Zachary Chan

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**Work Experience**



**Software Development Engineer Intern**

**Netflare.dev** **January 2023 - April 2023**

* Proficient in utilizing technologies such as JavaScript, React, AWS services, Jest, and Cypress for full-stack development across various projects
* Involved in making informed system design choices to improve performance, scalability, and maintainability.
* Developed Pulse, a comprehensive web monitoring tool for websites and APIs, offering features such as deep output checks, response time monitoring, minimized false-positive reports, customizable check frequency, regional pinging, and webpage snapshots. Enhanced user experience, reduced downtime, and optimized performance for various businesses.



**PERSONAL PROJECTS**



**Website that builds itself (JavaScript, HTML and CSS)**

**October 2022 - Present**

* Developed an innovative, self-building website that dynamically assembles itself in real-time, providing users with a unique and engaging experience.
* Designed an interactive user interface, enabling users to customize and modify the website layout and components.
* Conducted extensive user testing and incorporated feedback, refining the website's self-building process and interactions to cater to diverse user preferences and requirements.

**Chess AI using Monte Carlo Tree Search and Deep Neural Networks (Python)**

**February 2023 - Present**

* Designed a sophisticated deep neural network to enhance MCTS search capabilities, leveraging PyTorch for high-performance GPU-accelerated computation.
* Introduced various optimizations to strike a balance between performance and move exploration, significantly improving Chess AI gameplay and optimizing potential move exploration while reducing computational bottlenecks.
* Incorporated early stopping and adaptive learning rate scheduling techniques to prevent overfitting and boost overall model performance.

**Chess Engine Tournament (JavaScript and C++)**

**June 2022 - October 2022**

* Designed and implemented a competitive chess tournament featuring 16 distinct chess engines, showcasing diverse strategies and playstyles.
* Evaluated their relative performance against each other in a round-robin tournament.
* Processed roughly 15 million chess games to create an opening book and a Markov chain for a performance boost to the engines with C++.

**4-Key Rhythm Game (JavaScript)**

**January 2023 - February 2023**

* Designed and developed a real-time rhythm game engine using pure JavaScript, complete with dynamically generated notes, customizable player options, and integrated visual effects for an immersive user experience.
* Implemented a system to interpret and load different game levels and songs on-the-fly, while seamlessly transitioning and adjusting gameplay elements to enhance variety and replayability.
* Constructed an intuitive game interface complete with responsive key hints, dynamic scoreboards, and interactive control buttons, enhancing user engagement and ease of use.

**Automatic UPass Registration (Python)**

**August 2022 - October 2023**

* Developed a Python-based automation script leveraging the Selenium library to streamline the monthly UPass registration process for BC students, significantly reducing manual efforts and ensuring timely registration.
* Incorporated features to handle multi-factor authentication (MFA) and intelligently link Compass cards if not already linked. The application detects the presence of MFA, utilizes pyotp for one-time password (OTP) generation, and interacts with iFrames for seamless authentication.
* Integrated user prompts to allow for the reuse of previously entered session data, providing a balance between convenience and security. Integrated persistent storage using Pickle to maintain user preferences across sessions, enhancing user experience.

**Gesture Genius (Javascript)**

**September 2023 - September 2023**

* Collaborated closely with a team of three computer science students to ideate, design, and develop the innovative "Gesture Genius" ASL-to-English translation website within a tight 36-hour timeframe at Hack The North 2023.
* Leveraged Teachable Machine for AI model training, utilizing a comprehensive Kaggle dataset comprising approximately 3,000 images per ASL alphabet letter to enhance translation accuracy.
* Shared responsibilities evenly among team members, ensuring timely task completion and a holistic approach to problem-solving, resulting in a seamless final product.

**Automated Crossword Puzzle Generator (Python)**

**August 2022 - October 2023**

* Scalped a word bank and word definitions from various websites using Selenium, BeautifulSoup4 and requests to generate the crossword hints.
* Designed a generic page format with Matplotlib and PIL to better automate the creation of puzzle pages.
* Built a unit testing suite with native python to assist with debugging unexpected results.



**EDUCATION**



**B.Sc Computer Science**

**Simon Fraser University • Burnaby, BC • 2022 - now • 3.75 CGPA**

**Associate of Computer Science (Transferred)**

**Langara College • Vancouver, BC • 2020 - 2022 • 3.87 CGPA**



**COURSES**



**Introduction to Software Engineering**

**Simon Fraser University • 2023 • A**

Using good software development and design principles, built and implemented a project as a group. Developed intuition for the key phases of software development including requirements analysis, documentation, design, implementation, testing, and maintenance.

**Algorithms & Data Structures II**

**Langara College • 2021 • A**

Performed algorithm analysis. Implemented binary trees, heaps, priority queues, graphs and various algorithm paradigms (divide and conquer, greedy, dynamic programming, etc). Wrote unit tests to rigorously find and fix bugs and other unexpected behaviours. Explored object oriented programming (OOP).

**Networking**

**Langara College • 2020 • A**

Learned about network topology, ports, MAC addresses, IP addresses, TCP/IP and UDP packets, terminal commands, the OSI 7 layer model and, wired and wireless data communication.



**SKILLS**



**Programming Languages:** C++, Python, JavaScript, HTML, CSS, C#, Java, RISC V

**Software & Tools:** Visual Studio Code, Git, GoogleTest, Microsoft Office Suite, AWS, Jest, Cypress, React

**Languages:** English, French, Mandarin



**INTERESTS**



**Programming**

Placed 8th in “New Year’s MASH Programming Contest 2022“

Placed 16th in “ICPC Pacific NorthWest Regional Programming Contest 2022”

Placed 5th in “A Strange Programming Contest 2022”

Participated in Hackathons such as “Hack The North 2023”and “Fall Hacks 2022”.

**Chess**

2000 Rapid, 1700 Blitz, 1250 Bullet, 2250 Puzzle on chess.com.