

York Research Chair (YRC) in Managing AI-Driven Technologies in Health Care

- Early-Career Tier 2 (July 2022 - Current)

Department of Operations Management & Information Systems, Schulich School of Business at York University

- Associate Professor (July 2020 - Current)
- Assistant Professor (July 2015 - June 2020)

Research Areas

Health Care Operations, Scheduling, Dynamic Optimization, Artificial Intelligence, Inventory and Logistics

Research Methods

Stochastic Modeling, Approximate Dynamic Programming, Mathematical Optimization, Decomposition Methods, Queueing Theory, Optimal Control, Robust Optimization, Machine Learning, Econometrics and Statistics.

Education

Ph.D. Operations Management, Rotman School of Management at the University of Toronto, January 2015.

Committee: Joseph Milner (Supervisor), Philipp Afeche, Opher Baron, Fayez Quereshy

M.Sc. Mathematical Finance, Questrom School of Business at Boston University, June 2009.

B.Sc. Computer Science and Physics, University of Toronto, June 2007.

Thesis Advisor: Dylan Jones (Atmospheric Physics and Composition Modelling Group)

Refereed Journal Publications

Introducing Prescriptive and Predictive Analytics to MBA Students with Microsoft Excel

Adam Diamant

INFORMS Transactions on Education (forthcoming)

Consecutive Surgeries With Complications: The Impact of Scheduling Decisions

Adam Diamant, Anton Schevchenko, David Johnston, Fayez Quereshy

International Journal of Operations & Production Management (forthcoming)

Dynamic Scheduling of Home Care Patients to Medical Providers

Andre Cire, Adam Diamant

Production and Operations Management, 31.11 (2022): 4038-4056

Customer Acquisition and Retention: A Fluid Approach for Staffing

Eugene Furman, Adam Diamant, Murat Kristal

Production and Operations Management, 30.11 (2021): 4236-4257

- Winner of the 2019 Canadian Operational Research Society (CORS) Student Paper Competition in Queueing

Dynamic Multistage Scheduling for Patient-Centered Care Plans

Adam Diamant

Health Care Management Science, 24 (2021): 827-844

Prediction of Personal Protective Equipment Use in Hospitals During COVID-19

Eugene Furman, Alex Cressman, Saeha Shin, Alexey Kuznetsov, Fahad Razak, Amol Verma, Adam Diamant

Health Care Management Science, 24 (2021): 439-453

- Special Issue: Management Science in the Fight Against Covid-19

Sampling from the Complement of a Polyhedron: An MCMC Algorithm for Data Augmentation

Timothy Chan, Adam Diamant, Rafid Mahmood

Operations Research Letters, 48.6 (2020): 744-751**The Importance of Evaluating the Complete Knowledge-Based Automated Planning Pipeline**

Aaron Babier, Rafid Mahmood, Andrea McNiven, Adam Diamant, Timothy Chan

European Journal of Medical Physics, 72 (2020): 73-79**Knowledge-Based Automated Planning with 3-D Generative Adversarial Neural Networks**

Aaron Babier, Rafid Mahmood, Andrea McNiven, Adam Diamant, Timothy Chan

Medical Physics Journal, 47.2 (2020): 297-306

- Editors' Choice in the July 2018 edition of the Medical Physics Journal

Double-Sided Matching Queues: Priority and Impatient Customers

Adam Diamant, Opher Baron

Operations Research Letters, 47.3 (2019): 219-224**Why Do Surgeons Schedule Their Own Surgeries?**

David Johnston, Adam Diamant, Fayez Quereshy

Journal of Operations Management, 65.3 (2019): 262-281

- Finalist for the 2020 Jack Meredith Best Paper Award in the Journal of Operations Management
- Profiled by the Health Research Innovation Portal in 2018

A Network-Based Formulation for Scheduling Clinical Rotations

Andre Cire, Adam Diamant, Talys Yunes, Alejandro Carrasco

Production and Operations Management, 28.5 (2019): 1186-1205**Dynamic Patient Scheduling for Multi-Appointment Health Care Programs**

Adam Diamant, Joseph Milner, Fayez Quereshy

Production and Operations Management, 27.1 (2018): 58-79**Inventory Management of Reusable Surgical Supplies**

