

CASSANDRA PHILOGENE

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EDUCATION

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

TECHNICAL SKILLS

Programming: C/C++, Python, VHDL
Embedded/Robotics: Arduino, ROS2, sensor interfacing, closed-loop control (PID), motor drivers
Hardware: power distribution, wiring/harnessing, PCB design, circuit simulation (LTspice), CAD (Fusion 360)
Tools: Git/GitHub, Linux, Vivado, ModelSim, MATLAB

ENGINEERING PROJECTS

Robot Operating System 2 (ROS2) Chess Robot Arm	Dec 2025 – Present (Target: Summer 2026)
<i>IEEE Club Project</i>	<i>Montreal, QC</i>
<ul style="list-style-type: none">Developed a ROS2 control stack in Python with modular nodes for command handling, state feedback, and motion executionImplemented 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 demonstrationsPlanned next milestones: calibration and tuning for accuracy/repeatability; add performance metrics such as cycle time, success rate, and positioning error	
Buck Converter PCB (Battery Eliminator Circuit)	Dec 2025 – Present (Target: Summer 2026)
<i>SAE Club Project</i>	<i>Montreal, QC</i>
<ul style="list-style-type: none">Designed a buck converter architecture to regulate input voltage to a stable rail for aircraft/RC power; selected controller, inductor, and protection features (UVLO/OCP/thermal)Created schematic and BOM; validated switching behavior, stability, and transient response in LTspice and iterated component values toward ripple and thermal targetsStarted PCB layout with EMI-aware routing practices: minimized high di/dt loops, defined grounding strategy, and placed decoupling capacitors for stable operationPlanned 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
<i>Concordia University, Student Design Team</i>	<i>Montreal, QC</i>
<ul style="list-style-type: none">Designed and assembled aircraft electrical and control subsystems (power distribution, wiring harnessing, connectors, control interfaces) for competition-ready integrationSupported prototype integration by debugging electrical issues using incremental subsystem isolation; improved system reliability by resolving shorts and intermittent connectionsContributed to flight testing by reviewing telemetry and proposing electrical/integration changes to improve stability and power delivery	
Hovercraft Prototype Competition	Dec 2025
<i>Concordia University</i>	<i>Montreal, QC</i>
<ul style="list-style-type: none">Developed an autonomous hovercraft using Arduino and onboard sensors; implemented navigation logic to solve a maze and iterated behavior based on testingDesigned a manufacturable 3D CAD model in Fusion 360; optimized layout for stability and serviceability (center of gravity and battery access)	
Robowars Competition (Autonomous Robot)	Apr 2025
<i>IEEE Competition</i>	<i>Montreal, QC</i>
<ul style="list-style-type: none">Programmed an autonomous robot on Arduino Nano using modular control logic (sensor read, decision, actuation) for real-time behaviorIntegrated sensors and a motor driver; tuned control parameters to improve responsiveness and reduce unstable behavior during matchesImproved mechanical and electrical robustness (mounting, wiring strain relief) to increase match uptime and reduce failures	