

Ryan Cory-Wright

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Academic Appointments

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

London, UK
July 2023-

IBM Research
Herman Goldstine Postdoctoral Fellow

Cambridge, MA
2022-2023

Education

Massachusetts Institute of Technology
PH.D. IN OPERATIONS RESEARCH

Cambridge, MA
May 2022

Advisor: Dimitris Bertsimas | Thesis: Integer and Matrix Optimization: A Nonlinear Approach

University of Auckland
B.E. (1ST CLASS HONORS) IN ENGINEERING SCIENCE

Auckland, New Zealand
May 2017

Research Interests

Methodological: Analytics, Optimization, Machine Learning, Statistics. Applications: Energy, Finance, Healthcare.

Selected Honors and Awards

- 2022 IBM Herman Goldstine Fellowship, IBM Department of Mathematical Sciences
- 2021 First place, Student Paper Competition, INFORMS Data Mining Section
- 2020 First place, George Nicholson Student Paper Competition, INFORMS
First place, William Pierskalla Paper Award, INFORMS Health Applications Society
- 2019 First place, ICS Student Paper Award, INFORMS Computing Society
- 2017 Senior Scholar Award (top of graduating class), University of Auckland
- 2016 First place, Young Practitioner's Prize, Operations Research Society New Zealand

Publications

Solving Large-Scale Sparse PCA to Certifiable (Near) Optimality
with Dimitris Bertsimas, Jean Pauphilet, Journal of Machine Learning Research, 23(13):1-35, 2022.

A Scalable Algorithm for Sparse Portfolio Selection
with Dimitris Bertsimas, INFORMS Journal on Computing, Articles in Advance, 2022.

Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints
with Dimitris Bertsimas, Jean Pauphilet, Operations Research, Articles in Advance, 2021.
• First place, INFORMS George Nicholson Student Paper Competition (2020).

A Unified Approach to Mixed-Integer Optimization Problems With Logical Constraints
with Dimitris Bertsimas, Jean Pauphilet, SIAM Journal on Optimization, 31(3):2340-2367, 2021.
• First place, INFORMS Computing Society Student Paper Competition (2019).

- From Predictions to Prescriptions: A Data-Driven Response to COVID-19*
with Dimitris Bertsimas et al., *Health Care Management Science*, 24:253-272, 2021.
- First place, INFORMS Healthcare Applications Society William Pierskalla Best Paper Award (2020).
- On Stochastic Auctions in Risk-Averse Electricity Markets With Uncertain Supply*
with Golbon Zakeri, *Operations Research Letters*, 48(3):376-384, 2020.
- On Polyhedral and Second-Order Cone Decompositions of Semidefinite Optimization Problems*
with Dimitris Bertsimas, *Operations Research Letters*. 48(1):78-85, 2020.
- Payment Mechanisms for Electricity Markets With Uncertain Supply*
with Andy Philpott and Golbon Zakeri, *Operations Research Letters*. 46(1):116-121, 2018.
- First place, Operations Research Society of New Zealand Young Practitioner's Prize (2016).

Articles Under Review

- Sparse Plus Low-Rank Matrix Decomposition: A Discrete Optimization Approach*
with Dimitris Bertsimas and Nicholas Johnson, under review at JMLR.
- First place, INFORMS Data Mining Section Student Paper Competition (2021)
- A New Perspective on Low-Rank Optimization*
with Dimitris Bertsimas, Jean Pauphilet, under review at Math. Prog. (second decision: major revision).

Books in Preparation

- Integer and Matrix Optimization: A Nonlinear Approach*
with Dimitris Bertsimas and Jean Pauphilet, Dynamic Ideas Press, targeted to appear in 2023.

Research Experience

- COVID Analytics: Core Team Member Cambridge, MA
PRINCIPAL INVESTIGATOR: DIMITRIS BERTSIMAS 2020
- Material from the effort available at: covidanalytics.io
- Operations Research Center-MIT: Research Assistant Cambridge, MA
SUPERVISOR: DIMITRIS BERTSIMAS 2017 - 2022
- University of Auckland- Electric Power Optimization Center: Research Assistant Auckland, New Zealand
SUPERVISOR: GOLBON ZAKERI 2016-2017

Teaching Experience (As TA)

- 15.095 Machine Learning Under a Modern Optimization Lens MIT
HEAD TEACHING ASSISTANT Fall 2019, 2021
- 15.071 The Analytics Edge MIT
HEAD TEACHING ASSISTANT Fall 2020
- 15.093 Optimization Methods MIT
TEACHING ASSISTANT Fall 2018

Other Teaching Experience

- INFORMS Teaching Effectiveness Colloquium INFORMS
PARTICIPANT October 2021

15.S60 Computing in Operations Research and Statistics
SESSION INSTRUCTOR: ADVANCED COMPUTATIONAL OPTIMIZATION

MIT
Jan 2019, Jan 2020

15.089 Analytics Capstone
PROJECT MENTOR

MIT
Summer 2018, Summer 2019

Selected Invited Talks

A New Perspective on Low-Rank Optimization

ICCOPT, July 2022; INFORMS Optimization Society, March 2022; INFORMS, October 2021.

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

Rice CAAM, January 2022; CMU Tepper OR, January 2022; USC Viterbi ISE, January 2022; Georgia Tech ISyE, January 2022; Johns Hopkins Carey OM, January 2022; Princeton ORFE, January 2022; Imperial College London Analytics and Operations, October 2021; MIT LIDS & Stats Tea, March 2021; MIT ORC Student, December 2020; INFORMS Nicholson, November 2020; University of Auckland Engineering Science, October 2020.

Solving Large-Scale Sparse PCA To Certifiable (Near) Optimality

Guest lecture for MIT Class 15.095 Machine Learning Under a Modern Optimization Lens, November 2021

A Unified Approach to Mixed-Integer Optimization Problems With Logical Constraints

MIP Workshop, May 2020; INFORMS, October 2019; ICCOPT, August 2019.

A Scalable Algorithm for Sparse Portfolio Selection

INFORMS, November 2018.

Payment Mechanisms and Risk-Aversion in Electricity Markets With Uncertain Supply

ISMP Bordeaux, July 2018; ORSNZ Young Practitioner's Prize Finalists Session, December 2016.

Industry Experience

SUEZ Smart Solutions

ASSISTANT OPTIMIZATION ENGINEER

Auckland, New Zealand

2014-2016

Peer Review

Reviewer

Operations Research, INFORMS Journal On Computing, INFORMS Journal on Optimization, Mathematics of Operations Research, SIAM Journal on Mathematics of Data Science, European Journal of Operational Research, IEEE Transactions on Power Systems, Journal of Global Optimization, and Omega.

Skills and Activities

Programming: Julia (preferred), R, VBA, SQL, MATLAB, Mathematica, C++, HTML, CSS.

Software: JuMP (preferred), Gurobi (preferred), MOSEK (preferred), CPLEX, most languages/solvers.

Languages: English (native), French (conversational), German (beginner).

Citizenship: New Zealand, Ireland.