Adam Diamant, Joseph Milner, Fayez Quereshy, Bo Xu

Health Care Management Science, 21.3 (2018): 439-459**Patient and Operational Factors Affecting Wait Times in a Bariatric Surgery Program in Toronto**

Adam Diamant, Michelle Cleghorn, Joseph Milner, Sanjeev Sockalingam, Allan Okrainec,

Timothy Jackson, Fayez Quereshy

Canadian Medical Association Journal, 3.3 (2015): E331-E337**Double-Sided Batch-Arrival Queues With Abandonment: Modeling Crossing Networks**

Philipp Afeche, Adam Diamant, Joseph Milner

Operations Research, 62.5 (2014): 1179-1201**Analysis of Patient Dropouts for a Bariatric Surgery Program**

Adam Diamant, Joseph Milner, Michelle Cleghorn, Sanjeev Sockalingam, Allan Okrainec,

Timothy Jackson, Fayez Quereshy

Journal of the American College of Surgeons, 219.5 (2014): 1047-1055

- Profiled by Reuters: Healthcare and Pharma in 2014

Refereed Workshop Proceedings**Automated Radiation Therapy Treatment Planning Using 3-D Generative Adversarial Networks**

Aaron Babier, Rafid Mahmood, Andrea McNiven, Adam Diamant, Timothy Chan

Proceedings of the Machine Learning for Health (ML4H) Workshop at the Neural Information Processing Systems (NeurIPS) Conference, Montreal, Quebec (December 8, 2018)

Refereed Conference Proceedings

The Importance of Evaluating the Complete Knowledge-Based Automated Planning Pipeline

Aaron Babier, Rafid Mahmood, Andrea McNiven, Adam Diamant, Timothy Chan

International Conference on the use of Computers in Radiation Therapy, Montreal, Canada (June 17-21, 2019)

Automated Treatment Planning in Radiation Therapy Using Generative Adversarial Networks

Rafid Mahmood, Aaron Babier, Andrea McNiven, Adam Diamant, Timothy Chan

Proceedings of Machine Learning Research, 85: 484-499, Stanford, California (August 17-18, 2018)

How Surgeons Schedule: An Exploration Of Discretion In The Delivery Of A Complex Professional Service

David Johnston, Adam Diamant

European Operations Management Association (EUROMA) Annual Conference, Edinburgh, Scotland (July 1-5, 2017)

Articles Under Review

Learning to Optimize Contextually Constrained Problems for Real-Time Decision-Generation

Aaron Babier, Timothy Chan, Adam Diamant, Rafid Mahmood

Major Revision at Management Science

Optimal Capacity Planning for Cloud Service Providers with Periodic, Time-Varying Demand

Eugene Furman, Adam Diamant

Submitted to Operations Research

Working Papers

Reducing the Imaging Backlog due to COVID-19: An Optimal Control Approach

Opher Baron, Andre Cire, Adam Diamant, Eugene Furman

Two-stage Distributionally Robust Optimization for Network Balancing Problems

Aliaa Alnaggar, Andre Cire, Adam Diamant

Network-Based Approximations for Two-Stage Stochastic Chance-Constrained Systems

Andre Cire, Carlos Henrique Cardonha, Adam Diamant

The Affordable Care Act and Hospital Closures: A Difference-in-Differences Analysis

Ortac Onder, Murat Kristal, Adam Diamant, Manus Rungtusanatham

Work in Progress

Regularized Online Allocation for Fair Patient-Midwife Assignments

Andre Cire, Adam Diamant

Fluid Models for Stochastic Dynamic Transportation Problems

Aliaa Alnaggar, Andre Cire, Adam Diamant

The Optimization of State Relevance Weights for Approximate Linear Programs

Andre Cire, Adam Diamant

Understanding How COVID-19 has Affected Hospital Performance

Raha Imanirad, Adam Diamant, Fahad Razak, Amol Verma

Assigning Patients to Practitioner Teams and the Effect on Clinical Quality and Operational Performance

Raha Imanirad, Adam Diamant, Fahad Razak, Amol Verma

Evidence-Based Scheduling to Improve the Delivery of Oncology and Hematology Services

Andre Cire, Adam Diamant, Divinus Oppong-Tawiah, Rachel Whitty

Supply-Demand Matching: Motivating Ride-Hailing Platform Drivers to Relocate to Surge Zones

