# Paolo Torres

3A Mechatronics Engineering, University of Waterloo

paolo-torres.github.io
github.com/paolo-torres
linkedin.com/in/paolo-torres
ptorres@uwaterloo.ca
(647) 863-7995

## Skills

**Languages/Tech:** C++, C, C#, XAML, .NET, JavaScript, Node.js, JSON, Python, Arduino, HTML, CSS
**Libraries/APIs:** C++ STL, libc++, Clang, LLVM, C Run-Time, WPF, jQuery, OpenCV, scikit-learn, Tkinter
**Tools:** Visual Studio, Git, Azure DevOps, Command Prompt, MSBuild, Terminal, PowerShell, Linux, Jira

## Experience

**Software Engineering Intern** - Microsoft — Jan 2019 - Apr 2019

- Developed **C++20** features for the **STL** including algorithms, math, containers, type traits, and strings
- Optimized function's move constructor to **reduce object file size** by 30% for x86 and 45% for x64
- Committed changes to the **C++ Standard**, applied performance improvements, and shipped with VS

**Explore Intern** - Microsoft — May 2018 - Aug 2018

- Developed Visual Studio IDE and IntelliSense features in C++ and C#, shipped to over **5 million users**
- Added **telemetry analytics** and full test coverage to track success metrics and increase robustness
- Utilized Git and Azure DevOps to track work, participated in sprint meetings, and carried out demos

**Robotics Engineering Intern** - Aeryon Labs — Sep 2017 - Dec 2017

- Generated fixes on **IMU sensors** and **MCUs** to improve temperature reading and flight performance in C
- Fixed **memory management** issues in C++ and CUDA on Nvidia Jetson TK1 to reduce payload crashes
- Squashed 50+ bugs in Jira and tested feature requests related to controls, computer vision, and UI

**Software Developer/QA Intern** - Solink — Jan 2017 - Apr 2017

- Implemented central **data source connector** in JavaScript for 10,000+ POS device transactions a day
- Wrote camera-based and data extraction **automation scripts** via REST saving hours of work a week
- Created software tools, patched numerous bugs, and tested the product via Scrum/Agile methodology

**Embedded Developer** - Waterloo Aerial Robotics Group — Sep 2016 - Dec 2016

- Designed a **debugging system** in C for the GPS to prevent coordinates from incorrectly locking values
- Utilized integer-based commands to control decision-making for the aircraft's probe drop mechanism
- Employed pulse width modulation code on mounted camera to manage payload imaging for competition

**Programming Instructor** - Addity — Jul 2016 - Aug 2016

- Implemented Lego Mindstorms activities and taught 40+ students about the fundamentals of **robotics**
- Configured Gradle automation system with Windows batch files to build and host project workspaces
- Led the WordPress course for 30+ students and integrated HTML and CSS to enrich the program

## Projects

**Vehicle Tracker** - (C++, OpenCV)

- Created an application enabling users to upload traffic video and have the data analyzed at 96% accuracy
- Employed **computer vision** and image processing techniques to separate static from dynamic instances

**Sign Language Translator** - CUHacking (Python)

- Built a sign language recognition system via Leap Motion hardware with an incorporated video chat
- Won Indico's Challenge for **best use of machine learning** through SVMs and the scikit-learn library

**Pathfinding Simulator** - (C++)

- Implemented **A* search algorithm** to simulate closest path robotic navigation with obstacle avoidance
- Allowed users to create the environment and visualize movement and heuristics via binary representation

**Toast the North** - Hack the North (Arduino, Python)

- Developed a system that allows users to create their own design and have it come to life through toast
- **Wrote all the code** consisting of the heat control mechanism, Processing software, and Tkinter GUI