Craig Fernandes

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Education

PhD Operations Research, University of Toronto   Sep 2021 – May 2026
Advisors: Timothy C.Y. Chan and Ningyuan Chen

MASc Operations Research, University of Toronto   Jan 2020 – Aug 2021
Advisor: Timothy C.Y. Chan

BASc Industrial Engineering, University of Toronto   Sep 2014 – May 2018

Research Visits

Dartmouth College, Tuck School of Business   Summer 2024
Hosts: James Siderius and Raghav Singal

Research (by topic)

Design and Analysis of Innovative Markets

Points Gained in Football: Using Markov Process-Based Value Functions to Assess Team Performance
Timothy Chan, Craig Fernandes, Martin Puterman
Operations Research, 69(3): 877-894, 2021. [DOI, Ungated]
- Media Coverage: INFORMS Analytics Magazine

Income Pools for Superstar Markets
Timothy Chan, Ningyuan Chen, Craig Fernandes
Management Science, 2025 (Articles in Advance). [DOI, SSRN]
- **First Place, CORS Student Paper Competition (Open Category), 2025**
- **First Place, NUS Analytics for X Best Student Presentation, 2025**

Peer Review Market Design: Effort-Based Matching and Admission Control
Craig Fernandes, James Siderius, Raghav Singal
Soon to be Submitted to **Operations Research**, 2025. [SSRN]
- **Accepted, ACM Economics and Computation (EC), 2025**

Handicapping Strategies for Maximizing Engagement in Amateur Darts Tournaments
Timothy Chan, Craig Fernandes, Rachael Walker
Working paper, 2025.
- **First Place, MIT Sloan Sports Analytics Conference Paper Competition, 2024** [Video]
- **Finalist, CORS Student Paper Competition (Undergraduate Category), 2023** [Awarded to Rachael]

Data-Driven B2B Pricing: Learning from Bargainers
Timothy Chan, Ningyuan Chen, Craig Fernandes
Work in progress, 2025.

Estimating Distributions with Failure Rate Properties from Noisy Quantile Data

Timothy Chan, Ningyuan Chen, Craig Fernandes, Muhammad Maaz

Work in progress, 2025.

Analytics Education

Advising Student-Driven Analytics Projects: A Summary of Experiences and Lessons Learned

Aaron Babier, Craig Fernandes, Ian Zhu

INFORMS Transactions on Education, 23(2):121-135, 2022. [DOI]

- Media Coverage: ORMS Today

Moneyball for Murderball: Using Analytics to Construct Lineups in Wheelchair Rugby

Timothy Chan, Craig Fernandes, Albert Loa, Nathan Sandholtz

INFORMS Transactions on Education, 24(2):175-181, 2023. [DOI]

- **First Place, INFORMS Case Competition, 2022**
- Media Coverage: ORMS Today

Sports Analytics

Predicting Plays in the National Football League

Craig Fernandes, Ronen Yakubov, Yuze Li, Amrit Prasad, Timothy Chan

Journal of Sports Analytics, 6(1): 35-43, 2020. [DOI]

A Markov Approach to Untangling Intention Versus Execution in Tennis

Timothy Chan, Doug Fearing, Craig Fernandes, Stephanie Kovalchik

Journal of Quantitative Analysis in Sports, 18(2): 127-145, 2022. [DOI]

- **Finalist, MIT Sloan Sports Analytics Conference Poster Competition, 2022**

Equity, Diversity, and Inclusion in Sports Analytics

Craig Fernandes, Jason Vescovi, Richard Norman, Cheri Bradish, Nathan Taback, Timothy Chan

Journal of Quantitative Analysis in Sports, 20(2): 87-111, 2023. [DOI]

Teaching Experience

Course Instructor

MIE368: Analytics in Action, Average Rating 4.55/5   Fall 2023

Teaching Assistant

MIE263: Stochastic Operations Research, Average Rating 4.77/5   Winter 2023, 2024, 2025, 2026

MIE368: Analytics in Action, Average Rating 4.86/5   Fall 2020, 2021, 2022

- **MIE Teaching Assistant Award, 2022**
- **MIE Group Teaching Assistant Award, 2020**