Sonia Bagherirad, Adam Diamant, Moren Levesque, Manus Rungtusanatham

Student Advising and Collaborations

Current Students

Former Graduate Students

- Aliaa Alnaggar 2021-2023 (co-advisor with Andre Cire) - Assistant Professor @ TMU
 - NSERC Post-Doctoral Fellow: *Optimization under Uncertainty for Healthcare and Social Good*
- Ortac Onder, 2016-2022 (co-supervisors with Murat Kristal and Manus Rungtusanatham) - Consultant @ PwC
 - PhD Thesis: *Hospital Survivability and Government Policies: The 2010 Affordable Care Act*
- Eugene Furman, 2015-2020 (supervisor) - Assistant Professor @ Alba Graduate Business School
 - PhD Thesis: *Models for Capacity Allocation in Anticipation of Time-Varying Demand*
- Rafid Mahmood, 2017-2020 (co-advisor with Tim Chan) - Assistant Professor @ Telfer School of Management
 - PhD Thesis: *Learning to Solve Optimization Problems with Hidden Components*
- Majid Salavati, 2018-2019 (co-advisor with Andre Cire) - Researcher @ Concordia University
 - Post-Doctoral Fellow: *Scheduling of Firmware Over-The-Air Systems*

Former Undergraduate Students

- Mahrus Kazi, Summer 2020 (supervisor of NSERC award) - Automation Engineer @ Apple Inc.
 - Research Project: *Artificial Intelligence in Radiation Therapy Treatment Planning*
- Benjamin Ghatan, Summer 2019 (supervisor of NSERC award) - Strategy Consultant @ Deloitte
 - Research Project: *The Application of Network-Based Formulations for Scheduling Clinical Rotations*
- Manisha Bansal, Fall 2018 (supervisor of guided study) - Strategy and Consulting Analyst @ Accenture
 - Research Project: *Supply Chain Ordering Policies at Giant Tiger*
- Luka Knezevic, Summer 2018 (supervisor of NSERC award) - JD Candidate @ University of Toronto
 - Research Project: *Inventory Management with Time-Varying Demand*

Grants

- York Research Chair (YRC) Program (principal investigator), \$100,000 [2022-2027].
- NSERC Postdoctoral Fellowships Program Award (co-principal investigator), \$90,000 [2022-2023].
- CIHR: Addressing the Wider Health Impacts of COVID-19 (co-principal investigator), \$500,000 [2022-2023].
- NSERC Early Career Researcher - COVID Grant Extension (principal investigator), \$60,000 [2022-2025].
- CIHR: SARS-CoV-2 Variants Supplement (Stream 1 and Stream 2) (co-investigator), \$150,000 [2021].
- Sandra Rotman Centre for Health Strategy - Virtual Research Grant (co-principal investigator), \$60,000 [2020].
- CIHR: COVID-19 Rapid Research Funding Opportunity (co-investigator), \$2,010,500 [2020].
- NSERC Undergraduate Student Research Award (principal investigator), \$6,875 [2018, 2019, 2020].
- Schulich Fellowship Competition, Schulich School of Business (principal investigator), \$2,500 [2018, 2020].
- Junior Faculty Research Competition, Schulich School of Business (principal investigator), \$850 [2017, 2018].
- NSERC Discovery Grant Program (principal investigator), \$100,000 [2017-2022].
- Dean's Research Fund, Schulich School of Business (principal investigator), \$90,000 [2015-Current].

Teaching Experience

Instructor

Winter 2022 OMIS Foundations II: Queueing Systems (OMIS 7100), 2021-Current
 Models & Applications of Operations Research (OMIS 6000), 2019-Current
 Prescriptive Analytics (OMIS 4000), 2017-Current
 Coordinating Demand & Supply (OMIS 6230), 2019-2021
 Undergraduate Operations Management (OMIS 2010), 2015-2017
 Operations Management (RSM 270), 2014

Certificate Program. Instructional Skills Workshop (ISW), York University (June 2015).

Workshop. Course Instructor Training Camp, University of Toronto (August 2014).

Certificate. Teaching Business in Universities, Rotman School of Management (April 2012).

Invited Seminars & Conference Presentations

Rotman School of Management, *Post-COVID-19 Prediction of Personal Protective Equipment (PPE) Use in Hospitals*.
Session: Research Roundtable on Data Analytics in Health Care (May 2023).

