

# Joshua Cheng

✉ j885cheng@uwaterloo.ca | 🏠 chengjoshua.com | 📷 JoshuaC15 | 🌐 joshuacheng15

## Skills

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**Proficient** Python, JavaScript/TypeScript, C++, C, Docker, Node, Flask, Git  
**Comfortable** React, GraphQL, HTML/CSS, Scala, Apache Airflow, OpenCV, PostgreSQL  
**Familiar** SQL, Kubernetes, TensorFlow, Unity, C#

## Experience

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### Solutions Developer

FAIRVENTURES

Waterloo

Jan 2021 - Apr 2021

- Increased performance of a Loss Run extraction tool and reduced output file size by **10x** by adding preprocessing functionality to improve optical character recognition results by **200%** using **Python** and **OpenCV**
- Implemented an abstraction layer to pass file metadata through **Python Airflow DAGs**, modularizing code and adding parallelization
- Developed an email bot to process and route questions to a deep-fake chat model, exposed on a **GraphQL** endpoint using **Prefect**
- Created a Loss Run extraction model with an accuracy of **97%** using **Tensorflow**, and generated **120+ annotated documents**

### Software Developer

UNIVERSITY OF WATERLOO FACULTY OF ENGINEERING

Waterloo

May 2020 - Aug 2020

- Designed a KenKen puzzle solver in **C** and reduced the runtime by **50%**, through implementing a breadth-first search algorithm
- Migrated a spaceship physics game from **Unity** to **Godot** using **C#**, deployed faculty wide to **2000+ students**
- Wrote code examples in **C** of higher order functions for the Programming Principles textbook using LaTeX

### Firmware Developer

MIDNIGHT SUN SOLAR CAR DESIGN TEAM

Waterloo

Sep 2019 - Jan 2020

- Increased workflow efficiency by **50%** by developing an API to configure the GPIO states of MCP2300 integrated circuits with **C**
- Developed a GPIO expander with the **I2C** library and updated the codebase in **Atlassian**

### Teaching Assistant SE-101

UNIVERSITY OF WATERLOO FACULTY OF ENGINEERING

Waterloo

Sep 2020 - Dec 2020

- Led the development of **5 software design projects** and taught industry standard programming principles to undergrad SE students

## Projects

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### Business Insight Extractor and Interpreter

BUSINEXT.AI

- Developed an open-source image classification web page with **TypeScript**, **Node**, **GraphQL**, **Docker**, and **React** to automate the process of gathering restaurant statistics for an insurance underwriter
- Built an image extraction provider to detect localized objects and determine image labels using **Google Vision API**

### Heat Source Mapping Drone

PROJECT BRETT

- Programmed an autonomous drone in **Python** and **C**, scanning areas of heat with a precision of **0.01 °C** to aid in wildfire detection
- Designed an algorithm to create heat maps using **kernel density estimation** to extrapolate missing heat values with **Matplotlib**

## Education

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### University of Waterloo

BACHELOR OF SOFTWARE ENGINEERING

Waterloo, ON

Sep 2019 - Present

- COURSES: Introduction to Database Management, Data Structures & Data Management, Foundations of Sequential Programs
- SCHOLARSHIPS: President's Scholarship of Distinction 2019 (\$2000), Halton Proficiency Award 2019 (\$1000)