SEAN YANG

sean@seanyang.ca ◆ seanyang.ca ◆ linkedin.com/in/syang07 ◆ github.com/aicheye

EDUCATION

University of Waterloo
Bachelor of Software Engineering Expected Apr 2030
- **Cumulative GPA**: 92.68% or 3.97/4.0 (Term Distinction awarded 2 of 2 terms)

SKILLS

- **Programming Languages**: C++, Rust, Python, C, Java, TypeScript, Verilog HDL, SQL
- **Systems & Infrastructure**: Linux, Docker, Ansible, Github Actions, NVIDIA Jetson/JetPack, QNX
- **ML & Web**: PyTorch, OpenCV, NumPy, MuJoCo, MJLab, Isaac Sim/Lab, React, Next.js, Vite, Vue.js

EXPERIENCE

Medra **San Francisco, California**
Member of Technical Staff Intern, Robotics (Incoming) Jan 2027 – Apr 2027

University of Waterloo (CAMS-Lab) **Waterloo, Ontario**
Undergraduate Research Assistant Sep 2026 – Present
- Built the lab's first **ROS 2/Gazebo** simulator for its **Ackermann-steered** rovers, packaged in **Docker** with a live web UI
- Wrote a **C++** nonlinear controller that tracks arbitrary smooth trajectories within the rover's turning limits
- Ran the same controller on a real **DJI RoboMaster S1** with **motion-capture** feedback and a convex safety-zone cutoff
- Built a **Python** testbed for **online parameter estimation**, identifying unknown plant dynamics with a gradient adaptive law

moss robotics **San Francisco, California**
Perception Engineering Intern May 2026 – Aug 2026
- Architected an end-to-end **C++/ROS 2** autonomy stack for agricultural rovers, owning sensing, planning, and control
- Developed **platform-agnostic mobile control** for both the **Clearpath Husky** and **Rover Robotics MAX** rovers
- Collaborated on **RTK-odom fusion** for precise navigation, reaching mean **<20cm follow error** over **500m+** of autonomous tests
- Achieved **microsecond-level** sensor sync to enable robust fusion with real-time **LiDAR inertial SLAM**
- Built a **Rust** synthetic LiDAR generator (@ **4M+ pts/s**) producing labelled orchards when only **50K of 3M** real scans had labels
- Grew procedural apple trees through a **PyO3** bridge with per-point instance labels and a streaming **COPC** viewer
- Developed **Ansible playbooks** for automated OTA deployment and testing, discovering and fixing **8+ critical bugs**
- Automated firmware provisioning and **BSP customization** for **NVIDIA Jetson** platforms, reducing flash times by **3x**

WATonomous **Waterloo, Ontario**
Robotics Software Engineer Sep 2025 – Present
- Built a humanoid badminton receive environment in **mjlab/MuJoCo Warp** with shuttle aerodynamics and **EKF** tracking
- Distilled a privileged **PPO** teacher into a noisy-perception student, raising hit rate from **76.6% to 98.8%** of serves
- Fine-tuned within a hardware envelope (**3 rad/s** joint cap, rated motor torque), halving distal joint speeds at **98.2%** hits
- Refined the student with an **asymmetric actor-critic**, returning **78%** of serves over the net
- Built rapid-inference **predictive models** in **C++/ROS 2** for the EVE autonomous car, **cutting safety incidents 3x**
- Integrated perception, world modelling, planning, and action nodes and maintained **Docker-based** dev environments

PROJECTS

Spidey & Armie (Hack the North 2026) | *C++, TypeScript, OpenCV, QNX* Sep 2026
- Built a **3D digital twin** of a robot table that commands a real **quadruped** to any clicked point in a team of 4
- Developed a **C++** camera tracker on a **QNX** Raspberry Pi with **MobileSAM** object detection and path planning

Multi-Robot Swarm Exploration | *Python, ROS 2, Docker, Gazebo* Feb 2026 – Apr 2026
- Achieved **7.5x** faster exploration of procedurally generated mazes using **4 decentralized robots** in **ROS 2**
- Implemented **geodesic Voronoi partitioning** and multi-threaded **frontier assignment** to divide exploration across robots
- Built **4 ROS 2 packages** with per-robot FSMs across **7 Docker services** with Gazebo and Foxglove visualization

CRusTTY (C Interpreter/Debugger) | *Rust, C, GitHub Actions* Dec 2025 – Mar 2026
- Built a **C interpreter** from scratch in **Rust** with a **TUI debugger** visualizing stack and heap memory in real time
- Implemented a **snapshot-based execution engine** for bidirectional stepping, garnering **50+ stars** on GitHub