York University, *Building Back Better: Operational Lessons From COVID-19*. **Session:** York Circle Lecture Series: COVID's Impact on Canada's Health Care System (March 2023).

Rotman School of Management, University of Toronto, *Optimal Capacity Planning for Cloud Service Providers with Periodic, Time-Varying Demand*. **Session:** Rotman Young Scholar Seminar Series (November 2022).

Telfer School of Management, Ottawa University, *Dynamic Multistage Scheduling for Patient-Centered Care Plans*.
Session: Operations Management Seminars (April 2021).

Haskayne School of Business, University of Calgary, *Dynamic Multistage Scheduling for Patient-Centered Care Plans*. **Session:** Operations Management Seminars (January 2021).

Rotman School of Management, University of Toronto, *Dynamic Multistage Scheduling for Patient-Centered Care Plans*. **Session:** Seminar on Health Care Analytics (November 2020).

Rotman School of Management, *Consecutive Surgeries with Complications: The Impact of Scheduling Decisions*.
Session: Research Roundtable on Data Analytics in Health Care (March 2020).

University of Toronto - Industrial Engineering, *Dynamic Multistage Scheduling for Patient-Centered Care Plans*.
Session: Operations Research Seminars (February 2020).

Canadian Health Care Optimization Workshop (CHOW), *Dynamic Multi-Assessment Scheduling for Patient-Centered Care Plans*. **Session:** Health care workshop (May 2019).

Canadian Operational Research Society (CORS) - 61st Annual Conference, *Consecutive Surgeries with Complications: The Impact of Scheduling Decisions* **Session:** Applications in Health Care, **Track:** Empirical Modeling in Health Care (May 2019).

Canadian Health Care Optimization Workshop (CHOW), *Dynamic Scheduling of Home Health Care Patients to Medical Providers*. **Session:** Health care workshop (June 2018).

Canadian Operational Research Society (CORS) - 60th Annual Conference, *Dynamic Multi-Assessment Scheduling for Patient-Centered Care Plans*. **Session:** Applications in Health Care, **Track:** Stochastic Modeling with Health Care Applications (June 2018).

- DeGroote School of Business, McMaster University, *Dynamic Scheduling of Home Health Care Patients to Medical Providers*. **Session:** Operations Management Seminar Series (February 2018).
- International Federation of Operational Research Societies (21st), *Scheduling Medical Students to Clinical Rotations*. **Session:** Scheduling in Health Care (July 2017).
- Rotman School of Management, University of Toronto, *Dynamic Scheduling of Home Health Care Patients to Medical Providers*. **Session:** Operations Management Seminar Series (January 2017).
- INFORMS International 2016, *Dynamic Scheduling of Home Health Care Patients to Medical Providers*. **Session:** Incentives and Operational Guidelines for Global Health (June 2016).
- Canadian Operational Research Society (CORS) - 58th Annual Conference, *Dynamic Scheduling of Home Health Care Patients to Medical Providers* **Session:** Dynamic Models in Operations: Procurement, Customer Relationship Management (May 2016).
- INFORMS Conference 2015, *Dynamic Patient Scheduling for Multi-Appointment Health Care Programs*. **Session:** Optimization in Health Care (November 2015).
- Lazaridis School of Business and Economics, Wilfred Laurier University, *The Replenishment Inventory Problem*. **Session:** Operations Management Seminar Series (October 2015).
- Mechanical and Service Operations Management (MSOM), *Dynamic Patient Scheduling for Multi-Appointment Health Care Programs*. **Session:** Health Care (June 2015).
- INFORMS Conference 2014, *Dynamic Patient Scheduling for a Multi-Appointment Health Care Program*. **Session:** Patient Scheduling (October 2014).
- INFORMS Conference 2014, *Inventory Management of Reusable Surgical Supplies*. **Session:** Health care supply chain management (October 2014).
- Annual Assembly of General Surgeons 2014, *Inventory Management of Reusable Surgical Supplies*. **Session:** Poster Presentation (May 2014).
- Canadian Operational Research Society (CORS) - 56th Annual Conference, *Dynamic Patient Scheduling for Multi-Appointment Health Care Programs*. **Session:** Stochastic models and their applications (May 2014).
- INFORMS Conference 2013, *Double-Sided Batch-Arrival Queues with Abandonment: Modeling and Performance of Dark Pools*. **Session:** Order Book Dynamics and Market Microstructure (October 2013).
- INFORMS Conference 2013, *Modeling and Analysis of a Bariatric Surgery Program*. **Session:** Health care Operations Management (October 2013).
- INFORMS Conference 2012, *Double-Sided Batch-Arrival Queues with Abandonment: Modeling and Performance of Crossing Networks*. **Session:** Limit Order Book Dynamics and Market Microstructure (October 2012).
- Mechanical and Service Operations Management (MSOM), *Double-Sided Batch-Arrival Queues with Abandonment: Modeling and Performance of Dark Pools*. **Session:** OR Applications to Finance (June 2012).
- Canadian Operational Research Society (CORS) - 54th Annual Conference, *Double-Sided Batch-Arrival Queues with Abandonment: Modeling and Performance of Dark Pools*. **Session:** Queueing Models in Services (June 2012).
- Cancer Center Business Summit, *Quantitative Analysis of OR Inventory Management Practices at a Tertiary Cancer Center* (November 2011) [Poster Presentation]. Joint work with Joseph Milner and Dr. Fayezer Qureshy.

