

# Craig Fernandes

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## Education

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<b>PhD Operations Research</b> , University of Toronto Advisors: Timothy C.Y. Chan and Ningyuan Chen	Sep 2021 – Aug 2026
<b>MASc Operations Research</b> , University of Toronto Advisor: Timothy C.Y. Chan	Jan 2020 – Aug 2021
<b>BASc Industrial Engineering</b> , University of Toronto	Sep 2014 – May 2018

## Research Visits

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<b>Dartmouth College</b> , Tuck School of Business Hosts: James Siderius and Raghav Singal	Summer 2024
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## Research (by topic)

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### Operations Management / Operations Research

#### 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**

#### 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**

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### **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

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

## Conference Presentations

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### Data-Driven B2B Pricing: Learning from Bargainers

- INFORMS (Atlanta)	2025
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### 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
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### A Markov Approach to Untangling Intention Versus Execution in Tennis

- CORS (Virtual), NESSIS (Harvard), SSAC (MIT)	2021, 2022
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### Points Gained in Football: Using Markov Process-Based Value Functions to Assess Team Performance

- CORS (Halifax), Sport Innovation Summit (Toronto)	2018, 2019
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### Predicting plays in the National Football League

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

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

## Research Mentorship

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### Undergraduate Thesis Advising (and first position)

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

## Service

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### Session Chair

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

## Scholarships

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NSERC Vanier CGS (\$150,000)	2023-2025
<b>- Canada's most competitive PhD scholarship (~4% acceptance rate)</b>	
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

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**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

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### Timothy Chan (Co-Supervisor)

Associate Vice-President and Vice-Provost  
Professor, Mechanical and Industrial Engineering  
University of Toronto  
Email: [tcy.chan@utoronto.ca](mailto:tcy.chan@utoronto.ca)

### Ningyuan Chen (Co-Supervisor)

Associate Professor, Rotman School of Management  
University of Toronto  
Email: [ningyuan.chen@utoronto.ca](mailto:ningyuan.chen@utoronto.ca)

### Martin Puterman (Co-Author)

Professor Emeritus, Sauder School of Business  
University of British Columbia  
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### Raghav Singal (Co-Author)

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Dartmouth College  
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