Anthony Coache | CV

Saint-Jean-sur-Richelieu, Québec – Toronto, Ontario

anthony.coache@gmail.com • anthonycoache.ca • acoache

Education

University of Toronto (UofT)
2019 – ... *Ph.D., Statistics (3.95/4.00)*

University of Oxford
2022 *Visiting student, 6 months, invitation from Prof. Álvaro Cartea, Oxford-Man Institute*

Université du Québec à Montréal (UQAM)
2017 – 2019 *M.Sc., Statistics (4.30/4.30)*
2014 – 2017 *B.Sc. with Honours, Mathematics concentration Statistics (4.18/4.30)*

Scholarships & Awards

2023 **SIAM** Student Travel Award (900 USD)
2022 **Oxford-Man Institute** Visitors Programme (9 000 GBP)
2019 – 2022 **NSERC**[1] Alexander Graham Bell Doctoral's Award (105 000 CAD)
2019 – 2023 **FRQNT**[2] Doctoral Scholarship (84 000 CAD)
2019 – 2023 **Faculty of Arts&Science of UofT** Top Doctoral Fellowship (95 000 CAD, declined)
2017 – 2018 **NSERC** Alexander Graham Bell Master's Award (17 500 CAD)
2017 – 2019 **FRQNT** Master's Award (30 000 CAD)
2016 – 2017 **NSERC** Undergraduate Research Awards + **FRQNT** Supplements (2 × 7 125 CAD)
2014 **UQAM Foundation** Admission Scholarship of the Faculty of Sciences (2 000 CAD)

Work Experience

2020 – ... **Teaching Assistant at UofT**
Data Science for Risk Modeling (STA2536), Data Analytics in Practice (STA2546), Stochastic Processes (STA447/STA2006), Dependence Modelling (STA4528), Statistical Consultation, Communication and Collaboration (STA490)
Project meetings, individual mentoring, grading assignments and weekly exercises tutorials.

2020 **Research Assistant with Prof. Sebastian Jaimungal**
Hidden trends in order-flow trading data and hedging with dynamic barriers
Collaboration between Oanda and Fields-CQAM.

2016 – 2019 **Teaching Assistant at UQAM**
Statistical Software Laboratory (STT2100), Regression (STT2120), ANOVA for Biology (MAT1285), Statistical Methods for the School of Management (MAT2080)

2016 & 2017 **Research Internship with Prof. François Watier and Prof. René Ferland**
Stochastic optimization in multi-period problems with convex risk measures,
Monte Carlo evaluation of sensitivities for risk measures

April 2017 **Research Internship with Prof. Sorana Froda and Prof. René Ferland**
Estimation of parameters from surveillance data on past epidemics

2017 – 2019 **Mathematics Tutor**
Weekly individual tutoring for Quantitative Analysis in Psychology (PSY4031)

[1] Natural Sciences and Engineering Research Council of Canada
[2] Fonds de recherche du Québec – Nature et technologies

Publications

Papers

- **Coache, A.**, Jaimungal, S. & Cartea, Á. (2022) Conditionally Elicitable Dynamic Risk Measures for Deep Reinforcement Learning. *arXiv*.
- **Coache, A.** & Jaimungal, S. (2021) Reinforcement Learning with Dynamic Convex Risk Measures. *Mathematical Finance, forthcoming*.
- Bilodeau, B. & **Coache, A.** (2021) Methods for Adding Explicit Uncertainty to Deep Q-Learning. *GitHub*.

Posters

- Binette, O. & **Coache, A.** (2018) The Significance of the Adjusted R Squared. *(Bio)Statistics Research Day*.
- **Coache, A.** & Larose, F. (2018) "Do schools kill creativity?" Well, they help analyze popularity! *Annual Meeting of the SSC*.
- Ferland, R., Froda, S. & **Coache, A.** (2017) Comparison of surveillance flu data across regions. *Annual Meeting of the SSC*.

Talks

Invited

- *SIAM Conference on Financial Mathematics and Engineering.* (2023) Robust Reinforcement Learning for Dynamic Risk Measures.
- *SIAM Conference on Financial Mathematics and Engineering.* (2023) Conditionally Elicitable Dynamic Risk Measures for Deep Reinforcement Learning.
- *INFORMS Annual Meeting.* (2022) Reinforcement Learning with Dynamic Risk Measures.
- *World Congress of the Bachelier Finance Society.* (2022) RL for Dynamic Risk Measures.
- *Oxford-Man Institute Workshop.* (2022) Optimising a Dynamic Conditional Value-at-Risk over Policies using Conditional Elicitability.
- *SIAM Conference on Financial Maths and Engineering.* (2021) RL with Dynamic Convex Risk Measures.

Contributed

- *Graduate Student Research Day.* (2023) An Introduction to Risk-Aware RL with Dynamic Risk Measures.
- *Research Topics in Statistical Machine Learning.* (2021) Distilling Policy Distillation.
- *ACTSCI / MAFI Research meeting.* (2021) Risk-Sensitive Optimization in Reinforcement Learning.
- *Annual Meeting of the SSC.* (2019) Stochastic Algorithms for Solving a Multiperiod Quantile-Based Portfolio Optimization Problem.
- *UQAM Prob/Stats Student Seminar.* (2017) Non-Parametric Estimation of the Quantile Function.

Leadership

- Reviewed papers: Quantitative Finance (2022), International Conference on AI in Finance (2021 – 2022).
- Ran: Matlab (2021 & 2022) and Python (2022) bootcamps for MFI students at UofT.
- Co-organized: the Canadian Statistics Student Conference (2020 & 2021), first Statistics Student Summit in Montréal (2019), orientation activities for new undergraduate students in Statistics (2016 – 2019).
- Volunteered for organization of: ML and Quantitative Finance Workshop (2022), Conference on NLP for Economic and Financial Modelling (2022), R in Montréal seminar (2018), UQAM Probability and Statistics Student Seminar (2016 – 2017).
- Contributed on: a professional development guide aimed at UQAM's Math & Stats majors (2019).

Skills

Research Interests: Reinforcement Learning (RL), Risk Sensitivity, Stochastic Modeling, Computer Science, Risk Measures, Optimization, Applied Statistics, Statistical Learning.

Programming: Strong knowledge of R, Python, Matlab, TeX. Knowledge of C/C++, SAS, Java, SQL.

Multitasking: Experience carrying out several projects in parallel from start to finish.

Versatility: Works on multiple interdisciplinary projects, particular ease in creative work and fast learning.