Bryan Wang

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Technical Skills

Programming Languages: Java, Python, C, C++, JavaScript, SQL, ARM, MIPS, Bash, Racket, HTML, CSS, LaTeX
Tools/Frameworks: Tensorflow, Google Colab, AWS, Azure, MySQL, Git/GitHub, Linux, Vim, Jira
Languages: English, Chinese

Experience

Full-Stack Developer at Xe.com | *Python, AWS, Terraform, MySQL, Stripe* Sep 2022 — Dec 2022

- Migrated the payment system to **Stripe** to reduce cost overhead; used **AWS SQS**, **S3**, **MySQL**, and Stripe APIs to process invoices, then loaded results to **iScala** for accounting.
- Created custom web scrapers that use **AWS Lambdas** to automatically gather Forex rates from a dozen central banks, providing new data endpoints for clients to use.
- Added automatic annual price increases and custom pricing preventing loss of revenue; before, high-paying enterprise customers were charged a far lower price without any increase for over a decade.

Projects

Evolving Snake Game AI | *Java (Genetic Algorithm - Machine Learning)*

- Recreated the **NeuroEvolution of Augmenting Topologies (NEAT)** without relying on machine learning libraries to teach AI how to play the game Snake.
- Currently, its **record length is 33**, exemplifying its intelligence in self-preservation, and ability to gain points.
- The AI receives mutations over hundreds of generations and competes within their assigned species in order to survive and reproduce akin to Darwinian evolution.
- Exploited **reinforcement learning** to punish/reward the AI's behaviour to guide its development.
- Visualized the neural network and its learning to understand the AI's thinking and track its direction of growth.
- Used **Object Oriented Programming** design structures to organise different genetic information.

Handwritten Digit Recognizer | *Java (Convolutional Neural Network - Machine Learning)*

- Built a digit recognizer trained on the MNIST database from scratch to read handwritten numbers.
- Leveraged machine learning concepts such as the feed-forward process, backpropagation, and stochastic gradient descent to achieve an **accuracy of $\sim$ 99.71%** when tested on other MNIST samples.

Multiclass Classification Neural Network | *Python, Tensorflow, Google Colab (Machine Learning)*

- Created a Multiclass Classification Neural Network trained on a Keras dataset that can recognize and classify images of clothing into types.
- Learned various visualization techniques to better analyze and evaluate my models. I.e. confusion matrices, learning rate vs. loss plots, loss vs. epochs plots, etc.

Chinese Compiler | *C++, MIPS (Compiler)*

- Designed a C-like Chinese esolang that compiles to MIPS assembly, and a MIPS assembler to convert it to binary.
- Employed Simplified Maximal Munch for the compiler's scanner, and SLR(1) for the parsing.
- Integrated key features such as pointers, heap allocation, while loops, printing, and conditional statements.

Text-to-Speech Highlighter | *JavaScript, Azure and Chrome APIs, HTML, CSS (Full-Stack)*

- Developed and maintained Text-to-Speech Highlighter, a Chrome extension with **17,000+ weekly users** that reads and optionally translates the text you highlight. Operated from July 2021 to July 2023.
- Experienced the full software development life cycle by constantly developing new features after deployment to satisfy reviews from real users.
- Employed **Azure** for translation and **Chrome APIs** for features such as text-to-speech and keyboard commands.
- Launched and pitched core product within 36 hours for a hackathon, demanding intense team coordination.

Education

University of Waterloo Sep 2021 — Apr 2026

Candidate for Bachelor of Computer Science *Waterloo, Ontario*

Relevant Courses: Compilers, Computer Design, Databases, Data Structures & Algorithms, Object-Oriented Programming, Operating Systems

Interests

Photography | Uploading Piano Videos | Cycling | Penpalling | Learning Chinese