Resume

Software Engineer

Simon Zeng

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Contact Info

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Work Experience

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: Python bindings for Dhall, a functional configuration language
- board-to-latex: Turn pictures of math into latex
- rag-shenanigann: Generate ragtime music with AI

Open Source Contributions

- kyazdani42/nvim-tree.lua
  - `9aa8be6` Fix null pointer crash from glibc bug
- dhall-lang/dhall-lang
  - `b22cce1` Update stale code to Dhall v19 standards
- dhall-lang/dhall-kubernetes
  - `3367b68` Remove declaration of deprecated python script
- nvim-lua/telescope.nvim
  - `59ef37d` Implement shortcut to dynamically use other telescopes
- 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