

# ETHAN GUO

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University of Waterloo Software Engineering, Class of 2023

## SKILLS

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- **Languages:** Python, C/C++, Java, C#, JavaScript, HTML, CSS/Sass, BASIC, VHDL
- **Technologies:** OpenCV, Qt, Node, Flask, React, jQuery, Android, Unity, Git, Arduino
- **Skills/Interests:** Computer vision, Natural language processing, Robotics, IoT, 3D modeling and 3D printing

## EXPERIENCE

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### Software Engineering Intern *Christie Digital, Kitchener, Ontario*

May 2019 – Aug 2019

- Added colour calibration feature to projection mapping software in C, and designed and developed intuitive user interfaces using Qt.
- Programmed an industrial robotic arm and built a custom peripheral device using an Arduino to allow our software to interface with the robot.

### Robot Technician *Rapid Novor, Kitchener, Ontario*

Jul 2018 – Aug 2018

- Developed lab protocols on a robotic pipetting platform using C and Python, streamlining lab operations and enabling mass-scale lab assays which were previously impractical to be performed.
- Set up and modified robot hardware to improve performance, and worked with scientists to integrate robot with existing automation systems in the lab.
- Forked and improved Python API for the robot, adding functionality and improving documentation.

### Software Intern *Teledyne DALSA, Waterloo, Ontario*

Jul 2017 – Aug 2017

- Developed computer vision system using OpenCV and Python to localize and guide an industrial robotic arm.

## LEADERSHIP EXPERIENCE

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### Logistics Core Team Lead *Hack the North*

Feb 2019 – Present

- Organizing Canada's biggest hackathon that hosts over 1500 hackers from over 23 countries.
- Leading a team of 4 organizers to plan out and execute core logistical areas of the event including 11 meals and snacks, 65 workshops, 20 buses, and coordinating 300 volunteers over the course of 36 hours.
- Coordinating with sponsorship, finance, marketing, design, frontend and backend teams, totaling 40 organizers.

### Founder and Lead Organizer *JAMHacks and JAMHacks 2*

Sep 2016 – May 2018

- Created and organized Waterloo's first 12-hour and 24-hour high school hackathons respectively, with an audience of over 200 students and over \$10,000 in sponsorships by 2018.
- Led a team of 5–10 organizers in all areas including sponsorships, promotions, logistics, and technical.
- Developed website ([jamhacks.ca](http://jamhacks.ca)) and registration system using Bootstrap, Pug, Sass, and Node.

## PROJECTS

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### Firefighter Robot

Jan 2018 – Jun 2018

- Created a record-setting autonomous robot to navigate a maze while detecting and extinguishing candles.
- Designed and fabricated all circuit boards using EagleCAD, and programmed PIC microcontroller in BASIC.
- Designed and built a unique holonomic drive system, allowing us to break time records in every category, in one case reducing a previous 1m45s record down to 19s.

### Polyspective *THacks 2 — Best Hardware Hack*

Oct 2017

- Created software to automatically switch between multiple live camera feeds in real-time, based on the amount of video and audio activity in each stream.
- Used OpenCV in Python for image analysis and facial feature detection.

### Timeline *Bonfire Hackathon 2017 — Runner Up*

Aug 2017

- Created a Chrome extension that analyzes Messenger conversations to find an optimal meeting time and displays free/busy times visually on a timeline. Uses Node, Pug and Sass, with a Gulp build script.

### LEAP Android *Hack the North 2016*

Sep 2016

- Developed an Android app that uses the phone's front-facing camera as a gesture sensor and hand tracker.
- Used OpenCV to track hand and finger positions, and Bluetooth to communicate with Python desktop app.