

# Paul Dougall

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Portfolio: [pauldougall.weebly.com](http://pauldougall.weebly.com)

Mathematician with an interest in **bioinformatics** and **machine learning** (ML) applications within bioinformatics. Familiarity with Illumina and Oxford Nanopore Technologies (ONT). Quick learner and innate ability to learn and use various software. Extensive experience processing and analyzing sequencing data using various software.

**Proficient in:** Python, MATLAB, Java, R, Microsoft Excel, WSL, Command Line, Bash

## RESEARCH EXPERIENCE

### **Applications of Machine Learning (ML) in Bioinformatics** Jan 2021 – Present

Clarkson University CMI Lab | Potsdam, NY

- Comparative analysis of phenotypic predictions using **ML algorithms** and **whole genome sequencing**. More specifically, selecting ideal ML algorithms based on the **feature space** of the data
- Data processing and coding ML algorithms in **Python** to apply current methods in the field
- Study of **mathematical foundation** of ML algorithms including: SVM, NN, SCM, and Decision Trees
- Extensive experience **processing** and **analyzing** ONT sequencing data
- Usage and understanding of various **bioinformatics software** including SPAdes genome assembler, ONT's Guppy and Bonito basecallers, SAMtools, and Kover.
- Familiarity and understanding of the biological aspects of the data and its generation as well as the mathematical and coding knowledge required to perform analyses and form informative hypotheses

### **Bioinformatics Intern**

June 2022 – August 2022

BioMarin Pharmaceutical Inc. | Novato, CA

- Utilized Flask and Python to develop a user friendly **next generation sequencing** dashboard for internal use throughout BioMarin to allow Biologists to easily process data using Nextflow pipelines
- Quickly and efficiently taught myself Flask, JavaScript and HTML having had no prior experience
- Employed the use of a HPC server to host the completed dashboard
- Initiated intern cohort interaction and community building via starting an intern Discord Server
- Provided numerous undergraduate interns with advice in regards to internships and graduate school

## EDUCATION

### **Clarkson University | Potsdam, NY**

**GPA: 3.79/4.0**

2020-Present

Degrees: Doctor of Philosophy in Mathematics

Master of Science in Mathematics (2022)

### **SUNY Potsdam | Potsdam, NY**

**Graduate GPA: 4.0/4.0**

**Undergrad GPA: 3.88/4.0**

2015-2020

Degrees: Master of Arts in Mathematics

Bachelor of Arts in Mathematics

Bachelor of Music in Music Business

Minor in Business Administration

**Concentrations/Honors:** Mathematics Honors | Advanced Honors | Honors | Voice

## AWARDS & DISTINCTIONS

- SIAM Chapter President • PME Chapter President • PKL Member • Math Alliance President  
*Math Organization '20-'22 Math Honor Society '19-'20 Music Honor Society '18-'20 Math Interest Club '19-'20*
- **Speaker**, student Career Services experience for **Potsdam Board of Trustees** Fall 2019
- National Association of Music Merchants (NAMM) **President's Innovation Award** Spring 2019
- Vasily Cateforis (Mathematics) Scholarship Spring 2019
- Susan Portugal **Statistics and Business Award** Spring 2019
- **Speaker**, Self-Branding/Networking for Major and Career Development Course Fall 2018
- Sophomore Mathematics Alumni **Award for Excellence in Mathematics** Spring 2018