

# CHARLES GAO

charlesgao.c@gmail.com • 514-262-1866 • Waterloo, Canada

## EDUCATION

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### University of Waterloo

Sept. 2015 — Apr. 2020

*Bachelor of Computer Science & Combinatorics and Optimization*

## EXPERIENCE

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### Co-Founder/Full-Stack Developer

Sept. 2015 — Apr. 2020

*Viafly Technologies, New York*

- Created a point-of-sale e-commerce platform with Ruby on Rails, React, and PostgreSQL
- Designed a database schema and implemented a PostgreSQL database for a e-commerce website
- Designed RESTful API development specifications using Postman API Documentation to plan the development of the website
- Added Shopify, Square, Lightspeed third-party authorization (OAuth 2.0)
- Automated vendors registration, and products uploading to server database from Shopify, Square, Lightspeed API, and tested using RSpec and mock
- Implemented an efficient tag-based product search infrastructure using Algolia
- Added online payment process on the back-end using Stripe API
- Created the landing webpage and profile pages for shops using React (Redux)
- Deployed the platform on Heroku for continuous integration, and set up mail server with AWS
- Scraped 50 000+ products using Python for front-end testing during early production stage

### ETL Developer

May 2018 — Mar. 2019

*Energy Profiles Limited, Toronto*

- Built ETL pipelines using Java and Python to efficiently gather, clean and store energy data for analysis
- Created data loaders in Java to obtain temperature data from a network of sensors in a buildings
- Created a Java scraping framework to increase the development efficiency of utility bills loading tools
- Built a Bash toolkit to check the consistency between the data of real and billed consumption
- Wrote stored procedures on a Microsoft SQL Server database for report generation
- Added unit tests on core functions with JUnit

## SKILLS

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- **Languages:** Ruby, JavaScript, Python, C++, Java, Bash
- **Technologies:** Ruby on Rails, Node.js, AWS, Heroku, PostgreSQL, Linux

## PROJECTS

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### Java Compiler (CS 444) — C++

Jan. 2020 — Apr. 2020

- Created a compiler from a subset of Java to x86 Assembly
- Implemented a tokenizer and parser from scratch in C++
- Developed semantics analysis in which includes type and hierarchical checking
- Integrated a unit testing framework Catch2 for Test-Driven Development

### ARM Microkernel (CS 452) — C

Sept. 2019 — Dec. 2019

- Created an ARM bare-metal real-time operating system (RTOS)
- Implemented context switching, hardware interrupt handler, RS-232 serial port device driver for processes to time-share CPU time

### OmnivoxDownloader — Python

Sept. 2019 — Dec. 2019

- Built a file downloader with a GUI to synced class documents from high school website
- Utilized Requests and BeautifulSoup to extract tags from school's online learning management website

- Built a GUI using wxPython featuring a real-time download status frame and a pause/resume option
- Synchronized multiple concurrent threads to improve the smoothness of the GUI