Joshua Cheng

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Technical Skills

Languages: **C++, Python, C, JavaScript, SQL, HTML5/CSS, C#**

Frameworks and Tools: **Git, Flask, Unix, Matplotlib, React, Unity3D, Processing, PyCharm**

Experience

Firmware Developer — **Waterloo, ON**
Midnight Sun Solar Car Waterloo Engineering Design Team — *September 2019 – Present*

- In a small team, developed an **API** in **C** to allow users to more efficiently configure the GPIO states on an MCP2300 integrated circuit, which led to an improved rear power distribution for the solar car
- Programmed using the **I2C** library, a GPIO expander, as well as thoroughly documented the code written through **Confluence**

Software Engineering Intern — **Toronto, ON**
CTO Boost Inc. — *July 2018 – August 2018*

- Created educational videos about the concepts of **Blockchain**, such as ledgers and cryptographic hash functions, for numerous stakeholders including the CEO
- Broke down the technical aspects of Blockchain through various graphics and video edits done using iMovie
- Communicated with executives to further develop knowledge of cryptocurrency, and demonstrated initiative through self-learning

Janet Barber Aquatics — **Oakville, ON**
Swim Instructor — *September 2016 – December 2018*

- Organized and taught swimming lessons to students aged 2-16, including four with special needs
- With the NLS and LSS first aid certificates, taught important lifesaving skills up to the Bronze Cross level

Technical Projects

Heat Source Mapping Drone – Software Engineering Design Project — *September 2019 – December 2019*

- Built and programmed a **self-piloting drone** with **C** that collected images and heat data in flight, which were coalesced into a heat map using **Python** and **OpenCV**
- Implemented data visualization techniques with **Matplotlib** and **Pandas** to highlight areas of heat with a **precision of 0.01 °C**
- Designed the infrared map creation algorithm to use **kernel density estimation** to accommodate for onboard hardware limitations
- Wrote Python scripts with **Seaborn** to map the drone's flight path, based on collected x and y positions

Slate – Hack the North — *September 2019*

- Created a social media platform to allow users to dynamically create time schedules and generate invites between one another using **Flask** and **React**
- Developed the back end consisting of user signup functionality through an **SQLite** database to store **encrypted** user information
- Designed the API with a front end team to ensure seamless integration with the back end endpoints

FPSGolf – Adrenalan Hackathon — *August 2018*

- Used **C#** and **Unity3D** to create a first-person shooter golf game for **iOS**, where the goal is to shoot enemies into specific locations
- Implemented conditional based enemy **AI** to track and pursue the player once they enter a certain range

Education

University of Waterloo — **Waterloo, ON**
Bachelor of Software Engineering — *September 2019 – April 2024*

Honors and Achievements: President's Scholarship of Distinction ($2000), Halton Proficiency Award ($1000)