Cait Harrigan, MSc.

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I am a graduate student at the University of Toronto supervised by Quaid Morris and Kieran Campbell, and a graduate researcher at the Vector Institute. I did my undergraduate studies at the University of Toronto, in Computational Biology and Statistics. In my PhD work, I use machine learning to understand cancer genomics by modelling the evolutionary constraints that underlie how mutation events occur in DNA. I'm passionate about open science, and promoting great mentorship in the sciences.

MEMBERSHIPS & AFFILIATIONS

Doctoral Fellow Data Science Institute, University of Toronto — Jul 2022 — present
Graduate Researcher Ontario Institute for Cancer Research — May 2020 — present
Graduate Researcher Vector Institute, Toronto, Canada — Sep 2019 — present

EDUCATION

PhD in Computer Science University of Toronto — Jan 2021 — present
MSc in Computer Science University of Toronto — Sep 2019 — Mar 2021
Honours BSc. Awarded with distinction University of Toronto — Sep 2015 — Jun 2019

WORK EXPERIENCE

Visiting Graduate Researcher — May 2021 — Sep 2021
Memorial Sloan Kettering Cancer Center
Undergraduate Research Assistant — Sep 2018 — May 2019
Terrence Donnelly Centre for Cellular and Biomolecular Genetics
Undergraduate Research Assistant — May 2017 — Sep 2017
SickKids The Hospital for Sick Children
Intern Eviviz Vancouver — May 2016 — Sep 2016

PUBLICATIONS

1. Caitlin Timmons, Quaid Morris, and **Caitlin F. Harrigan**. "Regional mutational signature activities in cancer genomes". En. In: *PLOS Computational Biology* 18.12 (Dec. 2022), p. e1010733.
2. Agata A. Bielska, **Caitlin F. Harrigan**, Yeon Ju Kyung, Quaid Morris, Wilhelm Palm, and Craig B. Thompson. "Activating mTOR mutations are detrimental in nutrient-poor conditions". Eng. In: *Cancer Research* (Jul. 2022).
3. **Caitlin F. Harrigan**, Gabriella Morgenshtern, Anna Goldenberg, and Fanny Chevalier. "Considerations for Visualizing Uncertainty in Clinical Machine Learning Models". Realizing AI in Healthcare: Challenges Appearing in the Wild, Workshop at CHI 2021 Online Virtual Conference, May. 2021.
4. **Caitlin F. Harrigan**, Yulia Rubanova, Quaid Morris, and Alina Selega. "TrackSigFreq : subclonal reconstructions based on mutation signatures and allele frequencies". In: *Pacific Symposium on Biocomputing* 25 (Jan. 2020), pp. 238-249.
5. Yulia Rubanova, Ruian Shi, **Caitlin F. Harrigan**, Roujia Li, Jeff Wintersinger, Nil Sahin, Amit Deshwar, and Quaid Morris. "Reconstructing evolutionary trajectories of mutation signature activities in cancer using TrackSig". In: *Nature Communications* 11.1 (Feb. 2020), pp. 1-12.

TALKS

DAMUTA: Dirichlet allocation of mutations as a function of both damage and DNA repair — Nov 2021
Cold Spring Harbour Laboratory Meeting: Genome Informatics
Selected Talk
TrackSigFreq: subclonal reconstructions based on mutation signatures and allele frequencies — Jan 2020
Pacific Symposium on Biocomputing
Selected Talk, Poster

POSTERS

Dirichlet Allocation of Mutations Captures the Action of DNA Damage and Misrepair Processes Jul 2022
Intelligent Systems for Molecular Biology

Dirichlet Allocation of Mutations in Cancer Genomes Nov 2021
Machine Learning in Computational Biology

TrackSigFreq: subclonal reconstructions based on mutation signatures and allele frequencies Dec 2019
Machine Learning in Computational Biology

GRANTS & AWARDS

NSERC Postgraduate Scholarship - Doctoral Sep 2022 — present
DSI Doctoral Student Fellowship Award Sep 2022 — present
Queen Elizabeth II Graduate Scholarship in Science & Technology Jul 2022
Ontario Graduate Scholarship Sep 2021 — Sep 2022
ACM SIGHPC Computational & Data Science Fellowship Jul 2020 — Jul 2022
JXTX foundation Genome Informatics Scholarship Aug 2021
General Motors Women in Science and Mathematics Award Sep 2020
NIH Conference Travel Fellowship Nov 2019
The Audrey Taylor Award Jul 2017

SERVICE

Peer review: Genome Biology, iScience, Genome Medicine
Conference program committee: Machine Learning in Computational Biology (2019),
Pacific Symposium on Biocomputing (2020)

TEACHING

Unless otherwise noted, school is University of Toronto

JSC370: Data Science II Jan 2023 — May 2023
JSC270: Data Science I Jan 2023 — May 2023
STA313: Data Visualization Sep 2022 — Dec 2022
JSC370: Data Science II Jan 2022 — May 2022
PRISM: Undergraduate Research Program Jan 2022 — May 2022
CSC197: What, Who, How: Privacy in the Age of Big Data Collection Sep 2021 — Dec 2021
STA4273: Minimizing Expectations Jan 2021 — May 2021
CSC197: What, Who, How: Privacy in the Age of Big Data Collection Sep 2020 — Dec 2020
JSC270: Data Science I Jan 2020 — May 2020
CSC373: Algorithm Design, Analysis & Complexity Sep 2019 — Dec 2019

EVENTCONFERENCE ORGANIZATION

Volunteer Coordinator Mar 2020
Grad Visit Day, Department of Computer Science, University of Toronto

Event chair: BioHacks Mar 2018
Bioinformatics and Computational Biology Hackathon

PROGAM ADMINISTRATION

Program Organizer Sep 2021 — present
Graduate Application Assistance Program, Department of Computer Science, University of Toronto

Project Manager STEMHub Foundation Oct 2020 — May 2021

Founder and treasurer May 2018 — May 2019
Bioinformatics and Computational Biology Student Union, University of Toronto