Joshua Himmens

Engineering Physics Student

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Education

University of British Columbia **Vancouver, BC, Canada**

Bachelor of Applied Science in Engineering Physics Sep 2023 – Expected May 2028

- Capstone projects: Linique, a VLA-controlled bimanual napkin-folding robot (2025–26); sim-to-real reinforcement learning for a multi-car RC platform (2026–27, in progress); designed a 24-channel phased-array sonar.
- Specialized in machine learning, robotics, controls, embedded systems, and quantum computing.

Work Experience

Tesla **Palo Alto, CA, USA**

Tactile Sensing Design Intern, Optimus May 2026 – Dec 2026

- Owned specifications and test plans for Optimus end-of-line, incoming quality control, and characterization testers.
- Developed mechatronic test systems using 7-DOF robot arms with vision in the loop, 3D reconstruction of complex geometries, and semantic object reconstruction.
- Built failure-analysis tooling for tactile sensors used across sensing, manufacturing, and supply chain teams.
- Designed and debugged on-bot sensors and electronics, using learned and classical physics models to guide architecture and manufacturing specs.
- Named inventor on a provisional patent application.

AltaML **Calgary, AB, Canada**

Associate Machine Learning Developer Jan 2025 – Apr 2025

- Developed machine learning models using scikit-learn projected to save the Government of Alberta >$4 million annually.
- Diagnosed a geographic shortcut in the training data, where random negative pairs had turned the classifier into a distance model, and fixed it through data construction rather than model choice.
- Built Azure ML pipelines for automated model training and deployment, serving predictions via REST APIs integrated with SQL databases and Blob Storage.
- Implemented H3 spatial indexing to balance geographic accuracy with user privacy in an infrastructure planning tool.

TRIUMF **Vancouver, BC, Canada**

ATLAS Deep Learning Research Student May 2024 – Feb 2025

- Developed PointNet-based panoptic segmentation models to associate ATLAS calorimeter signals with particle tracks, using TensorFlow and Keras.
- Discovered and corrected inverted energy-attribution labels in a shared training pipeline, restoring the intended learning target for researchers using the same data.
- Used CERN's grid computing to parallelize compute across thousands of nodes.
- Trained with an energy curriculum: pretrained on simple low-energy decays, then iteratively mixed in higher-energy bins, after strong results on small events failed to transfer to large ones.
- Implemented model serving with NVIDIA Triton for production deployment.

UBC Orbit Satellite Design Team **Vancouver, BC, Canada**

Command and Data Handling (CDH) Lead and Firmware Developer Oct 2023 – Oct 2026

- Led a team of 10 firmware developers building fault-tolerant flight software (FreeRTOS, TMS570) to ESA mission objectives for ALEASAT.
- Developed mission, function, and acceptance testing procedures to ESA and ECSS standards; built the FlatSat avionics test bench and programmed device drivers and electrical ground support equipment.

Selected Projects

Linique: Bimanual Robot Learning for Napkin Folding **Sep 2025 – Apr 2026**

UBC Engineering Physics capstone, six-person team; one of three Faculty Awards, Design & Innovation Day 2026

- Owned the software and robot-learning stack for a bimanual SO-101 system: synchronized teleoperation data collection, policy training, and on-device inference; roughly 40% autonomous folding success in physical trials.
- Chose real demonstrations over simulation, since deformable-cloth FEM is intractable for this task, and trained ACT, SmolVLA, and X-VLA policies on a published 499-episode dataset.
- Added a stage-and-progress reward model to reweight demonstrations for sample efficiency; diagnosed missed 30 Hz control deadlines and contributed SO-101 calibration test cases to LeRobot.

FizzVolt: Reinforcement Learning for Circuit Design **Jun 2026**
HUD RL Environments Hackathon at Y Combinator, two-person team
- Built a GRPO training environment in which Qwen3-8B writes programs that construct circuit graphs, graded by deterministic electrical-rule, KiCad ERC, cost, size, and component-availability validators.

HTTP 418: Autonomous Driving in Simulation **Dec 2025**
UBC ENPH 353, two-person team
- Built a ROS control system in Gazebo combining imitation-learned steering (ONNX), HSV sign detection, and cloud-hosted YOLO OCR with histogram voting, after benchmarking PPO, SAC, and DQN against imitation learning.

Publications and Presentations

Machine Learning for Robotic Napkin Folding Mar 2026
2026 IEEE Vancouver Section AGM. Placed 3rd. Poster on ACT, SmolVLA, and a stage-and-progress reward model for bimanual cloth folding.

Machine Learning Approaches to Segmentation for Reconstruction in the ATLAS Calorimeter Feb 2025
Winter Nuclear and Particle Physics Conference (WNPPC 2025), Banff. Contributed oral to a primarily graduate and postdoctoral audience.

Developing Machine Learning Techniques for Particle Flow in the ATLAS Experiment Jun 2024
Canadian Astroparticle Physics Summer Student Talks Competition (CASST 2024). Placed 2nd of 44 talks.

JetPointNet: A Machine Learning Approach to Cell-to-Track Attribution in the ATLAS Experiment Oct 2024
Canadian Undergraduate Physics Conference

3D Particle Flow in the ATLAS Calorimeter: How to Train Your Model May 2024
TRIUMF Science Week

ALEASAT ESA "Fly Your Satellite!" Training Week Presentation Mar 2024
European Space Agency's ESEC-GALAXIA (Transinne, Belgium)

Honours and Awards

2026 Design & Innovation Day Faculty Award, for Linique
Issued by *UBC Faculty of Applied Science* Apr 2026

Hector J. MacLeod Award
Issued by *IEEE Vancouver Section* Apr 2024

Erich Vogt First Year Summer Research Experience (FYSRE) Award
Issued by *UBC Department of Physics and Astronomy* May 2024

Community service awards: Alberta Centennial Award and Alberta Premier's Citizenship Award; Calgary Flames Foundation Community Involvement Scholarship; Julia Turnbull Leadership Award
Issued by *Government of Alberta, Education Matters, and The Calgary Foundation* May – Aug 2023

Leadership and Advocacy

Founding Chair (Aug 2025 – May 2026), now Past Chair
UBC IEEE Aerospace and Electronic Systems Society (AESS) Student Branch Chapter Vancouver
Aug 2025 – Present
- Founded the chapter and chaired its first year; Technical Program Chair, Student Aerospace Summit 2025.

Advisory Team Member, Child Rights Connect, Geneva, Switzerland (remote) Jan 2021 – Dec 2023

Technical Skills

- **Machine Learning**: PyTorch, TensorFlow, Keras, LeRobot (ACT, SmolVLA, X-VLA), scikit-learn, Weights and Biases, ONNX, NVIDIA Triton, GRPO, PPO
- **Robotics and Controls**: ROS 2, MoveIt, Isaac Lab, Genesis, Gazebo, imitation learning, PID, inverse kinematics
- **Embedded Systems**: FreeRTOS, TMS570, RP2040, STM32, ESP32, Xilinx and Altera FPGAs, KiCad
- **Languages and Tools**: Python, Rust, C, C++, Java, MATLAB, Bash, Git, Slurm, RunPod, Modal
- **Quantum Computing**: Qiskit, QASM, Pasqal, QCNNs, VQCs; GENQ Global Hackathon (Geneva 2025, Calgary 2024)