

# CHARLES GAO

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## EDUCATION

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### University of Waterloo

Sept. 2015 to Apr. 2020

B. Math., Computer Science Major and Combinatorics & Optimization Major

## EXPERIENCE

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### Backend Developer

Sept. 2019 to May 2020

*Viafly Technologies, New York*

- Created a point-of-sale e-commerce platform with Ruby on Rails, Heroku, React, and PostgreSQL integrated with Shopify, and Square API
- Added online payment process on the backend using Stripe API
- Implemented an efficient tag-based product search infrastructure through Algolia API
- Designed a normalized database schema on Rails Active Record (ORM)

### ETL Developer

May 2018 to Mar. 2019

*Energy Profiles Limited, Toronto*

- Maintained an ETL pipelines for energy gathering using Java, Python, and C#
- Implemented utility bill data loading system with HtmlUnit, Maven, and CronJob
- Wrote Stored Procedures and Constraints in SQL for cleansing of energy data
- Synchronized temperature data gathering from a network of sensors with BACnet Protocol

### Software Developer

Jan. 2018 to Mar. 2018

*Kamusi Project, Lausanne*

- Created a chatbot on WeChat using Python, Google App Engine and WebHooks
- Designed a database of emojis and foreign words encoded in UTF-8 using SQLite

## PROJECTS

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### JOOS1W Compiler (CS 444)

Jan. 2020 to Apr. 2020

- Created a compiler for JOOS1W, a large subset of Java 1.3 to i386 assembly language in C++17
- Handled Scanning, Parsing, Weeding, Abstract Syntax Tree Building, Name Resolution, Type Checking, Static Analysis and Code Generation for any code in the language of JOOS1W

### Trains Microkernel (CS 452)

Sept. 2019 to Dec. 2019

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

### OmnivoxExtractor

Sept. 2016 to Dec. 2016

- Built a file downloader to synced CEGEP class documents with Python, wxPython, and BeautifulSoup
- Captured key target data with CSS selector on the HTML page captured with Requests
- Inspected a website API requests with Chrome DevTools for data extraction
- Synchronized multiple concurrent threads to improve the smoothness of the GUI

## SKILLS

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- **Languages:** Ruby, JavaScript, Python, C++, Java, Bash
- **Libraries & Framework:** Ruby on Rails, Node.js, RSpec, JUnit, Catch2
- **Technologies & Tools:** AWS, Heroku, PostgreSQL, CMake, Maven, Docker, Linux