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

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

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