Daniel Kwan

+1 (604) 352-4858 | d35kwan@uwaterloo.ca | linkedin.com/in/daniel-kwan

Technical Skills

Languages: Python, C++, C, SQL, Java, JavaScript, HTML/CSS
Libraries/Frameworks: PyTorch, TensorFlow, Keras, NumPy, Pandas, Pillow, Sci-kit learn, OpenCV
Developer Tools/Protocols: Git, GitHub, MAVLink, Bitbucket

Education

University of Waterloo Waterloo, ON
Bachelors of Applied Science in Computer Engineering
Relevant Coursework: Programming (C++), Digital Circuits, Discrete Math, Linear Algebra

Experience

Autonomy Software Developer Sep 2025 – Present
Waterloo Aerial Robotics Group *Waterloo, ON*

- Built and maintained a multi-process Python control system using MAVLink, implementing modular components for telemetry processing, logging, and error-handling autonomous navigation
- Developed and optimized OpenCV-based computer vision pipelines using HSV color segmentation, improving object detection robustness under variable lighting conditions
- Debugged and instrumented Python applications with structured logging, validated behavior through pytest, and enforced coding standards with pylint, resulting in 100% test coverage and cleaner, more maintainable code

Projects

ExoDiscover: NASA Space Apps Hackathon Oct 2025

- Led a 5-member engineering team to design and implement a Python-based machine learning system analyzing Kepler telescope light-curve data, achieving 4th place out of 250+ teams (Top 2%)
- Processed NASA Kepler telescope light curve data using the Lightkurve library, preparing thousands of stellar brightness time-series for machine learning analysis
- Designed and implemented data preprocessing pipelines, model inference logic, and RESTful API endpoints, enabling real-time predictions and interactive visualizations

Real-Time Sign Language Recognition System Jan 2026

- Deployed a fully functional MVP within a strict 36-hour sprint at uOttaHacks (AI & Robotics track), integrating the backend classification model with a live frontend visualization to demonstrate instant translation capabilities
- Architected a custom Convolutional Neural Network (CNN) in TensorFlow/Keras to classify 26 American Sign Language (ASL) characters, achieving 95% validation accuracy by implementing dropout regularization and hyperparameter tuning to prevent overfitting
- Engineered a real-time OpenCV computer vision pipeline processing video at 30 FPS, using Gaussian blurring and adaptive background subtraction (accumulated weighted average) to isolate hand gestures in noisy environments

Geo-Climate Playlist Recommendation Engine December 2025 - Present

- Engineered a recommendation engine using K-Means clustering to group tracks by acoustic features (energy, valence, tempo), mapping real-time weather vectors to optimal musical clusters
- Developed a data pipeline to normalize multi-source data from Spotify Web API and OpenWeatherMap, handling feature scaling to ensure climate variables correctly influenced cluster assignment

Leadership

STEM Club President Sep 2020 – June 2025
Sir Winston Churchill Secondary *Vancouver, BC*

- Orchestrated weekly technical workshops for 100+ members, teaching curriculum on C++, Python, and Git version control which resulted in a 40% increase in year-over-year club retention
- Coordinated 5+ interdisciplinary engineering hackathons, managing logistics, sponsorship, and judging for events attended by 2,000+ students school-wide

Coding Instructor January 2024 - Sep 2024
Code Ninjas *Vancouver, BC*

- Mentored students (ages 8–14) using the IMPACT proprietary game engine, translating abstract CS fundamentals (loops, conditionals) into playable projects to cultivate technical confidence and a collaborative environment