Ian Li

Github: @ianayl, Linkedin: ianayl, Email: ianayl.work@gmail.com

Skills

Programming Languages	C, C++, C#, Python, Java, Javascript, Typescript, POSIX Sh, Bash, Scheme, ARM assembly, R
Tooling	LLVM, Linux, Nix/NixOS, MS Azure, Selenium, PCRE Regex, Make, Git, SSH, GDB/LLDB
Web Development	React, React Native, .NET Core, SQL, Express, SASS, Bootstrap, MongoDB, Flask
Certificates	Microsoft Azure AZ-900, Microsoft Azure AI-900

Experiences

Web Developer, *nvision* - *Markham, Canada* 2019

- Developed internal employee dashboards for visualizing metrics using **React** and **MongoDB** (**MERN** stack) and **Bootstrap**
- Maintained a **Linux** server to host Wordpress sites using the **LAMP** stack; Developed customizable Wordpress themes

Undergraduate Thesis

Improving KLARAPTOR: Finding optimal CUDA kernel parameters Current

Improving the KLARAPTOR project: predicting optimal CUDA kernel parameters for fast GPU computation. My goals are:

- Finding better performing CUDA kernel parameters by algorithmically generating better training data for KLARAPTOR
- Automatically detect kernel dimensions, variable relations, etc. used to better parallelize code via static analysis (on LLVM IR)

Speeds-up *data-oblivious* computations (*e.g.* matrix operations for faster machine learning/AI, computer graphics, *etc.*)

Projects

Experimental Language - repo Current

A programming langauge written in **C++**, aiming to be a fast and modern replacement to system shells.

- Devised an *automatic* table-based **lexer generator**, and wrote a **recursive descent** parser following LL grammar
- Writing a **tree-walk evaluator** for interpretation, and passes to turn ASTs to CFGs to LLVM IR for compilation
- Static type system with type inference in works, goal for JIT compilation in future

Mindless - repo 2021

Proof-of-concept **unconditionally secure** biometrics password manager based on hashing algorithms and math

- Developed a password manager using facial recognition landmarks (extracted using **OpenCV**) with a web frontend (**Flask**)
- Devised method to generate consistent passwords from facial landmark data: *password is **never** stored! Not even encrypted*
- Finalist project in a 36-hour hackathon (Hackwestern 8), competing as a one-man team out of 346 teams of 4 to 5

Rentura (Startup) 2021 – 2022

Lead the development and design of a *minimum viable product* for a B2C furniture rental platform

- Developed a backend in Javascript, implementing a **RESTful API** with **CRUD** endpoints secured with tokens (in **Express.js**)
- Maintained **MongoDB** instances on a **Linux** server, and designed database schemas for an *order management system*
- Developed a responsive, mobile-first *e-commerce* frontend in **React.js** using **Sass** and **Axios** (**MERN** stack)

Shell Site Generator (`shsg`) - repo Current *(On hiatus)*

Ultra lightweight and portable static site generator that will run on literally *anything* with a minimal UNIX-like enviroment

- Developing a static site generator using pure **POSIX** `sh` and **PCRE Regex**: *No dependencies other than a UNIX shell + coreutils!*
- Transpiles markdown to themed webpages, but unlike current options (e.g. *Jekyll*), no installation + alternate runtimes needed
- In works: parsing tables and lists in pure regex, removing dependency on PCRE (support for Busybox and other glorified toasters)

Education

University of Western Ontario - *London, Canada* 2021 – Current

Candidate for Bachelor of Science – Specialist in Honours Computer Science, Anticipated in Spring 2025

Awards – Dean's Honor List (2021-2022, 2022-2023), 3.9/4.0 GPA