

# Nathan DSilva

University of Waterloo - Computational Mathematics

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## Work Experience

**Lead Developer**, University of Waterloo - Games Institute

May 2024 - Dec 2024

- Primary technical lead for the entire project, responsible for architecture, design, and implementation of new features.
- Independently led teams of 4-7 developers to overhaul the full-stack application written in Go and React.js.
- Pushed project timelines forward by 6 months by significantly improving development speed and code quality.
- Conducted code reviews, mentored developers, and worked with clients to determine project requirements and scope.

**Machine Learning Engineer (Part-time)**, University of Waterloo

Sep 2024 - Dec 2024

- Improved ECG diagnosis accuracy from 86.1% to 98.6% while simultaneously reducing model size by a factor of 250 times by architecting a neural network from scratch with PyTorch.

**Project Lead**, Scrawl Development Inc.

Jan 2023 - Aug 2023

- Lead developer on over 20 projects, including a reactivity library for Vue.js, a browser extension plugin for Vite, and various API specification & mocking utilities.
- Mentored several junior developers by providing technical guidance, conducting code reviews, and completing performance evaluations.
- Collaborated across 4 different teams to develop tools, infrastructure, CI/CD, web components, and APIs.

**Internal Tools Developer**, Scrawl Development Inc.

May 2022 - Dec 2022

**Junior Network Administrator**, Questenterprise Inc.

Sep 2021 - Dec 2021

## Personal Projects

**Infinite Craft Wiki**

*Web Interface*

Vue, Tailwind, Data handling

Used by over 84k players, compiled 6.6 million recipes from the game "Infinite Craft" into a searchable interface without requiring a database, and achieved 1.1 million page views in the first 4 months of operation.

**MineNewt**

*Machine Learning*

Rust, Python, Neural Networks

Created a machine learning library from scratch in Rust, and researched novel encodings of neural networks with stochastic (probabilistic) bits. Developed a Python library for simulating the performance of networks encoded this way, and embedded it into a custom chip architecture.

— See GitHub for more projects —

## Skills

**Frontend & Web Development** - Javascript/Typescript · React · Vue · Tailwind · REST APIs · PHP · HTML · CSS

**Programming Languages** - Python · Rust · Node.js · Go · C · C++ · Bash · SQL · Java · C#

**Infrastructure & Tools** - Docker · AWS · PostgreSQL · MongoDB · MySQL · Git · Linux · CircleCI

**Soft Skills** - Delegation Leadership · Technical Mentoring · Conflict Resolution · Automation

## Education

**University of Waterloo** 2020 - 2025

Computational Mathematics, Combinatorics & Optimization (Co-op)

**Quantum Cryptography School for Young Students** 2019

Studied theoretical physics & cryptography at the Lazaridis Quantum Nano Center and Perimeter Institute.