

Sean Moore

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EDUCATION

PhD. Quantitative Life Sciences
MCGILL UNIVERSITY

Montreal, CA | Sep 2022 - Present

BSc. Honours Computer Science and Biology, Minor in Mathematics
MCGILL UNIVERSITY

Montreal, CA | Sep 2018 - Apr 2022

GPA: 3.79, First Class Honours

RESEARCH EXPERIENCE

FRANCOIS LAB | PHD. ROTATION 3

Université de Montréal | Apr 2023 – Sept 2023

- Analyzing T-Cell responses to antigens to understand the dynamics of different antigen qualities.
- Using machine learning and generative modeling to quantify high dimensional time series data in a low dimensional latent space while preserving information.

WEBER LAB | PHD. ROTATION 2

McGill University | Jan 2023 – Apr 2023

- Replicated and extended current methods of simulating and analyzing multi-component phase separation.
- Developed and implemented methods to analyze the physics of phase separated droplets in live cells.
- Worked to verify and reproduce results that support current models of phase separation in nucleoli.

VOGEL LAB | PHD. ROTATION 1

McGill University | Sept 2022 – Dec 2022

- Developed program to analyze biases in intrinsically disordered regions of proteins based on the NARDINI algorithm.
- Used automated tracking pipeline to analyze microscope image data to obtain quantitative information about a system and develop a model to quantify cell division structures.

VYBIHAL LAB | VOLUNTEER

McGill University | Sept 2020 – Dec 2020

- Developed and published (<https://github.com/ruitaiS/vybLab>) novel machine learning models for online learning and unsupervised classification.
- Operated under strict time and space constraints as model was to be deployed on a robot with limited hardware and processing resources.

WORK EXPERIENCE

GUARDIAN THERAPEUTICS | BIOINFORMATICS CONSULTANT

Lexington, MA | Apr 2021 – Present

- Design and maintain a pipeline to process and analyze sequence data from laboratory experiments.
- Design and implement algorithms to process large amounts of RNA sequence data.
- Design, implement, and maintain a web server to facilitate the usage of above algorithms and efficiently store database files.

IDEXX LABORATORIES | RAPID ASSAY PROJECT MANAGEMENT INTERN

Westbrook, ME | Jun 2019 - Aug 2019

- Facilitated multiple parasitology prevalence studies for canine parasites.
- Worked with R&D to develop novel devices for onsite assays to increase parasite detection in household pets.

OFFICE OF THE HARBORMASTER | ASSISTANT TO THE HARBORMASTER

Yarmouth, ME | Jun 2016 - Aug 2021

- Assisted the Harbormaster with his duties.
- Patrolled local waterways and warfs within the Harbormaster's jurisdiction.
- Managed the use of the town landing, licensing, and permitting with the public.

PRIZES AND AWARDS

GRAD EXCELLENCE AWARD MCGILL UNIVERSITY	\$8,000 Jul 2022
QLS GRAD AWARD QUANTITATIVE LIFE SCIENCE, MCGILL UNIVERSITY	\$20,000 Jul 2022
QLS 3MT COMPETITION 3RD PLACE QUANTITATIVE LIFE SCIENCE, MCGILL UNIVERSITY	Dec 2022
IDEXX INTERN POSTER COMPETITION 1ST PLACE IDEXX	Aug 2019

LEADERSHIP

VP FINANCE QUANTITATIVE LIFE SCIENCES STUDENT ASSOCIATION	2023-2024
BUDDY QLS BUDDY PROGRAM	2023-2024
PRESIDENT MCGILL NORDIC SKI TEAM	2021-2022
VP FINANCE MCGILL NORDIC SKI TEAM	2020-2021, 2022-2023

CONFERENCES AND WORKSHOPS

PHYSICAL BASIS OF CELLULAR MEMORY AND ADAPTION CHAIR	April 2023
QLS ANNUAL RESEARCH DAY POSTER PRESENTATION	January 2023

PROJECTS

LLPSSIM [↗](#) **SIMULATION, PHASE SEPARATION, JULIA**
Developed a simulation in order to predict the number and composition of different phases that arise from specific component interaction strengths.

NARDS [↗](#) **NULL MODEL, IDR, JULIA**
Developed NARDS, (Nonrandom Arrangements of Residues in Disordered Shuffles) a tool for analyzing biases in the composition of intrinsically disordered regions of proteins. Originally, the program was written in python. I rewrote it in the Julia programming language to optimize for speed and flexibility.

R-GEN [↗](#) **RUST, BAYESIAN INFERENCE, GENERATIVE MODELING**
Developed a generative modeling framework written in the Rust programming language. Currently has support for arbitrary model construction and simple inference such as importance sampling. Currently working to improve api usability and out of the box support for more advanced algorithms such as Metropolis Hastings and particle filters.

TORAT [↗](#) **RUST, DATABASE**
Developed a simple command line application written for the Office of the Maine State Treasurer. Allows for the screening and identification of out-of-state bank routing numbers to detect fraudulent COVID relief checks.

OCEANIC MONITORING BUOY **C, ARDUINO, ENVIRONMENT, DATA COLLECTION**
Designed and deployed the electronic system on an oceanic monitoring buoy. Programmed an Arduino board to collect readings from temperature, turbidity, dissolved oxygen, and electrical conductivity sensors at regular intervals and transmit the results over a 2G cellular network to the mainland.

SKILLS

Programming Languages: Rust, Julia, Java, C++, Python, C#, Bash, C, R, Kotlin, OCaml **Databases:** SQL, MongoDB
Web Development: Vue, JavaScript, HTML/CSS **Technology:** Git, DigitalOcean, Docker, \LaTeX
Language: English (Native), French (Intermediate)

Coursework: Honors Algorithms and Datastructures (COMP 252), Honors Algorithm Design (COMP 352), Probabilistic Programming (COMP 596), AI (COMP 424), Intro to Software Systems (COMP 206), Operating Systems (COMP 310), Intro to Computer Systems (COMP 273), Intro to Ecology and Evolution (BIOL 215), Intro to Phys Mol & Cell Biol (BIOL 219), Organic Chemistry 1 (CHEM 212), Basic Genetics (BIOL 202), Mathematical Models in Biology (BIOL 309), Comp. Biol. Methods & Research (COMP 561), Biodiversity and Ecosystems (BIOL 310), Eukaryotic Cell Biology (BIOL 313), Principles of Cellular Control (BIOL 551)