Ryan D. Wood

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EDUCATION

Carleton University **Ottawa, Ontario**

Electrical Engineering, Bachelor of Engineering (B.Eng), 4th Year *Graduation Date: Apr 2026*

RELEVANT SKILLS

Technical: Circuit design and testing, communications (PLL & VCOs), control theory (frequency domain analysis), digital/analog signal processing, digital logic and low-level computer architecture (FPGAs & ASICs).

Languages: Java, JavaScript, C, Python, Git, HTML, CSS, REST, React, Verilog HDL, Assembly

Software: Multisim, Arduino IDE, VS Code, Ansys HFSS, Fusion 360, MATLAB, Logisim, Vivado, Microsoft Office

Teamwork: Effective communication with team members on deadlines, requirements, and navigating complex engineering projects as a group. Organized and punctual.

Analytical: Thorough problem definition using critical thinking, running experiments and simulations to solve the problem through iterative refinement. Documentation of the process and reviewing the final product.

PROJECT EXPERIENCE

Smart Card Dispensing Mechanism (Joker) Winter 2025

Fusion 360, Arduino IDE, Control Theory

- Played an integral role in the design and development of an automatic card dispensing mechanism which emulated a human playing card dealer.
- Led the design of the card holder and dispensing mechanism by utilizing engineering design principles from problem definition, to prototyping and iterative refinement, culminating in a reliable product which operated at high speed and precision.
- Controlled brushless DC motors using an Arduino Uno, which were mounted to a 3D printed frame modelled in Fusion 360.

Digital Circuit Design & Implementation using FPGA Winter 2025

Verilog, Digital Logic, FPGAs, FSMs

- Employed a structured Verilog design workflow spanning the definition of requirements, modular coding, testbench simulation, synthesis and implementation, culminating in real-world hardware validation and thorough documentation of the final solution.
- Designed clock multiplier/dividers, MUXs, full adders, decoders, comparators, and state machines through behavioural, dataflow, and structural programming methods.
- Proficient in modelling hierarchical systems and parameterized modules, as well as logic validation through DUT testing using testbenches.
- Created modular designs with clear state machine logic to handle user input, clocking, 7-segment displays, and other output feedback.

Optical Waveguide Simulator for Integrated Devices Winter 2025

MATLAB, Finite-Difference, Modelling, Simulation

- Applied advanced programming and numerical methods (e.g., parametric sweeps, data validation) to integrate theoretical models with finite-difference simulations, demonstrating strong analytical problem-solving and code optimization skills in MATLAB for waveguide modeling.
- Created a 1D model of an optical waveguide which included gain/loss dispersion, static gain and detuning, passive structures (gratings), and active structures (optical amplifiers) used to simulate a distributed Bragg-reflection (DBR) laser.
- Thoroughly documented the design process and compiled the results of a study on grating structures filter response into a well-written and professional report.

Phase-Locked Loop for FM Demodulation Fall 2024

Circuit Design, Analog, Telecommunication Systems

- Designed phase-locked loops used to demodulate recieved FM audio signals using a phase-frequency detector, loop filter, and voltage controlled oscillator. Included a frequency multiplier to generate signals as required to demodulate an FM signal.
- Used the 74HC4046 chip as the phase-frequency detector and VCO. Component specifications were determined and optimized using the manufacturer datasheet.
- Implemented designs using block diagrams in order to determine the required filter response and resonant characteristics of an LC tank circuit.

WORK EXPERIENCE

Magna Golf Course **Newmarket, Ontario**

Ground Crew *Mar 2022 - Aug 2024*

- Developed and implemented comprehensive training programs for new hires, enhancing team efficiency and reducing onboarding time by a full week through streamlined processes.
- Spearheaded maintenance and enhancement of a premier 200-acre golf course, achieving a high satisfaction rate of more than 300 private members.
- Assisted in the hands-on repair of small machinery both electronic and mechanical.