Resume

Software Engineer

Simon Zeng

## Contact Info

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## Work Experience

### Jane Street Capital – Software Engineering Intern

* Date: Jan 2022 – Apr 2022
* Location: New York, New York
* Skills: OCaml, Quantitative

### Tesla – Software Engineering Intern (Firmware Tooling)

* Date: May 2021 – Aug 2021
* Location: Remote
* Skills: Haskell, Firmware, C
* Description:
  + Continued development work on Haskell firmware tooling code base
  + Implemented network scheduler for custom Cybertruck communications protocols in Haskell using novel functional techniques
  + Designed and implemented C API code generation tools for embedded real-time vehicle transmissions in the Cybertruck

### TQ Tezos – Software Engineering Intern (Blockchain)

* Date: Sep 2020 – Dec 2020
* Location: New York, New York
* Skills: Blockchain, Haskell
* Description:
  + Authored Tezos smart contracts in a Haskell EDSL to automate proprietary applications for permissioned blockchains
  + Converted fragmented Python-based Tezos Kubernetes deployment script to idiomatic Dhall, greatly improving readability and maintainability
  + Constructed peer-to-peer staking topology monitoring and visualization infrastructure with Python

### Tesla – Software Engineering Intern (Firmware Tooling)

* Date: Jan 2020 – Aug 2020
* Location: Palo Alto, California
* Skills: Haskell, Python, Java
* Description:
  + Developed and maintained large Haskell code base responsible for automated firmware documentation, code, and signal generation
  + Improved Haskell products’ performance and runtimes by over 20% by identifying laziness-related space leaks and rewriting hot code paths
  + Responsible for design and implementation of firmware verification infrastructure employed by entire organization
  + Designed and developed robust firmware signal inspection architecture with Java and modern statically typed Python

### University of Waterloo – Teaching Assistant (Algebra)

* Date: Sep 2019 – Dec 2019
* Location: Waterloo, Ontario
* Skills: Pure Math, Teaching
* Description:
  + Tutored classes of over 1000 students in number theory and abstract algebra
  + Prepared individual tutoring lesson plans to ameliorate understanding in advanced topics such as quadratic reciprocity or interactive theorem proving

### Ericsson – Software Engineering Intern (Performance)

* Date: May 2019 – Aug 2019
* Location: Kanata, Ontario
* Skills: Clojure, Python
* Description:
  + Developed pure functional Clojure metrics infrastructure to monitor complex JVM architectures, allowing for discovery of multiple performance issues
  + Implemented a parser and interpreter for an internally designed performance-testing DSL

### CENX – Software Engineering Intern (Test Automation)

* Date: Jul 2017 – Sep 2017
* Location: Ottawa, Ontario
* Skills: Python, Systems
* Description:
  + Developed robust automated Python framework for load-testing web apps
  + Created custom implementation of IETF RFC socket protocols to debug non-standard network stacks
  + Discovered and provided patches for multiple security issues, including cryptography weaknesses, via automated fuzzing

### inBay Technologies – Software Engineering Intern (Full Stack)

* Date: Jul 2016 – Aug 2016
* Location: Kanata, Ontario
* Skills: Ruby, Rails, Javascript
* Description:
  + Created internal use development tools backed by Ruby on Rails and Javascript to monitor and debug specialized production systems

## Projects

* [dhall-python](https://github.com/s-zeng/dhall-python/): Python bindings for Dhall, a functional configuration language
* [board-to-latex](https://github.com/s-zeng/board-to-latex/): Turn pictures of math into latex
* [rag-shenanigann](https://github.com/s-zeng/rag-shenanigann/): Generate ragtime music with AI

## Open Source Contributions

* [kyazdani42/nvim-tree.lua](https://github.com/kyazdani42/nvim-tree.lua/)
  + 9aa8be6 Fix null pointer crash from glibc bug
* [dhall-lang/dhall-lang](https://github.com/dhall-lang/dhall-lang/)
  + b22cce1 Add support for Dhall v19
* [dhall-lang/dhall-kubernetes](https://github.com/dhall-lang/dhall-kubernetes/)
  + 3367b68 Remove declaration of deprecated python script
* [nvim-lua/telescope.nvim](https://github.com/nvim-lua/telescope.nvim/)
  + 59ef37d Implement shortcut to dynamically use other telescopes
* [ujihisa/repl.vim](https://github.com/ujihisa/repl.vim/)
  + 4910aa7 Add support for Racket

## Misc Experience

* Swim Instructor: Certified by Red Cross and Life Saving Society
* Accordion Teacher: Offering private lessons
* Camp Counsellor: For youth robotics camps

## Education

* University of Waterloo (May 2022): Bachelor’s degree, Computer Science

## Coursework

* Functional Programming (Haskell, Scala, Scheme)
* OOP Programming (C++)
* Formal Logic and Interactive Theorem Proving (Coq)
* Compilers and Interpreters