MURTADHA NISYIF

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WORK EXPERIENCE

Software Engineer—Machine Learning **Jan 2024 – Aug 2025**
University of Guelph *Guelph, Ontario*

- Spearheaded the integration of a Swin-Transformer–based compressor into a sophisticated edge-to-cloud pipeline, achieving a 30× reduction in bandwidth usage and a 29% decrease in latency under variable network conditions
- Architectured and trained an adaptive model extension to the existing semantic communication transformer,improving real-time responses to network bandwidth fluctuations while maintaining at least 96% model accuracy
- Quantized PyTorch models via Vitis AI to ONNX for deployment on Xilinx Kria SoCs, leveraging hardware acceleration for 3× faster inference
- Published a first-author paper in IEEE conference proceedings, detailing the novel integration of semantic communication with edge computing for real-time applications
- Extended semantic communication models with predictive adaptation mechanisms for network anomalies, sustaining 96% task accuracy under fluctuating conditions

Software Developer **Oct 2022 – Oct 2023**
University of Guelph – Robotics Institute *Guelph, Ontario*

- Architected and containerized a multi-technology stack combining ROS2, Node.js, and Vue to enable seamless real-time control across distributed robotic systems
- Implemented automated AWS infrastructure provisioning with Terraform and integrated CI/CD pipelines via GitLab and Jenkins, reducing manual deployment steps by 80%
- Created a secure certificate management workflow that streamlined Let's Encrypt renewals and configured a Nginx reverse proxy to enforce HTTPS and granular CORS policies
- Led the design and implementation of an accessible smart door system using ESP32, PIR sensors, and React Native, achieving over 95% reliability in extensive field tests

Information Technology Analyst **Jul 2020 – Dec 2020**
Kitchener Downtown Community Health Center — SRHC *Kitchener, Ontario*

- Deployed and tuned a centralized Samba file server, increasing file distribution efficiency by 40% across more than 20 staff and multiple departments
- Configured and maintained a FortiGate firewall and VPN solution for 60 users, integrating Prometheus-based monitoring for real-time diagnostics and rapid issue resolution
- Revamped the 3CX PBX system by re-architecting call routing and queue management, reducing patient on-hold times by 30% and enhancing communication reliability
- Led a comprehensive hardware modernization initiative by replacing legacy switches, servers, and workstations, which reduced operating costs by 45% while boosting network performance and security

EDUCATION

University of Guelph | ***MASc. - Computer Engineering*** **Dec 2025**
University of Guelph | ***B.Eng. - Computer Engineering*** **Apr 2023**

CERTIFICATIONS, SKILLS, TECHNOLOGIES, INTERESTS

Certifications: AWS Solutions Architect
Skills: AI; DevOps; Cloud Computing; IaC; Containerization; CI/CD; Monitoring; Data Engineering; ML Ops
Technologies: Python; C++; C; JavaScript; Rust; HTML; Java; Bash; Flask; FastAPI; Swagger; Node.js; React; PyTorch; MongoDB; PostgreSQL; SQLite; Docker; Kubernetes; Git; Jenkins; Terraform; AWS

PROJECTS

Personal Portfolio Website | *React, Rust, Async, Jenkins, Docker*

- Built a portfolio website featuring a React frontend coupled with a resilient Rust backend
- Integrated comprehensive Jenkins CI/CD pipelines and Docker-based deployment, slashing manual release efforts by 70% and ensuring high availability

Home lab Adminstration | *Docker, Terraform, Jenkins, Prometheus, Grafana, SSL/TLS*

- Orchestrate a comprehensive home lab environment managing 15+ Docker containers for media, web, and gaming services, configured auto-renewal SSL/TLS certification with Let's Encrypt, setup Prometheus/Grafana monitoring, and applied Fail2Ban for robust security achieving 99.9% uptime and detailed system analytics

HAM10K Skin Cancer Classifier | *Python, PyTorch, SciPy, Pandas*

- Engineered a comprehensive deep learning pipeline integrating a PCA-enhanced MLP, a custom-designed DCNN, and the RegNetY-320 architecture
- Applied systematic class rebalancing and extensive data augmentation to achieve 96.9% accuracy, an optimal F1-score, and a flawless 1.00 AUC

Heart Disease Predictor | *Python, Flask, RESTful, HTML, CSS, JS*

- Developed a scalable Flask-RESTful API paired with an interactive HTML/JS frontend while leveraging the UCI dataset and implemented real-time feature scaling with hyperparameter tuning to deliver a 95% prediction accuracy, supporting timely clinical decision-making

Real-Time Noise Cancellation with RL | *Python, PyTorch, Gymnasium, SciPy, librosa*

- Created a bespoke OpenAI Gym environment incorporating FFT-based audio processing and trained a PPO agent to perform adaptive noise cancellation in real time, achieving processing speeds exceeding 5,200 FPS for high-fidelity audio performance