

Walter Nedov

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Education

THE UNIVERSITY OF QUEENSLAND

Feb 2022 – Nov 2026

Bachelor of Engineering (Honours) and Master of Engineering

- Major: Electrical and Computer Engineering, GPA: 6.7/7. Dean's Commendation (8 semesters)
- **Coursework:** Control Engineering, Signals Systems & Control, Computer Vision & Deep Learning, Machine Learning, Advanced Embedded Systems, Digital System Design

TECHNICAL UNIVERSITY OF MUNICH

Oct 2024 – Mar 2025

Exchange Program, coursework in Machine Learning and Computer Vision

Publications

- **W. Nedov** et al. "Geometry-Conditioned Visual Place Recognition in Natural Environments." *International Conference on Digital Image Computing: Techniques and Applications (DICTA)*, 2026.
- **W. Nedov** et al. "Visual Place Recognition in Forests with Depth-Aware Distillation." *IEEE ICRA Workshop on Field Robotics*, 2026.

Skills

Languages & Tools: C/C++, Python, MATLAB, Bash, Git, Linux, CMake, Docker

Robotics & ML: ROS, PyTorch, NumPy, MuJoCo, ONNX, TensorBoard

Controls & Mathematics: Control Theory, Bayesian Estimation, Nonlinear Optimisation, Linear Algebra

Experience

RESEARCH ENGINEER

2026 – Present

CSIRO

- Developed Depth-Aware Distillation (DAD), conditioning DINOv2/SALAD visual place descriptors with foundation-model geometry; improved WildCross inter-sequence R@5 from 65.9% to 72.5%, with strongest gains under reverse traversal and appearance variation
- Accelerated distributed training of a billion-parameter PyTorch workload by migrating from DataParallel to DistributedDataParallel with NCCL gradient all-reduce, reducing GPU-hours by $\sim 38\%$

SOFTWARE ENGINEER

2023 – 2024

Defence Science and Technology Group

- Developed an automated program analysis tool in Scala and OCaml, enabling disassembly and lifting of AArch64 binaries while verifying program correctness
- Integrated GrammaTech's GTIRB binary format and the DDisasm disassembler into an existing analysis tool using Scala and Google Protocol Buffers

Projects

Robotics & Control Paper Replications

2025 – 2026

From-Scratch Algorithm Implementations

- Implemented RRT*, Hybrid A*, Kanayama tracking and MPC from primary sources; demonstrated kinematic-MPC failure at high speed when Pacejka tire saturation invalidated the controller model
- Implemented PPO from scratch in PyTorch; achieved 373 average return on Atari Breakout and 2700 on HalfCheetah, matching CleanRL

TinyML Vision on Microcontrollers

2025

STM32-based Image Classifier

- Trained a PyTorch CNN for MNIST, exported to ONNX and statically quantized to INT8; deployed with ST X-CUBE-AI on an STM32F446RE @180 MHz
- Achieved 99.43% test accuracy (vs. 99.46% FP32) with ~ 9 ms measured on-target latency

Leadership & Activities

TEAM LEAD, NCP STUDY TOUR

2025

- Led an AU/CN team to a working MVP; restructured communication across language barriers