-October 2016*
Four-year degree completed in three years via accelerated pathway (extra class per semester)

Journal Papers

J14. *The Need for Verification in AI-Driven Scientific Discovery*
C. Cornelio, T. Ito, **R. Cory-Wright**, S. Dash, and L. Horesh, to appear, **Philosophical Transactions of the Royal Society A**, 2026.

J13. *Decarbonizing OCP*
D. Bertsimas, **R. Cory-Wright**, and V. Digalakis Jr., **Manufacturing & Service Operations Management**, 27(6): 1760-1778, 2025.
- **Finalist, M&SOM practice-based research competition (2023)**
- **Honorable mention, MIT Operations Research Center Student Paper Award (Digalakis, 2023)**
- Featured in Imperial Business news article "Optimising renewables: a model for profitable decarbonisation" [link]

J12. *A Stochastic Benders Decomposition Scheme for Large-Scale Stochastic Network Design*
D. Bertsimas, **R. Cory-Wright**, J. Pauphilet, and P. Petridis, **INFORMS Journal on Computing**, 37(5):1163–1181, 2025.

J11. *Evolving Scientific Discovery by Unifying Data and Background Knowledge with AI Hilbert*
R. Cory-Wright, C. Cornelio, S. Dash, B. El Khadir, and L. Horesh, **Nature Communications** 15:5922, 2024.
- **IBM Outstanding Technical Achievement Award (2024)**
- Featured in IBM Research blog "Meet AI Hilbert, a new algorithm for transforming scientific discovery" [link]

J10. *Sparse Plus Low-Rank Matrix Decomposition: A Discrete Optimization Approach*
D. Bertsimas, **R. Cory-Wright**, and N. A. G. Johnson, **Journal of Machine Learning Research**, 24(267):1–51, 2023.
- **First place, INFORMS Data Mining Society Student Paper Award (2021)**
- **A. E. Grant Poster Award for Best Algorithm, CAARMS (Johnson, 2022)**

J9. *A New Perspective on Low-Rank Optimization*
D. Bertsimas, **R. Cory-Wright**, and J. Pauphilet, **Mathematical Programming**, 202(1-2):47–92, 2023.

J8. *Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints*
D. Bertsimas, **R. Cory-Wright**, and J. Pauphilet, **Operations Research**, 70(6):3321–3344, 2022.
- **First place, INFORMS George Nicholson Student Paper Competition (2020)**

J7. *A Scalable Algorithm for Sparse Portfolio Selection*
D. Bertsimas and **R. Cory-Wright**, **INFORMS Journal on Computing**, 34(3):1489-1511, 2022.

J6. *Solving Large-Scale Sparse PCA to Certifiable (Near) Optimality*
D. Bertsimas, **R. Cory-Wright**, and J. Pauphilet, **Journal of Machine Learning Research**, 23(13):1-35, 2022.

J5. *A Unified Approach to Mixed-Integer Optimization Problems With Logical Constraints*
D. Bertsimas, **R. Cory-Wright**, and J. Pauphilet, **SIAM Journal on Optimization**, 31(3):2340-2367, 2021.
- **First place, INFORMS Computing Society Student Paper Award (2019)**

J4. *From Predictions to Prescriptions: A Data-Driven Response to COVID-19*
D. Bertsimas, L. Bouissoux, **R. Cory-Wright** et al., **Health Care Management Science**, 24:253-272, 2021.
- **First place, INFORMS Healthcare Applications Society William Pierskalla Paper Award (2020)**

J3. *On Stochastic Auctions in Risk-Averse Electricity Markets With Uncertain Supply*
R. Cory-Wright and G. Zakeri, **Operations Research Letters**, 48(3):376-384, 2020.

J2. *On Polyhedral and Second-Order Cone Decompositions of Semidefinite Optimization Problems*
D. Bertsimas and **R. Cory-Wright**, **Operations Research Letters**, 48(1):78-85, 2020.

J1. *Payment Mechanisms for Electricity Markets With Uncertain Supply*
R. Cory-Wright, A. Philpott, and G. Zakeri, **Operations Research Letters**, 46(1):116-121, 2018.
- **First place, Operations Research Society of New Zealand Student Paper Award (2016)**

Working Papers

W7. *Pricing Discrete and Nonlinear Markets With Semidefinite Relaxations*
C. Guo, L. Henderson, **R. Cory-Wright**, and B. Yang, submitted.

W6. *Stability Regularized Cross-Validation*
R. Cory-Wright and A. Gómez, submitted.

