Rayan Mustafa

647-904-5127 | rayanmustafa1681@gmail.com | https://www.linkedin.com/in/rayan-mustafa-764093253/ | Toronto, ON

Education

University of Toronto Sept. 2021 – Expected May 2026
Bachelor of Applied Science, Computer Engineering *Toronto, ON*

- Dean's List for Academic Excellence (3+ years), CGPA: 3.86/4.0
- Relevant Coursework: **Operating System, Data Structures & Algorithms, Embedded Systems**

Experience

Embedded Software Engineering Intern May 2024 – Aug. 2025
Evertz Microsystems LTD *Burlington, ON*

- Built **C++/WebSocket** service to program **Analog-to-Digital-Converts (ADCs)** to expose RF data to front-end application and enable RF over IP
- Developed **C/C++ Websocket** testing tools to reduce develop debugging time by 20%
- Designed **OOP-based C++** network packet parser to facilitate flexibility and rapid feature development
- Prototyped **ADC** firmware dashboard in **Figma**, accelerating UI dev start by 4 weeks
- Authored system architecture documents to speed onboarding and simplify development
- Built **ARM C++** toolchain VM to provide a flexible, accessible development environment for remote teams
- Developed **Python and C/C++** testing tools for FPGA drivers to automate driver development and testing
- Implemented front-end features for the **ADC** firmware web interface using **Angular/TypeScript**, improving UI responsiveness
- Built **FFmpeg C** application for network media streaming and remuxing

FPGA Research Intern May 2023 – Aug. 2023
University of Toronto Electrical and Computer Engineering Department *Toronto, ON*

- Ported network intrusion detection system (Pigasus) from **Intel Quartus** to **Xilinx Vivado**, retaining 95% functionality and meeting timing constraints
- Rewrote **Quartus** pre-packages design modules in **SystemVerilog and Verilog** for compatibility with **Vivado**
- Rewrote multiple modules in **SystemVerilog and Verilog** to improve signal integration between components
- Used **Vivado** and **ModelSim/Questa** to validate components, achieving 90% functional and timing parity between rewritten and original modules

Projects

Robotic hand controlled by glove | STM32Cube, I2C, C, Keil µVision Mar 2023 – April 2024

- Developed **I2C** drivers and Bluetooth communication using **C** achieving under 200 ms response time, enabling smooth servo operation across 5 accelerometers and 5 servos
- Configured **I2C** and PWM pins and peripherals in **STM32Cube**, generating HAL APIs for accurate setup and accelerated development
- Worked with **Keil µVision** and **STM32Cube** to efficiently compile and flash firmware onto microcontrollers

Home Lab | Docker, Nginx Prxoy Manager, TailScale June 2025 – July 2025

- Built a secure home lab environment using **Docker** for hosting self-managed services with high availability
- Configured **Nginx Proxy Manager** with reverse proxy rules and an internal DNS resolver to route domains to correct internal IPs and enable HTTPS connections
- Integrated **Tailscale VPN** to allow secure, remote access from any device outside the local network

Garbage Classification ML model | Python, PyTorch, Pandas, NumPy Jan 2024 – April 2024

- Built and tuned CNN using **PyTorch** achieving 95% accuracy, outperforming baseline by 10%
- Preprocessed datasets with **Python**, removing 20% low-quality images and augmenting data to increase training samples by 50%
- Utilized **NumPy** and **Pandas** to efficiently organize, categorize, and preprocess datasets for optimized CNN training

Skills

Languages: C, C++, Python, JavaScript, Bash, HTML, CSS, TypeScript, Angular, Django, GO
Developer Tools: Git, SVN, Putty (SSH), Doxygen, Visual Studio Code
Design Tools: Figma, Intel Quartus Prime, Modelsim/Questa, Xilinx Vivado, LTSpice, Altium Design