

# 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, Terminal, Linux, Jira, ROS, CMake, MSBuild, Command Prompt, Azure DevOps

---

## 📁 EXPERIENCE

**Clearpath Robotics** | Software Developer Intern Waterloo, ON | Sep 2019 - Present

- Implementing **firmware** for DMX512 and sACN compatibility, allowing control of lighting applications
- Interfacing with an **STM32F407**, creating device drivers to enable UDP transport and SPI conversion
- Developing and testing features for autonomous ground vehicles in **C++**, utilizing ROS and CMake

**Microsoft** | Software Engineering Intern Redmond, WA | Jan - Apr 2019

- Developed **C++20** library conformance features based on the C++ STL that ships with Visual Studio
- **Libraries:** algorithms, numeric, cmath, containers, type traits, strings, functional, memory, and new
- Optimized function's move constructor to **reduce object file size** by 30% for x86 and 45% for x64
- Committed official changes to the C++ Standard through performance and wording improvements

**Microsoft** | Explore Intern Redmond, WA | May - 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
- Created query scripts to extract user metrics and formed Power BI dashboards for data visualization

**Aeryon Labs** | Robotics Engineering Intern Waterloo, ON | Sep - Dec 2017

- Generated fixes on **sensors** and MCUs to improve temperature reading and flight performance in C
- Squashed **50+ bugs** in Jira and verified feature requests related to controls, computer vision, and UI
- Tested and validated memory management issues, firmware, connectivity, calibration, and custom APIs

**Solink** | Software Developer/QA Intern Ottawa, ON | Jan - 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

---

## 🔗 PROJECTS

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

- Created an application enabling users to upload traffic video and count passing cars at 92% 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