W5. *Bridging the Gap Between Scientific Laws Derived by AI Systems and Canonical Knowledge via Abductive Inference with AI-Noether*
K. Srivastava, S. Dash, **R. Cory-Wright**, B. Trager, C. Cornelio, and L. Horesh, submitted.

W4. *Improved Approximation Algorithms for Orthogonally Constrained Problems Using Semidefinite Optimization*
R. Cory-Wright and J. Pauphilet, submitted.
- **Preliminary version accepted at IPCO 2026**

W3. *Disjunctive Branch-And-Bound for Certifiably Optimal Low-Rank Matrix Completion*
D. Bertsimas, **R. Cory-Wright**, S. Lo, and J. Pauphilet, major revision at **INFORMS Journal on Computing**.

W2. *Optimal Cross-Validation for Sparse Linear Regression*
R. Cory-Wright and A. Gómez, major revision at **INFORMS Journal on Computing.**

W1. *Sparse PCA With Multiple Components*
R. Cory-Wright and J. Pauphilet, major revision at **Operations Research**.
- **First place, INFORMS DMDA Workshop Paper Award (Theoretical Track, 2024)**

Articles in Preparation

P4. *Sensor Location to Reduce Air Pollution*
L. Meng, **R. Cory-Wright**, D. Den Hertog, and W. Wiesemann, in progress.

P3. *On the Convex Hulls of Convex Quadratic Optimization Problems With Rank Constraints*
R. Cory-Wright and J. Pauphilet, in progress.

P2. *Thinking Coherently About Interpretability*
R. Cory-Wright, D. Keehan, and A. Jacquillat, in progress.

P1. *A Minimax Shrinkage Scheme for Wasserstein Distributionally Robust Optimization*
L. Meng, **R. Cory-Wright**, and W. Wiesemann, in progress.

Books in Preparation

B1. *Integer and Matrix Optimization: A Nonlinear Approach*
D. Bertsimas, **R. Cory-Wright**, and J. Pauphilet, in preparation.

Selected Awards

Note: * denotes student paper award won by collaborator for coauthored work

2024	First place, **INFORMS DMDA Paper Award**, Theoretical Track
2023	Honorable mention, **Student Paper Award**, MIT ORC (Digalakis Jr.*)
2023	Finalist, **Practice-Based Research Competition**, M&SOM Society
2022	**A. E. Grant Poster Award for Best Algorithm**, CAARMS (Johnson*)
2022	**IBM Herman Goldstine Fellowship**, IBM Department of Mathematical Sciences
2021	First place, **Student Paper Award**, INFORMS Data Mining Society
2020	First place, **George Nicholson Student Paper Competition**, INFORMS
2020	First place, **Pierskalla Paper Award**, INFORMS Health Applications Society
2019	First place, **Student Paper Award**, INFORMS Computing Society
2017	**Senior Scholar Award** (top of cohort), University of Auckland
2016	First place, **Student Paper Award**, Operations Research Society New Zealand
2014-16	**Dean's List** (top 5% of cohort), Faculty of Engineering, University of Auckland

Teaching

Imperial

Fundamentals of Python (MSc AI Applications and Innovation) — *Imperial-X*
Course Creator and Instructor — *Fall 2025*

Introduction to Machine Learning in Python (MSc AI Applications and Innovation) — *Imperial-X*
Course Creator and Instructor — *Fall 2024*

Decision Making Under Uncertainty (PhD) — *Imperial Business School*
Course Creator and Instructor — *Spring 2024, 2025, 2026*

Data Structures and Algorithms (undergraduate) — *Imperial Business School*
Course Creator and Instructor — *Spring 2024, 2025, 2026*

Optimization and Decision Models (Online MSc Business Analytics) — *Imperial Business School*
Instructor — *Spring 2024*

MIT

15.095 Machine Learning Under a Modern Optimization Lens (MBAn/PhD) — *MIT*
Head Teaching Assistant — *Fall 2019, 2021*

15.071 The Analytics Edge (MBA) — *MIT*
Head Teaching Assistant — *Fall 2020*

15.093 Optimization Methods (MSc/PhD) — *MIT*
Teaching Assistant — *Fall 2018*

Kaufman Teaching Certificate Program — *MIT Teaching and Learning Lab*
Participant, eight practice-based workshops on teaching effectiveness — *Fall 2021*

Student Advising

Postdoctoral Fellows

1. Dominic Keehan, *ICRF Postdoctoral Fellow at Imperial Business School* (starting August 2026).

Doctoral Students

1. Lingjun Meng, *Third year PhD student at Imperial Business School* (co-advised with Wolfram Wiesemann, research on optimization under uncertainty with application to sustainability).

