# **Paul-Andre Henegar**, Montreal

paul-andre.github.io

## Work Experience

**JNI Consulting Work**, [unannounced startup] Fall 2024

- Researching and conceiving a system for a Java application compiled with GraalVM Native Image to communicate via Java Native Interface (JNI) to a different JVM for running third-party code.

**Software Engineer, Facebook**, *Express Backbone team* 2018 – 2020

- Worked on EBB, Meta's inter-datacenter software-defined network.
- Developed, tested, deployed, and troubleshooted:
  - C++ services,
  - C++ network daemons running on Arista switches,
  - Python command line tools.
- Built a continuous monitoring system based on MPLS traceroute.
- Investigated and resolved network-wide packet drops caused by the interaction of software components.

## Education

**Master of Science in Computer Science, McGill** 2020 – 2023

- **Courses**: Natural Language Processing, Theory of Proof Systems, Mathematical Theory of Machine Learning, Matrix Computations
- **Master's Thesis**: *RNA 3D Structure Prediction by Loop Motif Assembly*
  - Developed **rna_bits**, a **3D structural biology tool in Python**, iterating between rapid experimental implementation and refactoring phases.
  - Created data pipelines for extracting molecule fragments; analyzed data quality and investigated edge cases and incorrect assumptions.

**B. Sc. Joint Honours Mathematics and Computer Science, McGill** 2015 – 2018

- **Selected courses**: Advanced Algorithms and Data Structure, Compiler Design, Applied Machine Learning, Intro to Operating Systems, Probability, Statistics, lots of Pure Math courses
- **GPA: 3.93** (with a 4.0 in CS courses)

## Some Projects, Personal or Academic

- Node.js **Puppeteer "facade"** over a ClickFunnels affiliate marketing sign-up page to bypass coupon code field. Ran Google ads and got hundreds of sign-ups. April 2025
- **UnflipGame.com**, an original puzzle game for browser/mobile. *Featured in the Hacker News Newsletter.* Spring 2024
- Modified and finetuned a **RoBERTa LLM** in PyTorch, for NLP course project. Fall 2020
- **Compiler for a subset of Go**, in Rust and Flex+Bison. Lead a team of 3 people in course project. *Highest implementation accuracy among all teams*. Winter 2018
- **Java bytecode optimizer**, reducing bytecode size by 31.9% on hidden benchmarks, greatly exceeding all-time record in course assignment. Winter 2018
- **Bot for Halite II.** *Finished 37$^{th}$ out of 5800* in Two Sigma's multi-month game-playing AI bot competition. Fall 2017
- **Lisp interpreter in x86-64 assembly** and Linux system calls. August 2017
- Exploration of **non-linear oscillator simulation techniques** for audio synthesis, for undegrad research. Real-time C++ programming and signal processing. Summer 2017
- **Bohnenspeil game-playing agent**: 1$^{st}$ place with a 96% win rate in artificial intelligence course tournament. Winter 2017
- WebSocket **pixel-art editor**, in HTML5, Node.js. Winter 2014
- Multiple **HTML5 Games**. Since 2012

## Competitive Programming

**Current Codeforces rating**: 1767 Expert (handle: Paul-Andre)

- **Google Code Jam**, ranked among top 1000 Spring 2018
- **ICPC**, team ranked 3$^{rd}$ in Northeast North America Regional November 2017
- **IEEExtreme**, team ranked 4$^{th}$ in Canada, 84$^{th}$ worldwide October 2017

## Skills

- *Currently most proficient in*: Python, JavaScript, C/C++, HTML/CSS.
- *Having experience in*: Java, Rust, Bash, Ocaml, Go, Matlab, Haskell, Scheme, x86-64 ASM, VB6.
- Long-time GNU/Linux user.
- Fluent in English, French, and Russian.

## Other Interesting Experiences

- Volunteer on an organic farm. Summer 2023
- Day camp monitor for kids age 6-10: Planning activities, leading groups. Summer 2022
- “Greening Agent” in Éco-quartier NGO: Visiting clients to assess tree-planting needs, taking and returning voicemail, planting trees and maintaining park. Summer 2021
- Teaching Assistant: grading, helping students debug code, preparing and giving lectures. 2020-2022
- Singer in McGill Choral Society. 2015-2016
- Actor—and prior to that set-builder and stagehand—in full-length college plays. 2012-2015