

Craig Fernandes

5 King's College Road · Toronto · Ontario · M5S 3G8

craig.fernandes@mail.utoronto.ca | 416-436-5210 | <https://craigfernandes1.github.io/>

Education

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

MASc Operations Research, University of Toronto Jan 2020 – Aug 2021
Advisor: Timothy C.Y. Chan
cGPA: A+/A+ in all course work

BASc Industrial Engineering, University of Toronto Sep 2014 – May 2018
Ranked 4th out of 105 students

Research Visits

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

Research Interests

Optimization, economics, public policy, engineering education, sports analytics

Research (by Topic)

OM in Niche Markets

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

Craig Fernandes, James Siderius, Raghav Singal

Working paper, 2025.

8. *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 (Oral), 2024

- Finalist, CORS Student Paper Competition (Undergraduate Category), 2023 [Awarded to Rachael]

7. *Income pools for superstar markets*

Timothy Chan, Ningyuan Chen, Craig Fernandes

Management Science, 2024 (Forthcoming).

6. *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.

- Media Coverage: [INFORMS Analytics Magazine](#)

Analytics Education

5. 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.

- First Place, INFORMS Case Competition, 2022
- Media Coverage: [ORMS Today](#)

4. 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, 2023.

- Media Coverage: [ORMS Today](#)

Sports Analytics

3. 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, 2024.

2. 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.

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

1. 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.

Seminars

Tuck School of Business OM Group (Dartmouth College)

2024

Conferences

Peer Review Market Design

- INFORMS Annual Conference, Seattle (Oral)

2024

Handicapping Strategies for Maximizing Engagement in Amateur Darts Tournaments

- MIT Sloan Sports Analytics Conference, Boston (Oral)

2024

Income Pools for Superstar Markets

- INFORMS Annual Conference, Phoenix (Oral)
- INFORMS RMP Conference, London (Oral)
- MSOM Conference, Montreal (Oral)
- INFORMS Annual Conference, Indianapolis (Oral)
- CORS / INFORMS International, Vancouver (Oral)

2023

2023

2023

2022

2022

A Markov approach to untangling intention versus execution in tennis

- MIT Sloan Sports Analytics Conference, Boston (Poster) 2022
- New England Symposium on Statistics in Sports, Boston (Oral) 2021
- CORS Annual Conference, Virtual (Oral) 2021
- Sport Innovation Summit, Virtual (Poster) 2020

Points gained in football: Using Markov process-based value functions to assess team performance

- U of T Engineering Research Conference, Virtual (Poster) 2020
- Sport Innovation Summit, Virtual (Oral) 2019
- CORS Annual Conference, Virtual (Oral) 2018

Predicting plays in the National Football League

- Sport Innovation Summit, Virtual (Oral) 2019
- New England Symposium on Statistics in Sports, Boston (Oral) 2017

Teaching Experience

Course Instructor

MIE368: Analytics in Action Fall 2023

Teaching Assistant

MIE263: Stochastic Operations Research, Rated 4.62/5 Winter 2023, 2024, 2025

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

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

Research Mentorship

Developing fair handicap systems for darts using a Markov decision process framework 2023

R. Walker, **undergraduate thesis**

Defining Soccer Playing Styles through a Data-Driven Approach 2021

M. Arif, **undergraduate thesis** (co-advised with Binghao Zhang)

Drafting for the Columbus Blue Jackets 2021

D. Nalbantoglu, K. Smith, Y. Pan, **engineering capstone project** (co-advised with Timothy Chan)

Points Gained in Curling: Modelling Curling as a Markov Reward Process 2020

J. Tin, **undergraduate thesis** (co-advised with Timothy Chan)

Optimizing Lineup Selection Dynamically in Wheelchair Rugby 2020

A. Loa, **undergraduate thesis** (co-advised with Timothy Chan)

Professional Experience

- Amazon.com**, Data Scientist I Summer 2021
- Formulated a gradient boosting classifier on AWS SageMaker to identify low performing promotions with an accuracy of 84%, resulting in an annual savings of \$25.6 million
 - Presented results to senior leadership, garnering >\$100K of funding
 - Established a cross-functional implementation and maintenance plan to productionalize the ML model, which is currently still deployed

Applied Research Projects

- Redeploy.ca**, Co-Founder & Consultant 2020
- Developed a full stack software tool to optimize hospital staffing during the COVID-19 pandemic, speeding up the process by 400%
 - Built the staffing algorithm using mathematical optimization and created a web application which received positive user feedback
 - Collaborated with and advised 20+ hospitals worldwide, including University Health Network and was featured in several news articles

Service

Session Chair

- CORS / INFORMS International (Sports Analytics) 2022

Honors and Awards

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| Paul Cadario Fellowship in Global Engineering (\$8,900) | 2025 |
| First Place, MIT Sloan Sports Analytics Conference (\$10,000) | 2024 |
| NSERC CGS MSFSS (\$6,000) | 2023 |
| Mitacs Globalink Research Award (\$6,000) | 2023 |
| TD MDAL Research Grant (\$4,000) | 2023 |
| U of T MIE TA Teaching Excellence Award (\$500) | 2023 |
| NSERC Vanier CGS (\$150,000) | 2023-2025 |
| NSERC CGS D [Declined] (\$105,000) | 2023-2025 |
| Wallberg Research Fellowship (\$7,500) | 2022 |
| First Place, INFORMS Case Competition (\$500) | 2022 |
| U of T SGS Conference Travel Grant (\$800) | 2022 |
| U of T MIE Conference Travel Grant (\$650) | 2022 |
| Finalist, MIT Sloan Sports Analytics Conference Poster Competition | 2022 |
| Ontario Graduate Scholarship (\$15,000) | 2021 |
| U of T MIE Group TA Teaching Excellence Award (\$300) | 2021 |
| NSERC CGS M (\$17,500) | 2020 |
| Second place, CORS Undergraduate Student Paper Competition (\$200) | 2018 |
| U of T President's Entrance Scholarship (\$5,000) | 2014 |