

Simon Jin

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EDUCATION

Carnegie Mellon University

Bachelor of Science in Robotics, School of Computer Science

Pittsburgh, PA

Aug. 2026 – May 2029

Transferred from **Simon Fraser University** (Computing Science) | CGPA: 4.04/4.33

Relevant Coursework: Robotic Autonomy (SLAM, motion planning, ROS 2, control theory), Linear Algebra

EXPERIENCE

Software Developer | *Ascension Robotics (Student Design Team)*

Sept. 2025 – June 2026

- Wrote a C++ ROS 2 node decoupling a continuously spinning LiDAR/camera turret from the chassis — broadcasting a heading-locked base frame into tf2 and rotating Nav2's velocity commands into the firmware's turret frame — so Nav2 could plan for a holonomic base carrying a rotating sensor.
- Migrated the local controller from DWB to MPPI with an Omni motion model, retuning critics, costmaps, and velocity limits to recover lateral motion within the CPU budget shared with the onboard vision pipeline.
- Extended the host-MCU serial driver to publish absolute gimbal yaw and map-frame goal poses into ROS 2, gating publication on change detection so navigation goals are not re-triggered at packet rate.
- Replaced a fragile tmux bringup script with a lingering `systemd` user service, resolving cgroup, environment, and signal-handling faults so the LiDAR, vision, and Nav2 stack starts at boot and shuts down cleanly.
- Delivered real-time armor-panel detection in C++ on a Jetson Orin Nano, cutting camera-intrinsic RMS reprojection error ~80% and improving downstream PnP pose estimation.

Undergraduate Researcher | *LiDAR-Camera Sensor Fusion, Simon Fraser University*

Jan. 2026 – Apr. 2026

- Owned sensor integration on a 5-person team's mobile-robot data-collection rig (NVIDIA Jetson Orin Nano, ROS 2 Humble), fusing a ZED stereo camera and a Robosense LiDAR for indoor perception research.
- Calibrated the LiDAR-camera extrinsic 6-DoF transform, seeding the optimizer with CAD-derived measurements and ROI constraints to achieve translation error under ~3cm and reprojection error generally under 15px.
- Modeled and 3D-printed a custom two-tier sensor mount, positioning and thermally managing both sensors.

Technical Data Annotator | *Artiverse*

Oct. 2025 – Feb. 2026

- Automated generation of XML URDF robot descriptions from .glb assets with a multi-threaded Python/NumPy pipeline for high-fidelity physics simulations.
- Refactored legacy conversion scripts by resolving 3D coordinate-system discrepancies, isolating baked matrix transformations across 800+ 3D models.

Team Captain | *Team Parabellum*

Sept. 2022 – July 2025

- Directed the mechanical design of the competition robot — custom chassis, capstan-drive speed reducer, and a telescoping box-tube linear extension with a differential wrist — carrying the team to 2nd Place Innovate at the European Premier Event.
- Programmed Java autonomous routines with a custom PIDF controller, established Git/GitHub workflow standards, and delegated and reviewed software tasks across the team.

PROJECTS

Custom Hall-Effect Macropad

Feb. 2025 – Present

- Engineered a custom 2-layer PCB in KiCad (schematic capture, trace routing, manufacturing-ready Gerber files) with 3D-printed Hall-effect switch housings.
- Developing low-level embedded firmware in C++ for analog matrix scanning, signal debouncing, and dynamic actuation-point calibration.

AWARDS

FTC Innovate Award — 2nd Place, European Premier Event • ARC Competition — 3rd (1v1), 8th (3v3) • HardHaq '25 (1st Place) • nwHacks 2026 (Best Use of ElevenLabs API) • Hack the Coast (ScienceTech for Social Good) • Stormhacks (Surge Choice Award, Sustainable Engineering Track)

SKILLS

Robotics: ROS 2 (Nav2, MPPI, tf2, lifecycle nodes), SLAM & localization, motion planning, Jetson, Linux

Programming Languages: C++, Python, Rust, Java, JavaScript/TypeScript, SQL

Perception & ML: OpenCV, YOLOv12, ONNX Runtime, NumPy, scikit-learn, camera/LiDAR calibration

Hardware & Tooling: Fusion 360 (CAD), KiCad (PCB design), ANSYS HFSS, colcon/CMake, Git, Docker