

Jonathan Ung

Canadian Citizen | US J-1 Eligible
Email: jonathank.ung@icloud.com

Phone: +1 (778)-798-0415
Website: jonathanung.ca

LinkedIn: jonathankeithung
GitHub: jonathanung

EDUCATION

Simon Fraser University - Bachelor of Science in Computer Science

EXPECTED APR 2028

Relevant Coursework: Data Structures & Algorithms, Systems Programming, Distributed Systems, Artificial Intelligence, Networking, Computer Graphics, Computer Vision, Data Science, Robotic Autonomy

EXPERIENCE

Qualcomm | Markham, ON, Canada

MAY 2026 – AUG 2026

AI Software Engineering Intern

C/C++, Python, ONNX, GenAI, QNN, Hexagon

- Unified **50+ math ops and approximation functions** across multiple repositories into a canonical header library, eliminating divergent implementations of core operations (e.g., square root approximations) and enforcing a single computation path
- Designed **MRU-based graph eviction strategy** for on-device GenAI inference, enabling models exceeding device RAM by intelligently paging KV cache graph partitions to minimize latency under memory pressure
- Built automated graph validation tool for the Hexagon Tensor Processor pipeline, detecting **8+ categories of ONNX-to-QNN compilation defects** including quantization mismatches, redundant data movers, and broken connectivity

Rivian and Volkswagen Group Technologies | Vancouver, BC, Canada

MAY 2025 – DEC 2025

Infotainment Software Engineering Intern

Kotlin, Java, Android, Protobuf, QNX

- Owned **12+ user-facing features** across Rivian R2 Media App (browsing, search, playback, shuffle, podcasts), delivering an audio visualizer and vendor integrations for Spotify, Apple Music, and Tidal to pre-production builds
- Migrated Media App from fragment-based architecture to MVVM with view controllers consuming data models, cutting RAM usage **40%** and accelerating feature velocity **30%**
- Resolved critical vehicle safety defects including cold-boot launch crashes, unsafe service data handling, and a radio refactor regression that escaped QA, collaborating across platform and QA teams
- Fixed Bluetooth AVRCP metadata errors via caching and content-hash validation, raising accuracy **from 66% to 99%**

SFU Robot Soccer | Burnaby, BC, Canada

FEB 2024 – DEC 2026

Software Team Lead

C++, Python, Qt6, Protobuf, Docker

- Led **30-member C++ team**; redesigned onboarding workflows reducing new developer ramp-up time **40%**
- Engineered Behavior Tree DSL reducing node boilerplate **10:1** and Play Graph state machine with 12-play transitions evaluating **50+ metrics/tick**, coordinating 6 robots at **180Hz**
- Designed Protobuf networking protocol routing commands to **6 robots** with hot-swappable simulator/hardware modes

PROJECTS

Nasdaq ITCH Aggregator - GPU-Accelerated Market Data Pipeline

C++, CUDA, CMake, Python, zlib

- Built GPU-accelerated Nasdaq ITCH 5.0 pipeline streaming full-day TotalView feeds through a CPU parser into CUDA kernels, computing per-symbol **VWAP**, order imbalance, and bid/ask spread across **16,384 symbols**
- Engineered 4-slot pinned memory ring with async H2D/D2H double-buffering and event-gated recycling, sustaining **328 M msg/s** GPU hot-path throughput at **25 µs** batch latency on an RTX 4080

Follow-Ahead Robot Navigation - MCTS + RL Motion Planning

C++, PyTorch, ROS2, Stable Baselines3, Gymnasium

- Trained **LSTM** human motion predictor achieving **90% accuracy**, integrated predicted action probabilities into **MCTS** UCB selection for frontal following behavior
- Deployed real-time navigation on **Quanser QBot** with **ZED camera** and **Vicon** localization, running at **5Hz** planning frequency

Agentic Code Harness Tooling

Python, Go, Docker, Shell, tmux, Claude Code Plugin API

- Developed **Zone** under **Peasant Labs**, a per-repo Docker workspace manager for LLM coding agents with network sandboxing, adopted by **10+ researchers** for safe autonomous code execution
- Created **Finesse**, a **wave-based task decomposition** with dependency-aware scheduling, automatically splitting large tasks into parallel sub-workflows across isolated git worktrees with tmux orchestration and merge reconciliation

TECHNICAL SKILLS

Programming: Python, C/C++, CUDA, C#, Java, Kotlin, SQL, Bash, Docker, Qt6, Android, Networking (TCP, UDP, Sockets)

Machine Learning: PyTorch, scikit-learn, CNNs, RL (A2C, DQN), training pipelines, hyperparameter tuning, model evaluation

Computer Vision: OpenCV, feature & object detection, image pre-processing, augmentation, OCR, error analysis

Robotics & ADAS: Behavior Trees, multi-agent systems, real-time coordination, sensor fusion, Kalman filters, IMU processing

Data & Infrastructure: ETL pipelines, Spark, Databricks, Pandas, NumPy, dataset generation, experiment tracking