# Brighten Zhang

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## Skills

**Languages** C/C++, Python, Java, JavaScript, TypeScript, Racket, Ruby, Applescript
**Tools & Frameworks** React.js, Node.js, Django, Flask, Selenium, Cypress, Git, Heroku, Sequelize

## 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

**QA Automation Engineer** May. 2023 - Aug. 2023
*Relay Financial* *Toronto, ON*

- Verified the performance of Relay's mobile and web applications by implementing a Java Selenium-for-Android 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 programs; restructured core testing utilities to emphasize reusability and support an efficient automation process
- Developed a Java HTTP client to streamline mobile regression via Relay's internal REST API; validated requests using back-end API testing
- Introduced a department-wide integration of QA automation responsibilities by delegating tasks to individual product engineering teams to achieve an expedited release process in the context of an Agile workspace

**Summer Camp Counsellor** Jul. 2021 - Aug. 2022
*City of Toronto* *Toronto, ON*

- Collaborated with other counsellors to design and lead engaging camp activities for young children aged 6 to 12
- Fostered positive social connections between campers and eased pandemic anxiety
- Maintained clear communication with parents and guardians to ensure participants' safety and enjoyment

## Projects

**Moraband Chess Engine | Github**

- Developed a UCI-compatible chess engine in C++ using modern search and evaluation techniques with a legal move generator measuring 160,000,000 moves/second on a single Apple silicon M1 thread
- Applied a traditional alpha-beta search algorithm within a nega-max framework with iterative deepening, and incorporated transposition tables and tapered material values in evaluation functions; multi-thread support for up to 16 threads
- 800+ evaluation parameters tuned and optimized via high-precision Gradient Descent techniques; non-linear time-management tuned via Confident Local Optimization
- Hosted a Lichess.org BOT account on the Heroku cloud as a Python app with 200+ games played per month and ranking in the top 3% of all players with a peak rating of 2275 Elo

**Word Predictor | Github**

- Implemented a trigram language model based on Markov Chains in Python using the nltk module to predict the appropriate next word in a sentence based on an input text
- Created a Flask REST API with message endpoints and responses from an SQLite3 database with over 1,000 entries

**imgdb Image Host | Github**

- Built an image-hosting web application using the Node.js framework to easily share images online publicly with minimal dependencies