

EDUCATION

University of Toronto

PhD, Computer Science	2025 - Present
MEng, Mechanical and Industrial Engineering	2024 - 2025
Honours BS, Mathematics	2019 - 2024

RESEARCH

Graduate Student Researcher, advised by Hamed Ibrahim Sep 2024 - May 2025
University of Toronto Department of Mechanical and Industrial Engineering

- Developed a data analysis library in Python to investigate tropopause dynamics from global reanalysis and radiosonde datasets.
- Designed and implemented custom numerical algorithms for computing atmospheric variables and double tropopause detection.

Research Trainee, advised by Morgan O'Neill May 2024 - Aug 2024
University of Toronto Department of Physics

- Significantly enhanced a previous 2.5-layer moist convective shallow water model for simulating polar dynamics of giant planets, by developing a new parameterization for moist convection, rewriting the codebase for parallelization with Numba, adapting the model to Jupiter-like conditions, adding more physical terms, and conducting long-term simulations on the Niagara supercomputer.
- This resulted in a greater than 50× improvement in resolution and time integration

Undergraduate Student Researcher, advised by Emmy Murphy Jan 2024 - May 2024
University of Toronto Department of Mathematics

- Authored one of the first works to comprehensively review exotic 7-spheres, seven-dimensional manifolds that are homeomorphic but not diffeomorphic to Euclidean spheres.
- Reviewed the necessary tools from algebraic topology and differential geometry, expanded on the original proofs, and presented an equivalent technique to prove the key homeomorphism by directly computing the homology of the manifold.

Research Trainee, advised by Milad Lankarany May 2022 - Aug 2022
University of Toronto Institute of Biomedical Engineering

- Conducted a systematic study of mathematical neuron models, explored relevant optimization algorithms, and implemented various models in MATLAB and Python.

PROJECTS

IGRAT: a Python library for radiosonde data analysis

- Python library for pre-processing data from the Integrated Global Radiosonde Archive (IGRA). Allows users to visualize temporal and spatial patterns, plot atmospheric profiles, and export processed data sets in more standard formats.
- Accepted for publication in *Geoscience Data Journal*

TEACHING

Head Teaching Assistant Sep 2022 - Present
University of Toronto

- Head Teaching Assistant for introductory proofs, single and multivariable calculus

Teaching Assistant Jan 2022 - Present
University of Toronto

- Teaching Assistant for various mathematics courses on numeracy, introductory proofs, discrete math, differential equations, and single and multivariable calculus.

Research Assistant Dec 2022 - May 2024
University of Toronto Institute for the Study of University Pedagogy

HONORS AND AWARDS

- University of Toronto Department of Physics Summer Research Award (\$9,500) 2024
- Jackman Scholar Award (\$1,000 + accommodations, ~120 selected from ~1200 applicants) 2024
- UofT TA Teaching Excellence Award Finalist (14 selected from 324 candidates) 2023
- University of Toronto National Biology Scholar (placed top 5%, <200 of 3433 contestants) 2018