

David Kwong

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TECHNICAL SKILLS

Software & CAD: SolidWorks, AutoCAD, AGI32, MATLAB, LaTeX

Programming: Python, C, C++, Assembly, VHDL

Enterprise & Productivity: IBM Maximo, Microsoft Excel, Word, PowerPoint, Outlook

Hardware & Electrical: Arduino, ESP32, Stepper Motors/Drivers, Multimeters, Oscilloscopes, Soldering

EDUCATION

The University of British Columbia

Bachelor of Applied Science in Integrated Engineering

Vancouver, BC

Expected May 2029

TECHNICAL EXPERIENCE

General Motors of Canada

Engineering Operations Co-op Student, Equipment and Maintenance Systems

Oshawa, ON

Sep. 2026 – Apr. 2027

- Supporting the digitization and improvement of equipment records, inspections, and maintenance-related workflows across operational and technical equipment within Canadian Engineering Operations.
- Creating and updating asset, location, meter, preventive maintenance, and inspection configurations in IBM Maximo for prioritized operational, facility, and technical equipment, and supporting GEETS records for lab and measurement equipment including calibration and equipment assignment information.
- Reviewing existing control sheets, logs, and tracking records to determine the right system of record for each type of information, and developing mapping documentation that defines the purpose of each form and its suitability for digitization.
- Digitizing recurring equipment checks, inspections, and maintenance workflows for assets such as environmental chambers, load frames, garage equipment, EV chargers, HVAC and ventilation systems, and machine shop equipment.
- Coordinating with equipment owners, equipment administrators, stakeholders, and maintenance trades to gather information, confirm requirements, and support the rollout of improved digital processes.
- Creating clear work instructions and handover material to support adoption of new digital workflows by users and support teams, reinforcing Workplace Safety System expectations around standard work and process discipline.

McCuaig & Associates Engineering Ltd.

Electrical Engineering Co-op Student

Burnaby, BC

May 2026 – Aug. 2026

- Produced electrical design drawings, single-line diagrams, schematics, and panel layouts for tenant improvements and building upgrades across 30+ active commercial, government, and private sector renovation projects throughout the Lower Mainland.
- Worked across 3-phase and single-phase distribution systems from 14.4 kV utility service down to 600 V, 208 V, and 120 V branch circuits, applying the BC Electrical Code and Canadian Electrical Code (CSA C22.1).
- Performed lighting fixture photometric simulations in AGI32 to validate illuminance levels, uniformity, and code compliance for renovation and retrofit designs.
- Executed preliminary load calculations and feeder sizing checks per CSA C22.1, and drafted code-referenced electrical scope write-ups and condition assessments based on on-site documentation of service equipment, distribution panels, branch circuits, and BC Hydro pole and pad-mounted transformers.
- Coordinated with mechanical, drafting, and asset management groups to deliver condition assessment and design reports on commercial facilities, integrating electrical scope with multi-discipline inputs.
- Attended manufacturer and project site tours, including an Eaton Satellite facility tour, to build product knowledge on switchgear, panel boards, and distribution equipment from Eaton, Schneider Electric, and other major manufacturers.

TECHNICAL PROJECTS

Cinewhoop Drone

Apr. 2026 – Present

- Designed and built a custom 2.5-inch ducted quadcopter (~10 in overall footprint) from scratch, including frame CAD, electrical integration, soldering, and firmware bring-up.

- Modeled the full airframe in SolidWorks as a single-piece printed frame integrating four ducts, motor mounts, and top plate, iterating through four PLA prototypes to refine duct height, wall thickness, and motor stand-off geometry.
- Selected and integrated the electrical stack on a 4S 14.8 V LiPo system using an ESP32-class flight controller (GEPRC TAKER F411 AIO with built-in ELRS receiver), 4x 12A ESCs, and 4x GR1404 4500KV brushless motors driving Gemfan D63 tri-blade props.
- Soldered XT30 power input, 220 μ F filter capacitor, and motor phase leads to the FC; diagnosed and corrected a solder bridge across the R001 current sense resistor using multimeter continuity testing before first power-up.

Composite Filament Winder

Dec. 2025 – Apr. 2026

- Led electrical integration for a low-cost 4-axis composite filament winder designed to produce composite tubes up to 1ft in length and 6in outer diameter, achieving $\pm 1\%$ winding angle accuracy.
- Designed a custom PCB to integrate the ESP32 microcontroller, 4x TMC2209 stepper drivers, power distribution, and signal routing into a single board, replacing a breadboard prototype with a production-ready assembly.
- Integrated motion-control hardware using an ESP32, 4x TMC2209 drivers, 2x NEMA23 steppers, 2x NEMA17 steppers, including motor wiring, driver bring-up, and system debugging.
- Developed control software and a simple user interface to input key parameters (tube length, winding angle, diameter, layer count) and drive coordinated winding routines.
- Built and assembled the mechanical frame (aluminum extrusion) and mounting hardware to integrate motors, motion components, and the resin bath/toolhead into a single working prototype.

ENGINEERING DESIGN TEAM

UBC Rocket

Sep. 2025 – Present

Member

Vancouver, BC

- Fabricated carbon-fibre and fibreglass composite aerostructures (body tubes, fins, and nosecones) as part of UBC Rocket's Composites & Aerostructures manufacturing workflow.
- Laid up 2–3-ply composite tubes using 45° / 60° / 90° fibre orientations to target stiffness/strength while maintaining low mass.
- Executed end-to-end shop work (~ 10 hrs/week) including tooling/mandrel prep, ply cutting, resin handling, cure checks, trimming/sanding, and QA to deliver flight-ready parts.
- Validated structural performance via uniaxial loading tests, with a 3-ply carbon-fibre tube exceeding the lab's 100 kN compression tester without reaching failure.

VOLUNTEER EXPERIENCE

825 Royal Canadian Air Cadets

Sep. 2018 – Jun. 2024

Warrant Officer Second Class (WO2)

Yellowknife, NT

- Honoured veterans by participating in annual Remembrance Day ceremonies and cenotaph vigils, marched in parades, supported wreath-laying, and completed overnight guard shifts (~ 100 total hrs).
- Supported the Royal Canadian Legion's annual Poppy Campaign by distributing poppies and assisting with public-space fundraising efforts (~ 45 total hrs).
- Contributed to community clean-ups and civic events (e.g., Canada Day parades, soap box car derbies) through hands-on volunteering and event support (~ 40 total hrs).

AWARDS

NAPEG Scholarship

2025

Smitty Muyres Memorial Scholarship

2024

UBC Presidential Scholars Award

2023

PROFESSIONAL AFFILIATIONS

Engineers and Geoscientists BC, Student Member

2025 – Present