

Ryan Cory-Wright

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Academic Appointments

Imperial College London, Imperial Business School
Assistant Professor of Analytics and Operations

London, UK
Jul. 2023-present

IBM Research

Herman Goldstine Postdoctoral Fellow

Cambridge, MA
Jul. 2022-Jun. 2023

Research Interests

- **Optimization:** integer, semidefinite, conic, polynomial, under uncertainty, 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

Sept. 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

Feb. 2014-Oct. 2016

Four-year degree completed in three years via accelerated pathway (extra class per semester)

Journal Papers

J13. *Decarbonizing OCP*

D. Bertsimas, **R. Cory-Wright**, and V. Digalakis Jr., **Manufacturing & Service Operations Management**, 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 Accomplishment 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**, 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 E. Nicholson Student Paper Award (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. *AI Noether—Bridging the Gap Between Scientific Laws Derived by AI Systems and Canonical Knowledge*
K. Srivastava, S. Dash, **R. Cory-Wright**, B. Trager, and L. Horesh, working paper, soon to be submitted.
- W6. *The Need For Verification in AI-driven Scientific Discovery*
C. Cornelio, T. Ito, **R. Cory-Wright**, S. Dash, and L. Horesh, submitted
- W5. *Improved Approximation Algorithms for Low-Rank Problems Using Semidefinite Optimization*
R. Cory-Wright and J. Pauphilet, working paper, rewrite in progress.
- W4. *Stability Regularized Cross-Validation*
R. Cory-Wright and A. Gómez, working paper, soon to be submitted.
- W3. *Disjunctive Branch-And-Bound for Certifiably Optimal Low-Rank Matrix Completion*
D. Bertsimas, **R. Cory-Wright**, S. Lo, and J. Pauphilet, submitted.
- 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. *Thinking Coherently About Interpretability*
R. Cory-Wright and A. Jacquillat, in progress.
- P3. *Sensor Location to Reduce Air Pollution*
L. Meng, **R. Cory-Wright**, D. Den Hertog, and W. Wiesemann, in progress.
- P2. *A Minimax Shrinkage Scheme for Wasserstein Distributionally Robust Optimization*
L. Meng, **R. Cory-Wright**, and W. Wiesemann, in progress.
- P1. *Semidefinite Programming Relaxation for Copositive Dual Pricing*
C. Guo, L. Henderson, **R. Cory-Wright**, and B. Yang 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 E. Nicholson Student Paper Award**, 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
- 2013 **Outstanding Scholar** (top 50 high-school students in New Zealand), NZQA

Teaching

IMPERIAL

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*

Data Structures and Algorithms (undergraduate) *Imperial Business School*
 COURSE CREATOR AND INSTRUCTOR *Spring 2024, 2025*

Optimisation 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

DOCTORAL STUDENTS

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

Oral Presentations

Note: conference presentations omitted for brevity. Regular attendee at conferences including INFORMS, M&SOM, IOS, SIOPT.

INVITED PRESENTATIONS AT ACADEMIC INSTITUTIONS AND SINGLE-TRACK WORKSHOPS

Improved Approximation Algorithms for Low-Rank Problems Using Semidefinite Optimization

• CMU Tepper OR	2025 (scheduled)
• Michigan IOE	2025 (scheduled)
• IBM Yorktown Heights	2025 (scheduled)
• Workshop on Information Learning	2025
<i>Sparse PCA With Multiple Components</i>	
• Cornell ORIE	2025
• Northwestern IEMS	2025
• Imperial-X	2024
<i>Evolving Scientific Discovery by Unifying Data and Background Knowledge with AI Hilbert</i>	
• Cornell Tech	2025
• Turing Institute	2024
• Summer Workshop on Innovations in Management Science	2024
<i>Optimal Low-Rank Matrix Completion: Semidefinite Relaxations and Eigenvector Disjunctions</i>	
• Toronto Rotman Young Scholar's Seminar Series	2023
• Imperial College London Control and Optimization	2023
• Mixed Integer Programming Workshop	2023
<i>A New Perspective on Low-Rank Optimization</i>	
• IBM Yorktown Heights	2024
• Lehigh ISE	2022
<i>Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints</i>	
• 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 College London Analytics and Operations	2021
• University of Auckland Engineering Science	2020
INVITED PRESENTATIONS AT COMPANIES	
<i>The Future of Artificial Intelligence</i>	
• South Port New Zealand Board of Directors Meeting	2024

Other Academic and Industry Experience

Collaborations with companies/non-profits: Analytics for a Better World (2025-), OCP (2021-22), CIBC (2017-20).

University of Auckland, Department of Engineering Science	Auckland, New Zealand
RESEARCH ASSISTANT	Dec. 2016-Jul. 17

SUEZ Smart Solutions	Auckland, New Zealand
ASSISTANT OPTIMIZATION ENGINEER	Dec. 2014-Feb. 2016

Activities and Service

ORGANIZING SEMINARS AND WORKSHOPS

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| 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 Program Committee, 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 Chair, Analytics and Operations Faculty Search Committee 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 (IJO)*, *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)*, etc.

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

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