Ryan Cory-Wright

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Academic Appointments

Imperial College Business School, Imperial College London — *London, UK*
Assistant Professor of Analytics and Operations | Affiliated with Imperial-X — *July 2023-*

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

Education

Massachusetts Institute of Technology — *Cambridge, MA*
Ph.D. in Operations Research — *May 2022*
Advisor: Dimitris Bertsimas | Thesis: Integer and Matrix Optimization: A Nonlinear Approach

University of Auckland — *Auckland, New Zealand*
B.E. (1st Class Honors) in Engineering Science — *May 2017*

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

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 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).

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).

Articles in Preparation

Decarbonizing OCP
with Dimitris Bertsimas and Vassilis Digalakis, targeted at MSOM (September 2022).

Large-Scale Sparse PCA With Multiple Principal Components
with Jean Pauphilet, targeted at Operations Research (September 2022).

Certifiably Optimal Low-Rank Matrix Completion
with Dimitris Bertsimas, Jean Pauphilet and Sean Lo, targeted at Operations Research (October 2022).

Solving Stochastic Network Design Problems at Scale
with Dimitris Bertsimas, Jean Pauphilet and Pericles Petrides, targeted at IJOC (November 2022).

Books in Preparation

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

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*

Selected Invited Talks

Invited Research Seminars

Mixed-Projection Conic Optimization: A New Paradigm for Modeling 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; University of Auckland Engineering Science, October 2020.

Invited Industry Presentations

Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints
IBM TJ Watson Research Center, August 2022.

Conference Presentations and Guest Lectures

Certifiably Optimal Low-Rank Matrix Completion
MIP Workshop, May 2023.

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 due to 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 — *Auckland, New Zealand*
Assistant Optimization Engineer — *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.

Other

Languages: English (native), French (conversational), German (beginner).
Citizenship: New Zealand, Ireland.