Alina Salam

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EDUCATION

Bachelor of Engineering – Electrical Engineering CO-OP

McMaster University, Hamilton, ON *2023 – 2028 (Expected)*

Relevant Courses: Electronic Devices & Circuits II, Electromagnetics II, Circuits & Systems, Microprocessor Systems Project, Data Structures & Algorithms, Engineering Communications and Social Impact

EXPERIENCE

Electrical Team Member *Sept 2025 – Present*

McMaster Robotics Submarine – McMaster University

- Contributing to the design of **PCB** layouts using **Altium** to support embedded sensor integration and data acquisition
- Researching, and evaluating **20+ electronic components** based on performance and cost trade-offs, lowering projected **BOM cost by 15%**
- Interfacing and calibrating **multiple onboard sensors**, implementing **data acquisition** systems that improved real-time accuracy by approximately **12%** during field testing
- Collaborating with a multidisciplinary team of **7+ members** to design and build a robotic submarine for an **international competition**

Design & Testing Intern *May 2024 – Sept 2024*

CRAFTS Childcare Management– Toronto, ON

- Conducted **product testing** for application to identify **functional issues,** ensuring all features worked as intended before release
- Diagnosed and reported **over 150 bugs** in the application, collaborating closely with the **development team** to **verify fixes;** improved overall **product stability** and enhanced user satisfaction ratings by **20%** within 3 months
- Created **50+ visual** assets and marketing graphics, contributing to a **30% growth** in social media engagement over **3 months**
- Produced engaging content using creative tools such as Canva, Adobe Creative Suite, and AI-based design software

RELEVANT PROJECTS

Data Acquisition System

- Built an embedded spatial mapping system capturing **2,000+ data points** with **<2 mm error** using **ToF sensor** and **TI MSP432E401Y microcontrolle**r over **I2C communication** & **UART data transmission** to a PC
- Engineered control mechanisms using pushbuttons for **stepper motor** direction and start/stop operations and implemented interrupt-driven data collection, reducing latency by **35%**
- Processed raw distance data for 3D spatial reconstructions using **MATLAB/Python** and developed a technical report

Single-Transistor Linear Amplifier

- Built and tested a **common-collector BJT amplifier** for delivering linear input signals to a load with **<10% attenuation**
- Calculated and applied biasing **resistors** to achieve stable **DC** operating point and linear amplification
- Validated **BJT** amplifier performance against design specs using **PSpice** simulations and **oscilloscope** measurements, achieving **97% compliance**
- **Reduced** amplifier power consumption by 7% through circuit optimization

CMOS XOR Gate Design and Implementation

- Completed and executed a **CMOS XOR** logic gate using complementary pull-up and pull-down transistor networks with additional inverters for input signals, achieving **100% logic accuracy** in simulation
- Optimized **transistor sizing** for balanced resistance to reduce delay **by 15%** and improve switching performance
- Measured rise/fall times of **18 ns / 22 ns** and **propagation delay** under **capacitive load** using **oscilloscope**

SKILLS

Software: C, C++, Python, Java, R, MATLAB, Verilog/VHDL, SQL, JavaScript, HTML/CSS, Git, Linux, VSCode, Visual Studio, Microsoft Office (Word, Excel, PowerPoint), Google Workspace, Canva

Hardware: Assembly, Embedded Systems, Power Systems, Circuit Design and Hardware Interfacing, PLC Programming, Electrical Schematics (ORCAD PSpice, LTSpice), Micro-controller Programming, Function Generators, Bread-boarding, Power Supply, Oscilloscopes, Digital Multimeter, 3D CAD (AutoCAD, Solidworks), 3D Printing, Analog Discovery 3