

Ryan Cory-Wright

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Education	Massachusetts Institute of Technology, Cambridge, MA, USA Candidate for PhD in Operations Research; expected completion, May 2022. GPA: 5.0/5.0 Advisor: Dimitris Bertsimas University of Auckland, Auckland, New Zealand BE (1 st Class Honours) in Engineering Science, May 2017. GPA 8.84/9.00 Advisors: Golbon Zakeri, Andy Philpott.
Research Interests	Methodological: Optimization (discrete/conic/stochastic/robust), machine learning, statistics Applications: Finance, energy (market design/renewable integration)
Preprints	<i>Mixed-Projection Conic Optimization: A New Paradigm for Modeling Rank Constraints</i> with Dimitris Bertsimas and Jean Pauphilet, to be submitted to Operations Research. <i>Solving Large-Scale Sparse PCA to Certifiable (Near) Optimality</i> with Dimitris Bertsimas and Jean Pauphilet, Mathematical Programming, under review. <i>A Unified Approach to Mixed-Integer Optimization: Nonlinear Formulations and Scalable Algorithms</i> with Dimitris Bertsimas and Jean Pauphilet, Operations Research, under review. <ul style="list-style-type: none">• 1st place, INFORMS Computing Society Student Paper Competition (2019).• Abridged version appeared in the Spring 2020 INFORMS Computing Society Newsletter.• Finalist, MIP Workshop student poster competition (2020). <i>A Scalable Algorithm for Sparse Portfolio Selection</i> with Dimitris Bertsimas, INFORMS Journal on Computing, under review.
Publications	<i>On Stochastic Auctions in Risk-Averse Electricity Markets With Uncertain Supply</i> with Golbon Zakeri, Operations Research Letters, 48 (3):376-384, 2020 <i>On Polyhedral and Second-Order Cone Decompositions of Semidefinite Optimization Problems</i> with Dimitris Bertsimas, Operations Research Letters. 48 (1):78-85, 2020 <i>Payment Mechanisms for Electricity Markets With Uncertain Supply</i> with Andy Philpott and Golbon Zakeri, Operations Research Letters. 46 (1):116-121, 2018. <ul style="list-style-type: none">• 1st place, ORSNZ Young Practitioner's Prize (2016).
Talks	<i>A Unified Approach to Mixed-Integer Optimization: Nonlinear Formulations and Scalable Algorithms</i> Presented at: ICCOPT, August 2019; INFORMS Annual Meeting, October 2019; MIT ORC Student Seminar Series (invited), November 2019; LIDS student conference, January 2020; MIP Workshop, May 2020 (via Zoom). <i>A Scalable Algorithm for Sparse Portfolio Selection</i> Presented at: INFORMS Annual Meeting, November 2018; ORC 65 th anniversary, November 2018 (poster); LIDS student conference, January 2019; MIP Workshop, June 2019 (poster). <i>Payment Mechanisms and Risk-Aversion in Electricity Markets With Uncertain Supply</i> Presented at: ORSNZ, December 2016, EPOC mini workshop, July 2017; ISMP, July 2018.

Selected Honors and Awards

- 2020** Finalist, MIP Workshop 2020 Best Student Poster Competition
For: *A Unified Approach to Mixed-Integer Optimization: Nonlinear Formulations and Scalable Algorithms*
- 2019** First place, INFORMS Computing Society (ICS) Student Paper Award
For: *A Unified Approach to Mixed-Integer Optimization: Nonlinear Formulations and Scalable Algorithms*
- 2017** Senior Scholar Award, University of Auckland (top of graduating class).
- 2016** First place, Young Practitioner's Prize, Operations Research Society of New Zealand.
For: *Payment Mechanisms for Electricity Markets With Uncertain Supply*
- 2014-2016** Deans Honours List, Faculty of Engineering, University of Auckland (top 5% of class).
- 2014-2016** First in Course Award x5, University of Auckland.
- 2013** NZQA Outstanding Scholar Award (top 50 high school students in New Zealand).

Research Experience

- 2020-Present** **Massachusetts Institute of Technology COVIDAnalytics Initiative, Core Team Member**
PI: Dimitris Bertsimas
Member of MIT's COVIDAnalytics initiative, which quickly develops and delivers tools for hospitals and policymakers in the US to combat COVID-19. Site: covidanalytics.io/
- 2017-Present** **Massachusetts Institute of Technology, Cambridge, MA, USA**
Research Assistant. Advisor: Dimitris Bertsimas
Developing modern optimization techniques for solving central problems in the operations research, machine learning and statistics literatures, with focus on certifiable optimality and scalability. Also aiming to make methodological and algorithmic contributions to the fields of discrete and conic optimization.
- 2016-2017** **University of Auckland, Auckland, New Zealand**
Research Assistant. Advisor: Golbon Zakeri

Teaching Experience

- IAP 2020** **15.S60 Computing in Operations Research and Statistics Instructor** (MSc/PhD level).
Taught a 3-hour session which aims to provide PhD students with an overview of state-of-the-art software tools used in optimization and statistics. Material available [here](#).
- Fall 2019** **15.095 Machine Learning Under a Modern Optimization Lens TA** (MBaN/MSc/PhD level).
Instructor in charge: Dimitris Bertsimas
Teaching assistant for a course which provides masters/PhD students with a modern treatment of Machine Learning using the lenses of convex, robust and mixed-integer optimization.
Duties: Assisting students, leading recitations, writing and marking assignments and exams.
- Summer 2019** **15.089 Analytics Capstone Project: Student Mentor**. Instructor in charge: Dimitris Bertsimas
Advised a project completed by two MBaN students, who applied prescriptive analytics to prescribe actions which optimize fund flows for a large investment management company.
- IAP 2019** **15.S60 Computing in Operations Research and Statistics Instructor** (MSc/PhD level).
Taught a 3-hour session which aims to provide PhD students with an overview of state-of-the-art software tools used in optimization and statistics. Material available [here](#).
- Fall 2018** **15.093 Optimization Methods TA** (MBaN/MSc level). Instructor in charge: Bart Van Parys
Teaching assistant for a course which aims to provide masters students with a unified overview of the main algorithms and areas of application in optimization.
Duties: Assisting students, leading recitations, writing and marking assignments and exams.
- Summer 2018** **15.089 Analytics Capstone Project: Student Mentor**. Instructor in charge: Dimitris Bertsimas
Advised a project completed by two MBaN students, who applied machine learning techniques to predict fund flows at the financial advisor level for a large investment management company.
- Mentees received an award for the best capstone presentation in their graduating class.

Work Experience

2014-2016 **Derceto Ltd**, Auckland, New Zealand

Assistant Optimization Engineer

Assisted with installing a pump-scheduling optimization tool for two municipal water providers.
Refurbished 5+ VBA spreadsheet tools used in day-to-day operations.

Professional Activities and Service

2019-2020 **Coordinator**, MIT ORC Student Seminar Series

2019 **Session Chair**, INFORMS 2019 Annual Meeting

2019 **Tester and Proctor**, MIT Operations Research Center Qualifying Exam

2018-present **Reviewer**, European Journal of Operational Research; IEEE Transactions on Power Systems;
INFORMS Journal On Computing; INFORMS Journal on Optimization; Omega.

Skills and Activities

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

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

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

Extracurriculars: Skiing, Running, Hiking.

Citizenship Citizen of New Zealand, Ireland.