Oral Presentations

Invited Presentations at Academic Institutions and Single-Track Workshops

Improved Approximation Algorithms for Low-Rank Problems Using Semidefinite Optimization

- Aarhus Business Analytics (scheduled) *2026*
- Princeton ORFE (scheduled) *2026*
- Imperial Analytics and Operations (internal seminar) *2026*
- CMU Tepper OR *2025*
- Michigan IOE *2025*
- IBM Yorktown Heights *2025*
- Workshop on Information Learning *2025*

Sparse PCA With Multiple Components

- Cornell ORIE *2025*
- Northwestern IEMS *2025*
- Imperial-X *2024*

Evolving Scientific Discovery by Unifying Data and Background Knowledge with AI Hilbert

- Cornell Tech *2025*
- Turing Institute *2024*
- Summer Workshop on Innovations in Management Science *2024*

Optimal Low-Rank Matrix Completion: Semidefinite Relaxations and Eigenvector Disjunctions

- Toronto Rotman Young Scholar Seminar Series *2023*
- Imperial College London Control and Optimization *2023*
- Mixed Integer Programming Workshop *2023*

A New Perspective on Low-Rank Optimization

- IBM Yorktown Heights *2024*
- Lehigh ISE *2022*

Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints

- IBM Yorktown Heights *2022*
- Rice CMOR *2022*
- CMU Tepper OR *2022*
- USC Viterbi ISE *2022*
- Georgia Tech ISyE *2022*
- Johns Hopkins Carey OM *2022*
- Princeton ORFE *2022*
- Imperial Analytics and Operations *2021*
- University of Auckland Engineering Science *2020*

Invited Presentations at Companies

The Future of Artificial Intelligence

- South Port New Zealand Board of Directors Meeting *2024*

Other Academic and Industry Experience

Collaborations with organizations: Analytics for a Better World (2025-present), OCP (2021-22), CIBC (2017-20).

University of Auckland, Department of Engineering Science — *Auckland, New Zealand*
Research Assistant — *December 2016-July 2017*

SUEZ Smart Solutions — *Auckland, New Zealand*
Assistant Optimization Engineer — *December 2014-February 2016*

Activities and Service

Organizing seminars and workshops

2024- Co-organizer, London Operations Research Day (LORD) [web link]
2019- Session chair, INFORMS Annual Meeting, ICCOPT, IOS, SIOPT, other conferences
2019 Co-organizer, MIT ORC student seminar series

External

2025 Cluster chair, INFORMS Optimization Society Conference
2025 Committee member, INFORMS Computing Society Student Paper Award
2024-25 Judge, M&SOM Student Paper Competition
2017- Member, INFORMS (Main, Computing Society, Optimization Society)
Member, Mathematical Optimization Society

Imperial

Note: IB denotes service for Imperial Business School, ICL denotes service for Imperial College London

2025-26 Coordinator, Analytics and Operations Faculty Hiring *IB*
2025- Member, AI and Education Committee *IB*
2025- Member, Economics of AI initiative *ICL*
2023-25 Member, Interdisciplinary AI initiative (Imperial-X), *ICL*
2024-25 PhD early/late stage assessment committee, Yanwei Sun, Zhongze Cai, Fupeng Sun *IB*

Peer Review

Reviewer for academic journals: *Operations Research (OR), Management Science (MS), Manufacturing and Service Operations Management (M&SOM), Mathematical Programming (MAPR), Journal of Machine Learning Research (JMLR), Mathematics of Operations Research (MOOR), Foundations of Computational Mathematics (FOCM), INFORMS Journal on Computing (IJOC), INFORMS Journal on Optimization (IJOO), SIAM Journal on Optimization (SIOPT), Transportation Science (TS), SIAM Journal on Matrix Analysis and Applications (SIMAX), SIAM Journal on Mathematics of Data Science (SIMODS), Operations Research Letters (ORL), European Journal of Operational Research (EJOR).*

- 2024 Meritorious Reviewer Award, INFORMS Journal on Computing.
- (Partial) evidence of reviewing activity at ORCID [link] and Web of Science [link]

Reviewer for extended abstracts or papers at academic conferences: EC 2026, ICML 2026, IPCO 2026, M&SOM 2025, IPCO 2024.