Ryan Cory-Wright

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Academic Experience

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

Imperial College Business School, Imperial College London   *London, UK*
Assistant Professor of Analytics and Operations   *July 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: 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).
    • Finalist, MIP Workshop student poster competition (2021).

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).
    • Finalist, MIP Workshop student poster competition (2020).

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*

Kaufman Teaching Certificate Program   *MIT Teaching and Learning Lab*
PARTICIPANT   *Fall 2021*

15.S60 Computing in Operations Research and Statistics   *MIT*
SESSION INSTRUCTOR: ADVANCED COMPUTATIONAL OPTIMIZATION   *Jan 2019, Jan 2020*

15.089 Analytics Capstone   *MIT*
PROJECT MENTOR   *Summer 2018, Summer 2019*

Industry Experience

SUEZ Smart Solutions   *Auckland, New Zealand*
ASSISTANT OPTIMIZATION ENGINEER   *2014-2016*

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.

Professional Activities and Service

2022	INFORMS Optimization Society Meeting, Session Chair
2019, 21	INFORMS Annual Meeting, Session Chair
2019	ORC Student Seminar Series, Coordinator
2017-	Member, INFORMS (Society, Computing Society, Optimization Society)
	Member, Mathematical Optimization Society

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.