Invited Seminars

Rotman Young Scholar Seminar Series (Toronto)	2025
Tuck School of Business OM Group (Dartmouth College)	2024

Conference Presentations

Data-Driven B2B Pricing: Learning from Bargainers

- INFORMS (Atlanta)	2025

Peer Review Market Design: Effort-Based Matching and Admission Control

- MSOM (LBS), ACM EC (Stanford), RMP (Columbia), INFORMS (Atlanta)	2025
- NYC Ops Day (NYU), CORS (Edmonton)	2025
- INFORMS (Seattle)	2024

Income Pools for Superstar Markets

- MIW (Virtual), CORS (Edmonton), MSOM (LBS), RMP (Columbia), INFORMS (Atlanta)	2025
- MSOM (McGill), RMP (Imperial), INFORMS (Phoenix)	2023
- CORS (Vancouver), INFORMS (Indianapolis)	2022

Handicapping Strategies for Maximizing Engagement in Amateur Darts Tournaments

- NESSIS (Harvard), SSAC (MIT)	2023, 2024

A Markov Approach to Untangling Intention Versus Execution in Tennis

- CORS (Virtual), NESSIS (Harvard), SSAC (MIT)	2021, 2022

Points Gained in Football: Using Markov Process-Based Value Functions to Assess Team Performance

- CORS (Halifax), Sport Innovation Summit (Toronto)	2018, 2019

Predicting plays in the National Football League

- NESSIS (Harvard), CORS (Halifax), Sport Innovation Summit (Toronto)	2017, 2018, 2019

Industry

Amazon, Data Scientist I (Supply Chain Optimization Technologies)	Summer 2021
PepsiCo, Process Improvement Engineering Intern	Summer 2017, 2019

Research Mentorship

Undergraduate Thesis Advising (and first position)

Rachael Walker	solo-advised	Analyst, Birch Hill Equity Partners	2023
Mustafa Arif	co-advised with Binghao Zhang	Master's, MIT Sloan	2021
Michael Yin	co-advised with Timothy Chan	Master's, University of British Columbia	2020
Albert Loa	co-advised with Timothy Chan	Master's, University of Toronto	2020

Service

Session Chair

INFORMS Annual Meeting (Revenue Management)	2025
CORS Annual Meeting (Revenue Management)	2025
CORS / INFORMS International (Sports Analytics)	2022

Scholarships

NSERC Vanier CGS ($150,000)	2023-2025
- **Canada's most competitive PhD scholarship (~4% acceptance rate)**	
NSERC CGS Doctoral [Declined] ($105,000)	2023-2025
TD MDAL Research Grant ($4,000; $3,000)	2023; 2025
Paul Cadario Fellowship in Global Engineering ($8,900)	2025
NSERC CGS Michael Smith Foreign Study Supplement ($6,000)	2023
Mitacs Globalink Research Award ($6,000)	2023
Wallberg Research Fellowship ($7,500)	2022
U of T SGS Conference Travel Grant ($800)	2022
U of T MIE Conference Travel Grant ($650)	2022
Ontario Graduate Scholarship ($15,000)	2021
NSERC CGS Masters ($17,500)	2020
U of T President's Entrance Scholarship ($5,000)	2014

Other Experience

Seminarian, St. Augustine's Seminary   Aug 2015 – June 2019

I lived and studied in a seminary for four years, training to be a Catholic Priest. This involved 30 hours a week of communal and volunteer activities. I overloaded my engineering courses to earn the equivalent of a Minor in Philosophy as preparation for a Master of Divinity, completing one year, before following a different path.

References

Timothy Chan (Co-Supervisor)
Associate Vice-President and Vice-Provost
Professor, Mechanical and Industrial Engineering
University of Toronto
Email: tcy.chan@utoronto.ca

Ningyuan Chen (Co-Supervisor)
Associate Professor, Rotman School of Management
University of Toronto
Email: ningyuan.chen@utoronto.ca

Martin Puterman (Co-Author)
Professor Emeritus, Sauder School of Business
University of British Columbia
Email: martin.puterman@sauder.ubc.ca

Raghav Singal (Co-Author)
Associate Professor, Tuck School of Business
Dartmouth College
Email: raghav.singal@tuck.dartmouth.edu