

# SIMON ZENG

## Software Engineer

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## EXPERIENCE

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

Blockchain OCaml 📅 Sep 2020 – Dec 2020 📍 New York, New York

- Contributed to Python, Haskell, and OCaml blockchain products
- Authored and formally verified Tezos smart contracts in an OCaml-based DSL to automate proprietary applications for private blockchains
- Developed and instrumented automated deployment of test and private chains on Linux machines over Kubernetes
- Constructed peer-to-peer staking topology monitoring and visualization infrastructure with Python

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

Haskell Python Java 📅 Jan 2020 – Aug 2020 📍 Palo Alto, California

- 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%
- Responsible for design and implementation of core 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)

Pure Math Teaching 📅 Sep 2019 – Dec 2019 📍 Waterloo, Ontario

- 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)

Clojure Python 📅 May 2019 – Aug 2019 📍 Kanata, Ontario

- 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 domain specific language specifically tailored for highly variable telecom network performance evaluation environments, greatly reducing workload for performance team
- Contributed to Python performance testing applications

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

Python Security 📅 Jul 2017 – Sep 2017 📍 Ottawa, Ontario

- 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 multiple security issues, including cryptography weaknesses, via automated fuzzing

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

Ruby Rails Javascript 📅 Jul 2016 – Aug 2016 📍 Kanata, Ontario

- Created internal use development tools backed by Ruby on Rails and Javascript to monitor and debug specialized production systems

## SUMMARY

- Professional experience in functional programming (Haskell, OCaml, Clojure)
- Competent core development skills (Python, Java, Ruby, Javascript)
- Strong background in mathematics

## PROJECTS

### Board to Latex

[github.com/s-zeng/board-to-latex](https://github.com/s-zeng/board-to-latex)

React web app that transcribes photos of chalkboards and whiteboards to latex source, with OCR handled by a Python and Flask backend

### Ragtime Generator

[github.com/s-zeng/rag-shenanigann](https://github.com/s-zeng/rag-shenanigann)

A suite of Python scripts that fully automates the entire pipeline of AI-based ragtime generation, covering everything from automatically sourcing its own training data to outputting ragtime MIDI files on demand

## MISC EXPERIENCE



### Swim Instructor

Certified by Red Cross and Life Saving Society



### Accordion Teacher

Offering private lessons



### Camp Counsellor

For youth robotics camps

## COURSEWORK

- Functional Programming (Haskell, Scala, Scheme)
- Formal Logic and Interactive Theorem Proving (Coq)
- Object Oriented and Imperative Programming (C, C++)
- Compilers and Interpreters
- Number Theory and Cryptography

## EDUCATION

### Bachelor's of Computer Science

📅 2023

📍 University of Waterloo