

Shenghua Jin

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SKILLS

Programming Languages: Python, C++, Rust, Java, JavaScript/TypeScript, SQL
Machine Learning & Data: OpenCV, YOLOv12, Pandas, NumPy, scikit-learn, XGBoost, Optuna, Jupyter
Robotics & Hardware: ROS2, KiCad (PCB design), Fusion 360 (CAD), ANSYS HFSS, embedded firmware
Web & Tooling: React, Next.js, Tauri, Node.js, Git/GitHub, Docker, Linux

EDUCATION

Carnegie Mellon University Pittsburgh, PA
B.S. in Robotics, School of Computer Science | *Incoming Transfer* Fall 2026
Expected Graduation: 2029 | CGPA (Simon Fraser University): 4.04/4.33
Transferring from Simon Fraser University (Computing Science)
Relevant Coursework: **Robotic Autonomy** (SLAM, motion planning, ROS 2, control theory)

EXPERIENCE

LiDAR-Camera Sensor Fusion | *Undergraduate Research (CMPT 419), Simon Fraser University* January – April 2026

- Built, with a 5-person team, a calibrated multi-sensor data-collection rig on a mobile robot (NVIDIA Jetson Orin Nano, ROS2 Humble) fusing a ZED stereo camera and a Robosense LiDAR for indoor perception research.
- Designed and 3D-printed a custom two-tier sensor mount, positioning and thermally managing the camera and LiDAR for reliable data capture.
- Calibrated the LiDAR-camera extrinsic 6DoF transform, seeding the optimizer with CAD-derived measurements and ROI constraints to achieve translation error under ~3cm and reprojection error generally under 15px.

Ascension Robotics (Student Design Team) | *Computer Vision Developer* September 2025 – Current

- Built a real-time object-detection system in C++ on Linux (Jetson Orin Nano), automating tracking and trajectory prediction for dynamic targets.
- Reduced camera-intrinsic calibration RMS reprojection error by ~80%, improving downstream 3D coordinate extraction and pose estimation.
- Curated and labeled a ~7,000-image dataset to train and optimize a YOLOv12 detection model.

Artiverse | *Technical Data Annotator* October 2025 – February 2026

- Engineered a multi-threaded Python pipeline using NumPy to automate generation of XML URDFs from .glb files for high-fidelity physics simulations.
- Refactored legacy conversion scripts by resolving 3D coordinate-system discrepancies, isolating baked matrix transformations across 800+ 3D models.

Team Parabellum | *Team Captain* September 2022 – July 2025

- Led the design and build of a competitive FTC robot, winning Innovate 2nd Place at the European Premier Event.
- Programmed autonomous routines in Java with a custom PIDF controller; managed Git/GitHub workflows and delegated software tasks across the team.

PROJECTS AND COMPETITIONS

HardHq '25 – Superconducting Qubit Design | *1st Place* November 2025

- Designed a fabrication-ready, single-qubit superconducting (quantum-computing) processor, placing 1st.
- Ran ANSYS HFSS finite-element electromagnetic simulations to tune the chip's electrical and microwave behavior, improving qubit stability and signal-readout reliability.

Custom Hall-Effect Macropad February 2025 – Current

- 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.

Hudson, Deaf-Assist HUD (nwHacks 2026) | *Winner – Best Use of ElevenLabs API* January 2026

- Engineered an accessibility-focused Heads-Up Display on Viture Pro XR glasses for real-time captioning, integrating the ElevenLabs API for text-to-speech and voice cloning.
- Synchronized hardware inputs with cloud-based AI processing in a cross-functional team.