Cassandra Philogene

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EDUCATION

Concordia University	Montreal, QC
B.Eng., Electrical Engineering (Program Transfer), Expected May 2028	*Winter 2026 – Present*
Concordia University	Montreal, QC
Previous: B.Eng., Computer Engineering (coursework completed)	*Winter 2024 – Fall 2025*

RELEVANT COURSEWORK

Completed: ELEC 273 Basic Circuit Analysis; ELEC 242 Continuous-Time Signals and Systems.
In progress (Winter 2026): ELEC 251 Fundamentals of Applied Electromagnetics; ELEC 342 Discrete-Time Signals and Systems; ELEC 372 Fundamentals of Control Systems.

TECHNICAL SKILLS

Programming: C/C++, Python, VHDL
Electrical/Hardware: circuit analysis, power electronics (buck conversion), LV power distribution, wiring/harnessing, PCB design, circuit simulation (LTspice)
Drafting/CAD: AutoCAD (beginner), Fusion 360
Embedded/Robotics: Arduino, ROS2, sensor interfacing
Tools: GitHub, EasyEDA, KiCad, Linux, Vivado, ModelSim, MATLAB, oscilloscope
Languages: French (Native), English (Very fluent), Spanish (Beginner)

PROFESSIONAL SKILLS

- Engineering execution: milestone planning, task prioritization, risk/issue tracking, status updates
- Documentation: clear reports, design notes, calculation writeups, structured test plans
- Collaboration: cross-functional teamwork, integrating workstreams, incorporating feedback

ENGINEERING PROJECTS

Buck Converter PCB (Battery Eliminator Circuit)   December 2025 – Present (Target: March 2026)
(SAE) Power Electronics & LV Power Distribution Project
- Designed a buck converter architecture to regulate input voltage to a stable rail for aircraft/RC loads; selected controller, inductor, and protection features (UVLO/OCP/thermal)
- Created schematic and BOM; verified switching behavior and load-step response in LTspice; iterated component values toward ripple and thermal targets
- Started PCB layout using EMI-aware practices: minimized high di/dt loops, defined grounding strategy, and placed decoupling to support stable operation
- Planned validation: efficiency vs load, ripple, transient response, and thermal rise; finalize a documentation package (schematic, layout, BOM, test results)

Dual LED Blinker PCB (555 Timer, Variable Speed)   January 2026
Discrete Electronics / PCB Build
- Built an astable 555-timer oscillator to generate a square-wave drive signal for alternating LED blinking
- Set the blink rate using an RC timing network; added a potentiometer to adjust frequency live during operation
- Validated timing behavior with oscilloscope measurements and documented schematic, assumptions, and observed waveform characteristics

Aircraft Electrical & Control Subsystems (Power Distribution & Integration)   June 2025 – Present
(SAE) Systems Integration Project
- Designed and assembled aircraft electrical and control subsystems (power distribution, wiring harnessing, connectors, control interfaces) for integration readiness
- Diagnosed electrical faults using incremental subsystem isolation; improved reliability by resolving shorts and intermittent connections
- Supported system testing by reviewing telemetry trends and proposing electrical/integration changes to improve stability and power delivery

ADDITIONAL TECHNICAL PROJECTS

Robot Operating System 2 (ROS2) Chess Robot Arm   December 2025 – Present (Target: Summer 2026)
IEEE: Automation Project
- Developed a ROS2 control stack in Python with modular nodes for command handling, state feedback, and motion execution
- Implemented safety constraints (joint limits, workspace bounds) and documented setup/run procedures for repeatable demos

Hovercraft Prototype Competition   December 2025
Embedded Systems Project
- Developed an autonomous hovercraft using Arduino and onboard sensors; iterated navigation logic based on testing
- Designed a manufacturable 3D CAD model in Fusion 360; optimized layout for stability and serviceability