

Ryan Cory-Wright

✉ r.cory-wright@imperial.ac.uk | 🏠 ryancorywright.github.io | 💻 ryancorywright | 📖 Google Scholar [Link]

Academic Appointments

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

London, UK
July 2023-present

IBM Research

Herman Goldstine Postdoctoral Fellow

Cambridge, MA
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

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 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**, 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, C. Cornelio, and L. Horesh, soon to be submitted.
- W6. *Stability Regularized Cross-Validation*
R. Cory-Wright and A. Gómez, soon to be submitted.
- W5. *Disjunctive Branch-And-Bound for Certifiably Optimal Low-Rank Matrix Completion*
D. Bertsimas, **R. Cory-Wright**, S. Lo, and J. Pauphilet, submitted.
- W4. *Improved Approximation Algorithms for Low-Rank Problems Using Semidefinite Optimization*
R. Cory-Wright and J. Pauphilet, submitted.
- W3. *Optimal Cross-Validation for Sparse Linear Regression*
R. Cory-Wright and A. Gómez, major revision at **INFORMS Journal on Computing**.
- W2. *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)
- W1. *The Need for Verification in AI-Driven Scientific Discovery*
C. Cornelio, T. Ito, **R. Cory-Wright**, S. Dash, and L. Horesh, minor revision at **Philosophical Transactions of the Royal Society A**

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

Fundamentals of Python (MSc AI Applications and Innovation)	<i>Imperial-X</i>
COURSE CREATOR AND INSTRUCTOR	<i>Fall 2025</i>
Introduction to Machine Learning in Python (MSc AI Applications and Innovation)	<i>Imperial-X</i>
COURSE CREATOR AND INSTRUCTOR	<i>Fall 2024</i>
Decision Making Under Uncertainty (PhD)	<i>Imperial Business School</i>
COURSE CREATOR AND INSTRUCTOR	<i>Spring 2024, 2025</i>
Data Structures and Algorithms (undergraduate)	<i>Imperial Business School</i>
COURSE CREATOR AND INSTRUCTOR	<i>Spring 2024, 2025</i>
Optimization and Decision Models (Online MSc Business Analytics)	<i>Imperial Business School</i>
INSTRUCTOR	<i>Spring 2024</i>

MIT

15.095 Machine Learning Under a Modern Optimization Lens (MBAn/PhD)	<i>MIT</i>
HEAD TEACHING ASSISTANT	<i>Fall 2019, 2021</i>
15.071 The Analytics Edge (MBA)	<i>MIT</i>
HEAD TEACHING ASSISTANT	<i>Fall 2020</i>
15.093 Optimization Methods (MSc/PhD)	<i>MIT</i>
TEACHING ASSISTANT	<i>Fall 2018</i>
Kaufman Teaching Certificate Program	<i>MIT Teaching and Learning Lab</i>
PARTICIPANT, eight practice-based workshops on teaching effectiveness	<i>Fall 2021</i>

Student Advising

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

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

University of Auckland, Department of Engineering Science
RESEARCH ASSISTANT

Auckland, New Zealand
December 2016-July 17

SUEZ Smart Solutions
ASSISTANT OPTIMIZATION ENGINEER

Auckland, New Zealand
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 (IJC)*, *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.