

# CASSANDRA PHILOGENE

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## EDUCATION

Concordia University

*Bachelor Eng. Electrical Engineering*

Montreal, QC

*Winter 2024 – 2028 (expected)*

## TECHNICAL SKILLS

Programming: C/C++, Python, VHDL

Embedded/Robotics: Arduino, ROS2, sensor interfacing, soldering

Hardware: power distribution, wiring/harnessing, PCB design, circuit simulation (LTspice), CAD (Fusion 360)

Tools: Git/GitHub, Linux, Vivado, ModelSim, MATLAB, oscilloscope, EasyEDA, Altium

Languages: French (Native), English (Very fluent), Spanish (Beginner)

## PROFESSIONAL SKILLS

- Project management: milestone planning, task prioritization, risk/issue tracking, status updates
- Teamwork: cross-functional collaboration, supporting teammates, integrating workstreams
- Communication: clear written documentation, concise technical explanations, stakeholder updates

## ENGINEERING PROJECTS

Robot Operating System 2 (ROS2) Chess Robot Arm

Dec 2025 – Present (Target: Summer 2026)

*IEEE Club Project*

*Montreal, QC*

- Developed a ROS2 control stack in Python with modular nodes for command handling, state feedback, and motion execution
- Implemented motion execution pipeline (kinematics and trajectory generation) and safety constraints (joint limits, workspace bounds, basic fault handling)
- Documented system setup and run procedure to support team integration and repeatable demonstrations
- Planned next milestones: calibration and tuning for accuracy/repeatability; add performance metrics such as cycle time, success rate, and positioning error

Synchronous Buck Converter PCB

Dec 2025 – Present (Target: March 2026)

*SAE Club Project — Project Lead (PCB)*

*Montreal, QC*

- Designed a buck converter architecture with the use of an LTC3892 chip to step down input voltage to a stable output voltage for an aircraft control system. Selected IC controller, inductor, and protection features (UVLO/OC/thermal)
- Created schematic and BOM; validated switching behavior, stability, and transient response in LTspice and iterated component values toward ripple and thermal targets
- Started PCB layout with EMI-aware routing practices: minimized high di/dt loops, defined grounding strategy, and placed decoupling capacitors for stable operation
- Planned next milestones: bench validation (efficiency vs load, ripple, load-step response, thermal rise) and layout revisions based on measurements

## LEADERSHIP AND TECHNICAL ACTIVITIES

SAE Aero-Design - Systems

Jun 2025 – Present

*Concordia University, Student Design Team*

*Montreal, QC*

- Designed and assembled aircraft electrical and control subsystems (power distribution, wiring harnessing, connectors, control interfaces) for competition-ready integration
- Supported prototype integration by debugging electrical issues using incremental subsystem isolation; improved system reliability by resolving shorts and intermittent connections
- Contributed to flight testing by reviewing telemetry and proposing electrical/integration changes to improve stability and power delivery

Hovercraft Prototype Competition

Dec 2025

*Concordia University*

*Montreal, QC*

- Developed an autonomous hovercraft using Arduino and onboard sensors; implemented navigation logic to solve a maze and iterated behavior based on testing
- Designed a manufacturable 3D CAD model in Fusion 360; optimized layout for stability and maneuverability (center of gravity and battery access)

- Programmed an autonomous robot on Arduino Nano using modular control logic (sensor read, decision, actuation) for real-time behavior
- Integrated sensors and a motor driver; tuned control parameters to improve responsiveness and reduce unstable behavior during matches
- Improved mechanical and electrical robustness (mounting, wiring strain relief) to increase match uptime and reduce failures