Daniel Kwan

(604) 352-4858 | d35kwan@uwaterloo.ca | linkedin.com/in/daniel-kwan | https://github.com/danielkwan-dev

Technical Skills

Languages: Python, C++, C, SQL, JavaScript, HTML/CSS
Frameworks/Libraries: PyTorch, scikit-learn, OpenCV, NumPy, Pandas, FastAPI, Flask, MAVLink
Developer Tools: Git, GitHub

Education

University of Waterloo Waterloo, ON
Bachelor 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*

- Architected a multi-process Python control system using **MAVLink**, implementing modular components for telemetry processing, fault-tolerant logging, and error-handling for autonomous navigation
- Implemented an **OpenCV**-based vision pipeline using HSV segmentation and contour filtering, reducing false positives under variable lighting during autonomous flight tests
- Debugged and instrumented Python applications with structured logging, validated behavior through pytest, and enforced coding standards using pylint, resulting in 95% test coverage and cleaner, more maintainable code

Projects

Exoplanet Identifier: NASA Space Apps Hackathon (GitHub) Oct 2025

- Led a 5-member engineering team to design and deploy a Python-based machine learning system analyzing Kepler telescope light-curve data to classify potential exoplanets, achieving **4th** place out of 250+ teams (Top 2%)
- Processed NASA Kepler light-curve time-series using the **Lightkurve** library, engineering statistical and transit-based features to train **CNN** and **XGBoost** classifiers leading to 70% detection accuracy
- Designed and implemented data preprocessing pipelines, model inference logic, and **RESTful API** endpoints, enabling real-time predictions and interactive visualizations

Real-Time American Sign Language Recognition Engine (GitHub) Jan 2026

- Engineered a real-time ASL recognition system using **MediaPipe** hand landmarks and a **PyTorch MLP** classifier, trained on 70,000+ labeled samples from the Kaggle ASL dataset
- Built an end-to-end ML pipeline including data preprocessing (landmark normalization), model training with learning rate scheduling, and a hold-to-confirm UX pattern for reliable letter input at 30+ FPS
- Delivered and deployed a functional computer vision project within a 36-hour sprint at uOttaHacks, integrating real-time computer vision with neural network inference for instant ASL-to-text translation

Weather-Conditioned Music Classification Engine (GitHub) Dec 2025 - Jan 2026

- Co-developed a full-stack web application and ML pipeline using **scikit-learn** models (Naive Bayes, Logistic Regression, Random Forest, Gradient Boosting), achieving an F1 score of 0.76 via stratified k-fold cross-validation on a 5,200-track dataset
- Implemented a **FastAPI** backend integrating Spotify Web API and ReccoBeats API to extract audio features (energy, valence, tempo, acousticness, loudness), enabling weather classification with ∼70% confidence scoring

Leadership

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

- Mentored students (ages 8–14) using the IMPACT game engine, translating complex CS concepts including algorithms, object-oriented programming, and recursion into interactive projects that built technical confidence
- Facilitated technical troubleshooting sessions to resolve complex syntax and logic errors in **JavaScript** and **C**, teaching students to independently debug code and implement object-oriented programming concepts

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

- Led a 100+ member STEM club by organizing weekly **C++, Python,** and **Git** workshops and coordinating student-run presentations for 2,000+ students, increasing active participation by 40%