

EDUCATION

Simon Fraser University

EXPECTED APR 2027

Bachelor of Science in **Computer Science**, Minor in **Statistics**

Relevant Coursework: Data Science, Artificial Intelligence, Algorithms, Networking, Computer Vision, Computer Graphics

EXPERIENCE

Rivian and Volkswagen Group Technologies | Vancouver, BC

MAY 2025 – DEC 2025

Infotainment Software Engineering Intern

Kotlin, Java, Android, ADB, Protobuf, QNX, HXQ

- Architected scalable Android MVVM framework in Kotlin, cutting RAM usage **40%** and accelerating feature velocity **30%**
- Unified auth caches into **AuthenticationCacheManager**, enabling vendor APK regression detection and VIN-scoped Databricks analytics
- Owned **10+ production screens** for Media 2.0, integrating MediaBrowser, ViewModels, and event-driven UI pipelines
- Developed real-time FFT audio visualizer as reusable Hilt-injectable component, adopted across 5 screens in 2 display styles
- Fixed Bluetooth AVRCP metadata inconsistencies via caching and content-hash validation, raising album-art accuracy **from 66% to 99%**
- Cut CPU usage from **40% to 10%** by replacing Lottie animations with optimized rendering layer, eliminating UI jank under load
- Automated owner's manual SHA generation and publishing using **Python and Bash subprocesses**, cutting process time **80%** and active time **99%**

EXTRACURRICULARS

SFU Robot Soccer Club | Burnaby, BC

FEB 2024 – PRESENT

Software Team Lead

C++, Python, Qt6, UDP, Sockets, Protobuf, RL

- Led 30-member C++ team; redesigned onboarding workflows reducing new developer ramp-up time **40%**
- Designed Protobuf networking protocol routing commands to **6 robots** with hot-swappable simulator/hardware modes
- Engineered Behavior Tree engine **coordinating real-time role assignments** across 6 autonomous robots at 180Hz tick rate
- Implemented multithreaded eval/planning pipeline with deterministic ordering, achieving **40ms** simulation latency
- Initiated Analytics Core with ETL pipelines processing **100+ events/second** for replay tools and RL dataset generation
- Deployed GitLab CI/CD with Docker registry caching and Valgrind integration testing, cutting pipeline runtime **40%**
- Optimized Kalman filter for vision-based localization, reducing orientation jitter **35%** and interpolating missing detections

PROJECTS

VeTool - Real-Time Match Configuration Service

DEC 2025

Full-stack Web Development

.NET, PostgreSQL, Next.js, SignalR, JWT, Redis, Redux, Docker

- Architected SignalR and Redis event layer achieving **sub-150ms** state sync across horizontally scaled API instances
- Implemented Redis distributed coordination using monotonic sequence generators and SETNX idempotency with TTL

YOLO Traffic Analysis - Vision Model Benchmarking Pipeline

APR 2025

Data Engineering and Data Analysis

Python, OpenCV, Pandas, NumPy, PyTorch

- Created ETL pipeline producing 20,000+ model-ready samples from LISA traffic footage with normalized annotations
- Benchmarked **YOLOv3, v5, v8** across **50 epochs** with reproducible eval framework and PR curve analysis
- Reduced runtime 40% through vectorized preprocessing and consolidated annotation parsing

WeMote - Motion-Sensing Game Controller

MAR 2025

DreamHacks 2025 - Embedded Systems and Networking

ESP32, C++, Sensor Fusion, Serial, PyGame

- Built ESP32 motion controller with MPU-6050 IMU and Kalman-filter fusion, achieving **120Hz** sampling, **sub-30ms** latency
- Developed Python serial-to-socket pipeline converting IMU data into structured motion events via PyGame event bus
- Awarded DreamHacks **Technical Excellence Award** for fully integrated real-time embedded-to-application system

BlackjackNN - Q-Learning Agent

NOV 2024

Machine Learning

Python, PyTorch, Matplotlib, NumPy, Pickle, RL

- Trained Q-Learning agent for Blackjack in PyTorch, converging to optimal **~42% win rate** with logged reward curves and epsilon decay
- Parallelized training environment to run **10,000+ concurrent episodes** per epoch, enabling rapid strategy iteration

TECHNICAL SKILLS

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

Machine Learning: PyTorch, TensorFlow, scikit-learn, CNNs, object detection, training and evaluation pipelines, hyperparameter tuning

Computer Vision: OpenCV, YOLO (v3, v5, v8 benchmarking), image pre-processing, augmentation, OCR, error analysis

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

Data & Infrastructure: ETL pipelines, Spark, Databricks, Pandas, NumPy, dataset generation, logging pipelines, performance profiling