Craig Fernandes

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

craig.fernandes@mail.utoronto.ca | 416-436-5210 | linkedin.com/in/craig-fernandes | github.com/craigfernandes1

EDUCATION

University of Toronto, PhD. in Operations Research — Sep 2021 – Present

- Supervisor: Prof. Timothy Chan

University of Toronto, M.A.Sc. in Operations Research — Jan 2020 – Aug 2021

- Supervisor: Prof. Timothy Chan
- cGPA: A+/A+ in all coursework

University of Toronto, B.A.Sc. in Industrial Engineering — Sep 2014 – May 2018

- Ranked 4th out of 105 students | Deans List
- cGPA: 3.91/4.0

RESEARCH INTERESTS

Combinatorial optimization, Markov decision processes, simulation, decision-making under uncertainty, machine learning, economics, healthcare, sports

PUBLICATIONS

T. C. Y. Chan, C. Fernandes, M. L. Puterman. 2021. "Points gained in football: Using Markov process-based value functions to assess team performance," ***Operations Research***, 69(3): 877-894.

C. Fernandes, R. Yakubov, Y. Li, A. Prasad, T. C. Y. Chan. 2020. "Predicting plays in the National Football League," ***Journal of Sports Analytics***, 6(1): 35-43.

SUBMITTED AND WORKING PAPERS

A. Babier, C. Fernandes, I. Zhu. 2022. "Advising Student-Driven Analytics Projects: A Summary of Experiences and Lessons Learned," Major revision at ***INFORMS Transactions on Education***.

T. C. Y. Chan, D. Fearing, C. Fernandes, S. Kovalchik. 2022. "A Markov Approach to Untangling Intention Versus Execution in Tennis." Minor revision at ***Journal of Quantitative Analysis in Sports.***

C. Fernandes, J. Vescovi, R. Norman, C. Bradish, N. Taback, T.C.Y. Chan. 2022. "Equity, diversity, and inclusion in sports analytics." Under review at ***Journal of Quantitative Analysis in Sports.***

T.C.Y. Chan, C. Fernandes, A. Loa, N. Sandholtz. 2022. "Moneyball for Murderball: Using analytics to construct lineups in wheelchair rugby." Under review at ***INFORMS Transactions on Education.***

PROFESSIONAL EXPERIENCE

Amazon.com, Data Scientist I — Summer 2021

- Formulated a gradient boosting classifier on AWS SageMaker to identify low performing product promotions with an accuracy of 84%, resulting in an annual savings of $25.6 million
- Engaged with cross-functional stakeholders to garner buy in for the project and provide a implementation plan to push the model into productions

PepsiCo, Process Improvement Engineering Intern Fall 2019 & Summer 2017

- Managed a team of three junior interns to drive process improvement initiatives across the plant to increase efficiency
- Utilized lean manufacturing methodologies to optimize the production on three major machines, resulting in annual savings of 101 hours of downtime and $73 000
- Created a comprehensive database and dashboard for the Toronto and Moncton facilities to pinpoint the optimal allocation of maintenance resources and presented the results to senior leadership

CONFERENCE PRESENTATIONS

"Exploring fair, stable and optimal income pools in professional baseball"

- INFORMS Annual Meeting, Indianapolis 2022 (Oral)
- CORS Annual Meeting, Vancouver 2022 (Oral)

"Using Markov decision processes to evaluate style of play in professional tennis"

- MIT Sloan Sports Analytics Conference, Boston 2022 (Poster)
- New England Symposium on Statistics in Sports, Harvard 2021 (Oral)
- U of T Engineering Research Conference, Virtual 2021 (Poster)
- CORS Annual Meeting, Virtual 2021 (Oral)
- Sport Innovation Summit, Virtual 2020 (Poster)

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

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

"Predicting plays in the National Football League"

- U of T Engineering Research Conference, Virtual 2020 (Poster)
- Sport Innovation Summit, Toronto 2019 (Oral & Poster)
- New England Symposium on Statistics in Sports, Harvard 2017 (Oral)

RESEARCH MENTORSHIP

Undergraduate Research Thesis

- M. Arif, "A Data Driven Approach to Characterize Soccer Playing Styles" 2020
- A. Loa, "Optimizing Line-up Selection Dynamically in Wheelchair Rugby" 2019
- J. Yin, "Points Gained: Modelling Curling as a Markov Reward Process" 2019

Engineering Capstone Project:

- D. Nalbantoglu, K. Smith, Y. Pan, "Drafting for the Columbus Blue Jackets" 2021

OTHER PROJECTS

Redeploy.ca, Co-Founder & Consultant

- 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

TEACHING EXPERIENCE

MIE368: Analytics in Action, Teaching Assistant — 2020, 2021

- Topics: regression, classification, decision trees, optimization, simulation

HONORS & AWARDS

Ontario Graduate Scholarship ($15,000)	2021
UTERC Conference – 1st place poster ($300)	2021
UofT MIE Group TA Teaching Excellence Award ($300)	2021
NSERC Canada Graduate Scholarship – Master ($17,500)	2020
UTERC Conference – 2nd place poster ($300)	2020
CORS Conference – 2nd place undergraduate research paper ($200)	2018
CSA Group Award ($5,000)	2017
U of T President's Entrance Scholarship ($5,000)	2014