Dhruv Anand

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Education

Bachelor of Engineering, Electrical (CO-OP) **2023 – 2027**

McMaster University – Hamilton, ON

- A+ in digital systems, circuit analysis, and object-oriented programming (C/C++)
- Experience with Verilog, Quartus Prime, PSPICE, MATLAB, Arduino, ARM
- Team-based design projects integrating hardware/software systems

Skills

Programming	Assembly, Python, C, C++, MATLAB, R
Software	Quartus, EasyEDA, Waveforms, OrCad Pspice, Inventor, Microsoft Office
Hardware	TI–MSP Launchpad, FPGA, Arduino, Oscilloscope, Waveform Generator, Multimeter
Technical Strengths	Circuit simulation, embedded systems design, hardware debugging, signal analysis, OOP

Experience

Deck Supervisor **Sep 2025 – Present**

City of Brampton – Brampton, Ontario

- Lead lifeguard team, manage safety operations, and resolve incidents
- Implemented process improvements for efficiency and risk management
- Trained new staff on emergency procedures and customer service protocols, improving team readiness and cohesion

Swim Instructor and Lifeguard **Aug 2022 – Present**

City of Brampton – Brampton, Ontario

- Delivered lessons with a 22% higher success rate across diverse age groups
- Instructed lifesaving and leadership courses focused on teamwork and decision-making

Projects

Embedded LIDAR Mapping System | McMaster University **April 2025**

- Designed a 3D spatial mapping system using VL53L1X ToF sensor, MSP432 microcontroller, and stepper motor
- Captured and transmitted data via I2C and visualized spatial maps in MATLAB by converting polar to Cartesian coordinates

CMOS XOR Gate Design | McMaster University **April 2025**

- Built a CMOS XOR gate using NMOS/PMOS transistors with optimized sizing for balanced switching
- Validated logic and timing performance through truth table testing and oscilloscope analysis

BJT Common Collector Amplifier | McMaster University **February 2025**

- Designed and simulated a BJT amplifier with ≥0.9 gain and <10% attenuation using PSpice
- Verified midband gain, phase shift, and spectrum response using Analog Discovery 3 and WaveForms

Voltage Controlled Switch | McMaster University **February 2025**

- Implemented MOSFET-based switches to study non-ideal behaviors like Ron, leakage current, and threshold voltage
- Simulated and tested designs using OrCAD PSpice and hardware tools to evaluate performance trade-offs

DC Power Supply | McMaster University **January 2025**

- Engineered a regulated 3V ±0.1V DC supply from 120V AC using transformer modeling, rectification, and RC filtering
- Verified voltage regulation and ripple through simulation and hardware testing with Analog Discovery 3