Honors and Awards

Schulich Research Excellence Fellow (2021-2024)

Professional Memberships

Canadian Operational Research Society (CORS)

Institute for Operations Research and the Management Sciences (INFORMS)

Editorial Service

Associate Editor, *Decision Sciences Journal*, 2023-Current.

Associate Editor, *Health Care Management Science*, 2020-Current.

Ad-hoc Reviewer, *Productions and Operations Management (POM)*, *Manufacturing & Service Operations Management (MSOM)*, *Health Care Management Science (HCMS)*, *IIE Transactions*, *Omega*, *Decision Sciences Journal*, *International Journal of Operations and Production Management (IJOPM)*, *IEEE Transactions on Engineering Management*, *Canadian Medical Association Journal (CMAJ)*, *Natural Sciences and Engineering Research Council of Canada (NSERC)*, *Social Sciences and Humanities Research Council (SSHRC)*, *Mitacs*.

Conference Organizer and Professional Service

Communications Officer, Health Care SIG for the Canadian Operations Research Society (CORS), 2022-2024.

Co-Chair, Canadian Health Care Optimization Workshop (CHOW), 2019-2021.

Program Committee Member, Canadian Operational Research Society (CORS) Conference, 2019-2021.

Toronto Section Head, Canadian Operations Research Society (CORS), 2017.

Referee/Judge/Panelist

Judge, Canadian Operational Research Society (CORS), Health Care Presentation Competition, 2023.

Reviewer, INFORMS Healthcare Conference, Best Student Paper Competition, 2023.

Reviewer, Canadian Operational Research Society (CORS), Undergraduate Paper Competition, 2022.

Panelist, Round-Table Panel on the Benefits and Pitfalls of AI, Schulich Research Day, 2019.

Judge, Canadian Operational Research Society (CORS), Student Paper Competition, 2018.

Referee, Undergraduate/Graduate Awards, Schulich School of Business, 2016.

Departmental and University Committees

Member, Management of AI Masters Program Committee, Schulich School of Business, 2020-Current.

Member, Candidacy File Preparation Committee, Schulich School of Business, 2020.

Member, OMIS Undergraduate Academic Committee, Schulich School of Business, 2017-Current.

Member, Supply Chain Management Masters Committee, Schulich School of Business, 2017-2019.

Member, BBA/iBBA Academic Committee, Schulich School of Business, 2015-Current.

Examination and Defense Committees

Doctoral Dissertation Committee Member, Snezhana Kirusheva (Math Finance), York University, 2022.

Contributor/Invigilator, OMIS PhD Comprehensive Exam, Schulich School of Business, 2015-Current.

Examiner, Business Analytics Capstone Project (MBAN 6090), Schulich School of Business, 2015-2017.

University Outreach

Presenter, The Dean's Society, Schulich School of Business, 2019.

Poster, Research Day, Schulich School of Business, 2017, 2019.

Participant, FOCUS Event, Schulich School of Business, 2017, 2019.

Participant, Prospective Undergraduate/Graduate Student Outreach, Schulich School of Business, 2017-2020.

Participant, Experience Schulich Open House, Schulich School of Business, 2015, 2017, 2019.

Presenter, CONNECT, Schulich School of Business, 2015.