Nathan Lilienthal

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Languages: Rust, Java, Ruby, C/C++, LUA, Racket, Shell. Java/Typescript, Python, and more...
Systems: UNIX, Linux, Git + Hub/Lab, Rails, Heroku, Postgres (PostGIS), SQLite, AVR/ARM, WoW (ask me about it).

Professional & Teaching Experience

- **Northeastern University** **Boston, MA**
  Research Programmer, Intelligence Advanced Research Projects Activity, HECTOR *Aug. 2019 ∼ May 2021*
  - Collaboratively developed a hybrid-mode secure programming language design for multi-party computation (MPC)
  - Represented my team at both remote and in-person technical exchange meetings with other researchers
  - Built a prototype implementation of our language, which is forked from the Rust programming language
  - Began a formalism for our language(s), which will include sound typing rules, and reductions

  Teaching Assistant, Fundamentals of Computer Science 1 *Fall of 2012, 2013, 2014, and 2015*
  - Conducted short lectures before each lab and then lead the lab's students and tutors in the weekly assignments
  - Discovered new ways to present concepts that facilitated student understanding
  - Assisted students at established office hours and online
  - Participated and lead course administrative tasks, including grading, meta-grading, testing, rubric development, and weekly teaching staff meetings

- **Forward Financing Inc.** **Boston, MA**
  Sr. Software Engineer *May 2018 – Aug. 2019*
  - Developed a client wrapper for an Algolia search implementation
  - Quickly performed various application performance improvements, often caused by unacceptable response times
  - Planned architecture refactoring, including object model improvements and a new data permissions system
  - Led efforts to create an orchestration CLI for managing a complex Heroku + Salesforce microservice system
  - Mentored co-op university students by providing deep code reviews and pair programming

- **HOMER Energy** **Boulder, CO**
  Software Developer, Summer Intern *Summer 2012, Jul. 2017 - Nov. 2017*
  - Built API integrations for the HOMER C# application, including REST and CSV file APIs which involved a general refactoring of the code which imports data, complete with added tests
  - Developed an internal tool to view the Google Protocol Buffer used to pass values between all parts of the application allowing developers to quickly see inputs and outputs
  - Created a web-based frontend for HOMER in Rails, which served at the starting point for another version and provided a proof of concept for how to integrate the HOMER API with a webserver

- **Apple Inc.** **Cupertino, CA**
  Software Engineer – Full-time Coop & Full-time *Jan. 2015 – Aug. 2015, Jul. 2016 – Jul. 2017*
  - Built a Ruby library (`radic`) and CLI (`radish`) for interacting with Apple's bug management system (aka Radar)
  - Participated in a cross-cutting web design work group to help create common components for the hardware teams
  - Contributed to an internal tool for managing hardware validation, inspired in part by Travis CI
  - Contributed to an internal tool for analysing large amounts of pre-production device test data

- **Americas Test Kitchen** **Boston, MA**
  Web Developer – Full-time Coop *Jan. 2014 – June 2014*
  - Pushed code to the frontend and backend for all four Americas Test Kitchen websites, including bug fixes and technical infrastructure upgrades
  - Built modularized components to abstract functionalities found common throughout the company's codebase

- **Bluesocket - Adtran** **Burlington, MA**
  Software Developer – Full-time Coop *Jan. 2013 – June 2013*
  - Developed an automated build system, which reduced turnaround time by allowing anyone to easily run a build
  - Addressed user reported issues in Ruby/Rails and LUA, including hardening validations and updating database migrations for old versions of the software
  - Designed a class/model structure for users and accesspoints, which allowed the backend to represent clients of individual accesspoints

Other Interests: Microelectronics, Music, Woodworking, Billiards, Environmentalism, Travel & Culture, Gaming, Skiing, Frisbee, Cats, and much more ...

Education & Projects

- **Northeastern University** **Boston, MA**
  College of Computer and Information Science *2011 – 2016*
  Bachelor of Science in Computer Science
  - **Relevant Courses**: Programming Languages, Special Topics in Programming Languages, Compilers, GPU Programming & Architecture, Systems and Networks, Computer Organization, Software Development (aka HELL), Theory of Computation, Algorithms and Data Structures, Fundamentals of Computer Science 1 & 2, Object Oriented Design, Artificial Intelligence, Logic and Computation, Combinatorics.
  - **Clubs & Extracurriculars**: Association for Computing Machinery, NU Hacks, Hack Beanpot.
- **Notable Projects** `https://github.com/nixpulvis`
  - `alacritty`, a cross-platform, GPU-accelerated terminal emulator (contributor)
  - `oursh`, a multi-language shell which aims to be POSIX compatible, written in Rust
  - `lalrpop-lambda`, parser and reductions for the lambda calculus with a minimal webapp
  - `parser-combinator`, a Racket implementation of a recursive descent parser, used by students for a JSON lab
  - `galos`, an Elite: Dangerous EDDN subscriber, (PostGIS) database, CLI, and GUI
  - `nrf24l01`, basic working AVR firmware for the Nordic Semiconductor's nRF24L01+ radio transceiver
  - `maze_gl`, a small maze generation and first person OpenGL game