

Jack Stanley

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machine learning \cap life sciences

Education

McGill University	PhD in Quantitative Life Sciences
4.00 GPA • Supervisor: Danilo Bzdok	2021 – Present
◦ Thesis Topic: Investigating the molecular mechanisms underlying neurodegenerative diseases through the effective integration of diverse multiomic single-cell datasets	
University of Toronto	HBSc in Biochemistry & Statistics
3.91 GPA • Dean's List	2017 – 2021
University of Victoria	Mathematics Coursework
Concurrent enrollment during high school	2016 – 2017

Skills

Programming Languages: 🐍 Python, 📊 R, 🟢 Julia, 🚀 MATLAB, 📄 HTML / 📄 CSS

Tools & Frameworks: Linux, Git, PyTorch, JAX, scikit-learn, NumPy, Pandas, HuggingFace, L^AT_EX

Models & Architectures: Linear Models, Neural Networks, Deep Learning, Probabilistic Graphical Models, Natural Language Processing (NLP), Transformers, Variational Autoencoders

Experience

Graduate Student Researcher \\ Mila AI Institute & McGill University	2022 – Present
◦ Working directly with single-cell transcriptomic (and other omic) data from a variety of data sources to analyze batch effects and large scale data integration challenges.	
◦ Developing novel approaches to correct these batch effects and integrate large and diverse multiomic datasets.	
◦ This work will directly support our efforts to better understand the molecular pathology of neurodegenerative diseases such as Alzheimer's by increasing the size and diversity of potential data sources.	
◦ Previous graduate rotation projects included:	
◦ Fine-tuned large language models (LLMs) on unstructured clinical notes to further understand and quantify autism diagnoses.	
◦ Implemented a variational inference algorithm to estimate risk scores for rheumatoid arthritis drug non-response from genome wide association study (GWAS) data.	
◦ Used reinforcement learning to devise an adaptive policy for diabetic retinopathy screening and treatment under resource constraints.	
Machine Learning Research Intern \\ Donnelly Centre, University of Toronto	2020 – 2021
◦ Proposed the use of and implemented a variational autoencoder to track the metabolomic profiles of newborns with bronchopulmonary dysplasia over time through a low-dimensional latent space.	
◦ Successfully distinguished healthy from compromised newborns based on their latent trajectories at four weeks post-birth.	
◦ Worked directly with mass spectrometry peaks as well as resultant metabolite abundances, and modified the variational autoencoder architecture to handle metabolomic data.	
Web Developer \\ MonstrARTity	Summer 2020
◦ Sole web developer for MonstrARTity Creative Community, a not-for-profit arts organization.	
◦ Updated and implemented additional features to 5 different web properties, as well as domain/DNS management; handled tens of thousands of unique visitors during the live-stream event.	

Bioinformatics Research Intern \ University of Victoria

2019 – 2020

- Collaborated with wet lab biologists to analyze a large mass spectrometry proteomics dataset for the presence of systematic inverted repeat peptide sequences.
- Directly analyzed mass spectrometry peaks and peptide abundances to identify novel protein sequences using R and PEAKS studio.

Wet Lab Research Intern \ University of Toronto

2018 – 2019

- Assisted on a project to identify novel bacteriophages that selectively target antibiotic resistant bacteria.
- Responsibilities included transfecting cells with antibiotic resistance plasmids, designing experiments to test the efficacy of various bacteriophages, isolating and characterizing the most effective bacteriophages, and interpreting experimental results.

Awards & Honours

Provost's Scholar, Chancellor's Scholarship, Drew Thompson Scholarship:

2018 – 2021

Awarded to the top Trinity College students for high academic achievement

Schulich Leader Scholarship:

2017

\$80,000 scholarship for STEM leadership potential (only 4 awarded at U of T each year)

BMO National Scholarship:

2017

\$90,000 scholarship for academic excellence, leadership, and creative thinking (only 10 awarded at U of T each year)

Governor General's Academic Bronze Medal:

2017

Awarded to the student with the highest overall GPA at his/her high school

Committees & Clubs

McGill PGSS Innovation Committee

2022 – Present

- Review requests for PGSS endorsement of entrepreneurial projects, promote innovation opportunities for McGill graduate students, facilitate networking between McGill graduate students and business leaders in the community.

Mila Entrepreneurship Lab

Fall 2022

- Went through all the steps of a startup lifecycle, from ideation to funding, with a strong focus on the integration of AI into potential products or services.
- Collaborated with other students and mentors in the Mila and Montreal startup community.

Miscellaneous

Athletics:

- McGill Redbirds: Varsity cross country & track (team captain)
- Toronto Varsity Blues: Varsity cross country & track

2021 – Present

2017 – 2021

Test Scores:

- GRE: 169V/165Q
- ACT: 34