Huy (Michel) Trinh

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EDUCATION

University of Waterloo - MASc Electrical and Computer Engineering — **Waterloo, Canada**
Supervisors: *Prof. George Shaker, Prof. Elliot Creager* — *Jan 2024 - May 2026*

Tampere University — **Tampere, Finland**
B.Sc Science and Engineering, GPA: 4.69/5 — *Sep 2019 - May 2023*

RECENT PUBLICATIONS

- **Trinh, H**.*"Generative Latent Alignment for Interpretable Radar Based Occupancy Detection in Ambient Assisted Living"*, 39th Canadian Conference on Artificial Intelligence (*Under review*)
- **Trinh, H**; Creager, E and Shaker, G. *"Doppler-Domain Respiratory Amplification for Semi-Static Human Occupancy Detection Using Low-Resolution SIMO FMCW Radar"*, IEEE Transactions on Radar Systems (*Under review 2*)
- **Trinh, H**; Thai, P; Creager, E and Shaker, G. *"Reliable Quasi-Static Post-Fall Floor-Occupancy Detection Using Low-Cost Milimetre-Wave Radar"*, EMBC 2026 (*Under review*)
- Sebastian, R V.; **Trinh, H**; Sayed, A N; Elbadrawy, A; Sligar, A and Shaker, G. *"Radar-Based Fall Detection for Assisted Living: A Digital-Twin Representation Case Study"*, PerCom 2026
- **Trinh, H**; Sebastian, R V.; Creager, E and Shaker, G. *"A Physics-Informed Digital Twin Framework for Calibrated Sim-to-Real FMCW Radar Occupancy Estimation"*, Journal of Computational Vision and Imaging Systems 2025
- **Trinh, H** and Shaker, G. *"Lightweight Range–Angle Imaging Based Algorithm for Quasi-Static Human Detection on Low-Cost FMCW Radar"*, Journal of Computational Vision and Imaging Systems 2025
- Müller, P.; Pham-Dinh, K.; **Trinh, H.**; Rauhameri, A.; and Cronin, N.J. *"Estimating intra-subject and inter-subject oxygen consumption in outdoor human gait using multiple neural network approaches."* *Plos one* no. 9 (2024)
- Davidson, P.; **Trinh, H.**; Vekki, S.; Müller, P. *"Surrogate Modelling for Oxygen Uptake Prediction Using LSTM Neural Network."* *Sensors* 2023, 23, 2249.

RECENT WORK EXPERIENCE

Faculty Affiliate Researcher — **Aug 2024 - Dec 2025**
Vector Institute, Canada

- Researched robustness, interpretability, transparency and privacy of vision–language models on synthetic radar and non-visual modalities.
- Analyzed modality alignment gaps and improved cross-domain transfer via signal to image transformations, prompt engineering, and domain-gap diagnostics.

Performance Engineer — **Feb 2024 - Dec 2024**
Gold Sentintel, Canada

- Configured and adapted server-side code to Lenovo SE455 v3 AI Edge Server, focusing on asynchronous communication and scalability to handle high-volume data from 450 PCB boards.
- Optimized and integrated different ML models radar-based human activity recognition model onto the Tenstorrent Grayskull e150 AI Accelerator.

Intern - Supercomputing Performance Research Team — **Sep 2023 - Nov 2023**
RIKEN Center for Computational Science, Japan

- Extended A64FX benchmarking toolchain to support Fujitsu, GNU, LLVM, and Polly compilers; automated HPC performance evaluation and profiling on Fugaku
- Analyzed communication loads and patterns; contributed to scalable script generalization and early-stage extrapolation framework for large-node simulations

Research Assistant — **Oct 2020 - Aug 2023**
Tampere University, Finland

- Built real-time datalogger from source including Raspberry Pi, IMU GPS/GNSS VN200, and ROS for gait analysis.
- Implemented different neural networks for inter and intra subject's oxygen uptake predictions.
- Co-desgined platform, integrated custom libraries for parallel training and inference on Narvi cluster.

PROJECTS

- **Scalable_ViT**, supervised by Prof. Tahsin Reza , evaluate intra- and inter-node training efficiency of Vision Transformer across A4500, T4 GPUs using MPI and DeepSpeed.
- **On the evaluation of neural network deployment options**, A Bachelor's thesis to optimize and accelerate inference of multiple neural network models on low-power edge devices.

EXTERNAL COURSES

- Artificial Intelligence Training with AMD - CASTEIL
- Introduction to oneAPI, SYCL2020 and OpenMP offloading - HLRS
- Fundamentals of Accelerated Computing with CUDA,C/C++ - NVIDIA

EXTRACURRICULAR ACTIVITIES

- **1s Place Winner** in SMART Summer School Hackathon 2024, McGill University, Montreal - May 2024
- **3rd Place** in World Student Cluster Competition in SC22, Dallas, Texas - Jan 2022 - Nov 2022
- **Parallel Computing Trainee** in **CINECA, Bologna, Italy** - July 2023