Adam Diamant

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Department of Operations Management & Information Systems, Schulich School of Business at York University
- Associate Professor (July 2020 - Current)
- Assistant Professor (July 2015 - June 2020)

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Research Areas

Health Care Operations, Scheduling, Capacity Planning, Inventory and Logistics, Supply Chain Management.

Research Methods

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

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

Customer Acquisition and Retention: A Fluid Approach for Staffing
Eugene Furman, Adam Diamant, Murat Kristal
Production and Operations Management (2021)
· 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 (2021)

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, Tallys 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

Dynamic Scheduling of Home Care Patients to Medical Providers
Andre Cire, Adam Diamant
Major Revision at Production and Operations Management

Learning to Optimize with Hidden Constraints
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 Manufacturing and Service Operations Management

Consecutive Surgeries With Complications: The Impact of Scheduling Decisions
Adam Diamant, Anton Schevchenko, David Johnston, Fayez Quereshy
Submitted to Decision Sciences Journal

Working Papers

Medicaid Expansion and its Impact on Hospital Closures
Ortac Onder, Murat Kristal, Adam Diamant, Manus Rungtusanatham

Reducing the Imaging Backlog due to COVID-19: A Queueing Approach
Opher Baron, Andre Cire, Adam Diamant, Eugene Furman

Workforce Scale-Up Decisions in Tech Startups
Sonia Bagherirad, Adam Diamant, Moren Levesque

Work in Progress

Network-Based Approximations to Discrete Chance-Constrained Systems
Andre Cire, Carlos Henrique Cardonha, Adam Diamant

ICU Bed Redistribution for COVID-19: A Distributionally Robust Approach
Aliaa Alnaggar, Andre Cire, Adam Diamant

Understanding How COVID-19 has Affected Hospital Performance
Raha Imanirad, Adam Diamant, Fahad Razak, Amol Verma

Dynamic Scheduling of Software Updates to Smart Vehicles
Andre Cire, Adam Diamant, Margarita Paz Castro

Evidence-Based Scheduling to Improve the Delivery of Oncology and Hematology Services
Andre Cire, Adam Diamant, Divinus Oppong-Tawiah, Rachel Whitty

Optimal Clustering of Distributions Using Wasserstein Distances with Side Constraints
Adam Diamant, Andre Cire

Learning to Image More Effectively: Reducing Processing Times for Computed Tomography Scans
Andre Cire, Adam Diamant, Jonathan Patrick

Inequity-Averse Patient Assignments for Paramedical Services
Adam Diamant

Student Advising and Collaborations

Current Students

Ortac Onder, Fifth Year PhD Student (co-supervising with Murat Kristal and Manus Rungtusanatham)
· Thesis: *Improving Hospital Survivability: An Investigation of the Impact of the Affordable Care Act in the US*

Aliaa Alnaggar, Post-Doctoral Fellow (co-advising with Andre Cire)
· Project: *Optimization under Uncertainty for Healthcare and Social Good*

Former Graduate Students

Eugene Furman, PhD, 2015-2020 (supervisor) - Post-doctoral Fellow @ Rotman School of Management
· Thesis: *Models for Capacity Allocation in Anticipation of Time-Varying Demand*

Rafid Mahmood, PhD, 2017-2020 (thesis committee member) - Researcher @ NVIDIA AI
· Thesis: *Learning to Solve Optimization Problems with Hidden Components*

Majid Salavati, Post-Doctoral Fellow, 2018-2019 (co-supervisor) - Professional Specialist @ Princeton University
· Project: *Scheduling of Firmware Over-The-Air Systems*

Former Undergraduate Students

Mahrus Kazi, Summer 2020 (supervisor of NSERC award) - Developer @ Apple Inc.
· Project: *Artificial Intelligence in Radiation Therapy Treatment Planning*

Benjamin Ghatan, Summer 2019 (supervisor of NSERC award) - Strategy Consultant @ Deloitte
· Project: *The Application of Network-Based Formulations for Scheduling Clinical Rotations*

Manisha Bansal, Fall 2018 (supervisor of guided study) - Consulting Analyst @ Accenture
· Project: *Supply Chain Ordering Policies at Giant Tiger*

Luka Knezevic, Summer 2018 (supervisor of NSERC award) - Consultant @ First Derivatives
· Project: *Inventory Management with Time-Varying Demand*

Grants

NSERC Early Career Researcher - COVID Grant Extension (principal investigator), $20,000 [2022-2023].

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

Models & Applications of Operations Research (OMIS6000), 2019-Current
Coordinating Demand & Supply (OMIS6230), 2019-Current
Prescriptive Analytics (OMIS4000), 2017-Current
Undergraduate Operations Management (OMIS2010), 2015-2017
Operations Management (RSM270), 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

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. Fayez Quereshy.

Honors and Awards

Schulich Research Excellence Fellow (July 2021 - Current)

Professional Memberships

Canadian Operational Research Society (CORS)
Institute for Operations Research and the Management Sciences (INFORMS)

Professional Activities

Editorial Service

Associate Editor, Health Care Management Science, 2020-Current.
Ad-hoc Reviewer, Natural Sciences and Engineering Research Council (NSERC), 2018-Current.
Ad-hoc Reviewer, Productions and Operations Management, 2018-Current.
Ad-hoc Reviewer, Manufacturing & Service Operations Management (MSOM), 2016-Current.
Ad-hoc Reviewer, Health Care Management Science, 2019-Current.
Ad-hoc Reviewer, Omega: The International Journal of Management Science, 2020.
Ad-hoc Reviewer, Transactions on Engineering Management, 2017-2018.
Ad-hoc Reviewer, Canadian Medical Association Journal (CMAJ), 2015.

Conference Organizer and Professional Service

Co-Chair, Canadian Health Care Optimization Workshop (CHOW), 2019-2021.
Program Committee Member, Canadian Operational Research Society (CORS), 2019-2021.
Toronto Section Head, Canadian Operations Research Society (CORS), 2017.

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

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.

Referee/Judge/Panelist

Judge, Canadian Operational Research Society (CORS) Student Paper Competition, 2018.
Panelist, Round-Table Panel on the Benefits and Pitfalls of AI, Schulich Research Day, 2019.
Referee, Undergraduate/Graduate Awards, Schulich School of Business, 2016.

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.