

MURTADHA NISYIF

@mnisyif@gmail.com | +1 (519) 502-8463 | Ontario, Canada | m.nisyif.com | linkedin.com/in/mnisyif | github.com/mnisyif

SUMMARY

Versatile Computer Engineer (MAsc) specialized in Robotics, Machine Controls, and Embedded Systems. Certified SolidWorks Associate (CSWA) with a strong foundation in developing technical proposals and hardware-software integration. Experienced in low-level programming (Assembly/C), real-time systems, and evaluating industrial vision solutions—including exposure to Cognex and Keyence platforms—for automated applications

CERTIFICATIONS, SKILLS & TECHNOLOGIES

Certifications: Certified SolidWorks Associate (CSWA); AWS Solutions Architect
Design & Vision: SolidWorks, Cognex, Keyence, AutoCad, OpenPLC, ROS2
Automation/Logic: Ladder Logic (PLC), Structured Text, ESP32, PID Control, MQTT
Languages: C/C++, Python, Rust, Java, Bash, SQL, JavaScript
Tools & Protocols: MS Excel, Git, Jenkins, Docker, Terraform, AWS, Prometheus, HTTP/TCP
Frameworks: PyTorch, FastAPI, React, Node.js, Vitis AI, OpenCV

RELEVANT WORK EXPERIENCE

Researcher - Machine Learning & Edge Systems

Jan 2024 – Dec 2025

University of Guelph

Guelph, Ontario

- Developed semantic communication pipelines using Swin Transformer models, achieving a 30× reduction in bandwidth usage and 29% lower latency while preserving at least 96% task accuracy under variable network conditions
- Extended models with adaptive deterministic mechanisms to handle bandwidth fluctuations and anomalies, ensuring stable real-time performance
- Quantized encoder models to INT8 during edge-cloud simulations to emulate smartphone hardware constraints (6-core CPU, limited RAM), enabling realistic performance benchmarking
- Published a first-author paper in IEEE conference proceedings, detailing the novel integration of semantic communication with edge computing for real-time, near real-time and task-offloading applications

Software Developer (Robotics & Automation)

Oct 2022 – Oct 2023

University of Guelph – Robotics Institute

Guelph, Ontario

- Architected and implemented a server-client backend for an Assistive Robotic Feeding System in ROS2; utilized Cognex and Keyence vision systems to perform real-time food detection on trays
- Designed a custom ESP32-based PLC system using Ladder Logic to implement emergency safety interlocks, ensuring fail-safe operation during robotic movement
- Leveraged SolidWorks for concept development and mechanical breakdown structures of automation prototypes, ensuring hardware-software alignment
- Managed project lifecycles from initial technical proposals to successful field testing, achieving 95% reliability in autonomous assistive tasks
- Utilized Terraform and AWS to provision scalable infrastructure, reducing manual deployment efforts by 80% through automated CI/CD pipelines

Information Technology Analyst

Jul 2020 – Dec 2020

Kitchener Downtown Community Health Centre

Kitchener, Ontario

- Led a comprehensive network infrastructure upgrade, sourcing "best-in-class" hardware and managing a budget that resulted in 45% cost savings
- Configured FortiGate firewalls and VPN solutions for 60+ users, ensuring robust security for remote organizational workflows

PROJECTS

ESP32-based PLC with OpenPLC | Structured Text, Ladder Logic, Automation

- Developed a custom PLC for automation tasks, implementing safety logic and sequential control to manage hardware peripherals with real-time feedback loops

Home Lab Administration & Monitoring | Docker, Prometheus, Grafana, SSL/TLS

- Orchestrate a comprehensive environment with 15+ containers; implemented detailed system analytics and 99.9% uptime monitoring via custom dashboards

Text-to-Braille Real-Time Converter | Python, Git, Eagle

- Led a group of 4 and coordinated with a Non-Profit Organization (NPO) to design a novel assistive solution; managed a strict building budget of \$250 CAD while meeting all client technical requirements

Real-Time Security System | STM32, FreeRTOS, uC-OS III

- Built a real-time security system utilizing a STM32f429, FHD camera, and PIR sensor; applied RTOS concepts like semaphores and interrupts to achieve 50 ms response times

Precision Digital Voltmeter | K60 (Cortex-M4), Assembly, C, ADC/DAC

- Developed a digital voltmeter on a K60 microcontroller using a hybrid of C and Assembly; implemented ADC sampling and DAC output routines, optimizing for bit resolution and signal quantization to ensure high measurement accuracy

EDUCATION

University of Guelph | *MAsc. - Computer Engineering*

Dec 2025

University of Guelph | *B.Eng. - Computer Engineering*

Apr 2023