

Brighten Zhang

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Skills

Languages

C/C++, Java, JavaScript, TypeScript, HTML & CSS, Python, Racket, Bash, AppleScript

Tools & Frameworks

React.js, Django, Selenium, Cypress, PostgreSQL, Git, Heroku, AWS, Metabase, Docker

Education

University of Waterloo

Waterloo, ON

Candidate for BCS Computer Science

Sep. 2022 - Apr. 2027 (expected)

- Courses: Functional Programming, Algorithms and Data Abstraction, Object-Oriented Programming

Work Experience

Full Stack Engineer

Jan. 2024 - Apr. 2024

Relay Financial

Toronto, ON

- Developed external **Xero accounting software API** integrations for receipt export and **expense auto-categorization** across **13,000+ debit transactions** totalling **\$1.5 million** monthly using **React, Express, Node**, and **PostgreSQL**
- Built a **single-page application** document upload portal to extend receipt capture **microservices** and enable file upload from deep linked transactions; implemented mobile deep linking to support receipt upload via **SMS**
- Implemented **MCC restrictions** for Relay's **card-authorization rules engine** using **AWS Lambda** to enforce vendor-category purchase restrictions at **point-of-sale** and delivered UI for CRUD-ing restriction policies
- Addressed application **security vulnerabilities**, including updating role-based API permission guards to prevent **IDOR** and developed client-side file previewer to prevent **XSS** via PDF upload

QA Automation Engineer

May. 2023 - Aug. 2023

Relay Financial

Toronto, ON

- Verified the performance of Relay's mobile and web applications using a **Java Selenium** data-driven testing framework alongside a **TypeScript Cypress** web automation framework
- Increased mobile end-to-end coverage by **70%**, raised web automation coverage to **90%**, delivered **30+** automation scripts; reduced mobile daily regression runtimes by **40%** by refactoring base driver to maintain login sessions
- Developed a **Java HTTP client** to interface with Relay's registration API for mobile registration regression; validated requests using **back-end API testing**

Projects

Moraband Chess Engine | Github

- Developed a UCI-compliant **chess engine** in **C++** with modern search and evaluation techniques and a move generator measuring **160 million moves/second** on a single Apple silicon M1 thread
- Applied an **alpha-beta** search algorithm within a nega-max framework with iterative deepening; **multi-thread search** supported via a shared transposition table and lockless hashing
- Optimized **800+ evaluation parameters** using **gradient descent** techniques; **non-linear** time management optimized using **Confident Local Optimization** (CLOP)
- Hosted a Lichess.org BOT account on the **Heroku cloud** as a **Python web app** with 300+ games per month and ranking in the **top 3% of all players** with a peak rating of 2360 Elo

Word Predictor | Github

- Implemented a **trigram language model** based on **Markov chains** in **Python** using the **Natural Language Toolkit** (NLTK) to predict the appropriate next word in a sentence based on an input text
- Created a **REST API** using **Flask** and **SQLite3** with message endpoints and responses for a chatbot web application

Imgdb Image Host | Github

- Built an image-hosting web application using **Node** and **Express** to easily share images online anonymously