

Ryan Cory-Wright

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Academic Appointments

Imperial College Business School, Imperial College London
Assistant Professor of Analytics and Operations | Affiliated with Imperial-X

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

Auckland, New Zealand
May 2017

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

Research Interests

Methodological: 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

A New Perspective on Low-Rank Optimization

with Dimitris Bertsimas and Jean Pauphilet, Mathematical Programming, 2023.

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

with Dimitris Bertsimas, Jean Pauphilet, Operations Research, 70(6):3321–3344, 2022.

- First place, INFORMS George Nicholson Student Paper Competition (2020).

A Scalable Algorithm for Sparse Portfolio Selection

with Dimitris Bertsimas, INFORMS Journal on Computing, 34(3):1489-1511, 2022.

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 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).

- Abridged eight-page version features in the 2020 INFORMS Computing Society Newsletter.

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

A Stochastic Benders Decomposition Scheme for Large-Scale Data-Driven Network Design
with Dimitris Bertsimas, Jean Pauphilet, and Periklis Petridis, submitted.

Sparse PCA With Multiple Components
with Jean Pauphilet, submitted.

Decarbonizing OCP
with Dimitris Bertsimas and Vassilis Digalakis Jr., major revision at M&SOM.

Sparse Plus Low-Rank Matrix Decomposition: A Discrete Optimization Approach
with Dimitris Bertsimas and Nicholas Johnson, R&R at JMLR.

- First place, INFORMS Data Mining Section Student Paper Competition (2021)

Articles in Preparation

Optimal Low-Rank Matrix Completion via Semidefinite Relaxations and Eigenvector Disjunctive Branching
with Dimitris Bertsimas, Sean Lo, and Jean Pauphilet, in preparation.

Optimal Cross-Validation for Sparse Ridge Regression
with Andrés Gómez, in preparation.

AI Hilbert: From Data and Background Knowledge to Automated Scientific Discovery via Polynomial Optimization
with Sanjeeb Dash, Bachir El Khadir, and Lior Horesh, in preparation.

Books in Preparation

Integer and Matrix Optimization: A Nonlinear Approach
with Dimitris Bertsimas and Jean Pauphilet, Dynamic Ideas Press.

Teaching Experience (As TA)

15.095 Machine Learning Under a Modern Optimization Lens
HEAD TEACHING ASSISTANT

MIT
Fall 2019, 2021

15.071 The Analytics Edge
HEAD TEACHING ASSISTANT

MIT
Fall 2020

15.093 Optimization Methods
TEACHING ASSISTANT

MIT
Fall 2018

Invited Talks

INVITED RESEARCH SEMINARS

A New Perspective on Low-Rank Optimization
Lehigh ISE, November 2022.

Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints
IBM TJ Watson Research Center, August 2022; 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; University of Auckland Engineering Science, October 2020.

INVITED PRESENTATIONS AT SINGLE-TRACK WORKSHOPS

Optimal Low-Rank Matrix Completion via Semidefinite Relaxations and Eigenvector Disjunctive Branching
MIP Workshop, May 2023.

INVITED CONFERENCE PRESENTATIONS AND GUEST LECTURES

Decarbonizing OCP
SIAM Conference on Optimization, June 2023.

Sparse PCA With Multiple Components
INFORMS, October 2022.

A New Perspective on Low-Rank Optimization
ICCOPT, July 2022; IOS, March 2022; INFORMS, October 2021.

Mixed-Projection Conic Optimization: A New Paradigm for Modeling Low-Rank Constraints
INFORMS Nicholson Finalists, November 2020.

Solving Large-Scale Sparse PCA To Certifiable (Near) Optimality
Guest Lecture for MIT Class 15.095, November 2021; IOS, March 2020 (canceled, COVID-19).

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

Industry Experience _____

SUEZ Smart Solutions
ASSISTANT OPTIMIZATION ENGINEER

Auckland, New Zealand
2014-2016

Selected External Activities and Service _____

2023	SIAM Conference on Optimization, Mini-Symposium Organizer
2022	INFORMS Optimization Society Meeting, Session Chair
2019, 21, 23	INFORMS Annual Meeting, Session Chair
2017-	Member, INFORMS (Main Body, Computing Society, Optimization Society)
	Member, Mathematical Optimization Society

Reviewer

Operations Research, Management Science, Manufacturing and Service Operations Management, Mathematics of Operations Research, Foundations of Computational Mathematics, INFORMS Journal On Computing, INFORMS Journal on Optimization, SIAM Journal on Optimization, SIAM Journal on Matrix Analysis and Applications, SIAM Journal on Mathematics of Data Science, European Journal of Operational Research, IEEE Transactions on Power Systems, Journal of Global Optimization, Journal of Optimization Theory and Applications, and Omega.