CHARLES GAO

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EDUCATION

University of Waterloo *Expected Graduation Date: April 2020*
BMath, Double Major in Computer Science & Combinatorics and Optimization

EXPERIENCE

Co-Founder/Full-Stack Developer Sept. 2017 — Jan. 2020
Viafly Technologies, New York
- Created a full-scale point-of-sale e-commerce platform (Ruby on Rails, React, PostgreSQL) from scratch as a coordinator and full-stack developer in a team of three
- 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 (Visa, MasterCard) 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

- **Languages**: Python, JavaScript (ES6), C++, C, Java, Ruby, Bash
- **Technologies**: Ruby on Rails (RSpec), Node.js (Express), AWS, Heroku, PostgreSQL, React, Linux (Ubuntu, Arch, Gentoo)
- **Courses:** Operating System, Machine Learning, Real-time programming, Compiler Construction, Cryptography

PROJECTS

Java Compiler (CS 444) — C++ Jan. 2020 — Present
- 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 hierarchial checking
- Integrated a unit testing framework Catch2 for Test-Driven Development

Train Microkernel (CS 452) — C Sept. 2019 — Dec. 2019
- Created an ARM bare-metal real-time operating system (RTOS) from scratch in a team of two
- Implemented context switching, hardware interrupt handler, RS-232 serial port device driver for processes to time-share CPU time

OmnivoxDownloader — Python Jun. 2015 — Jul. 2015
- 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