



Mark Hedley Jones

Robotics Perception Engineer

SLAM • 3D mapping • sensor fusion

PROFILE

Over a decade building and shipping autonomous robots, from re-search platforms to deployed commercial fleets. PhD-qualified, spanning perception software, mechanical design and embedded hardware, with an AI-native workflow.

EXPERIENCE

Software Engineer

Nov 2018 — Present

SEQSENSE, Tokyo — mapping, simulation & object detection

Perception and mapping software for SEQSENSE's autonomous robots: **SQ-2**, a security robot deployed as a fleet across airports, offices and public buildings in Japan, and **FORRO**, a delivery robot co-developed with Kawasaki Heavy Industries.

- On-line lidar-based 3D mapping (point clouds / PCD) across desk-top, cloud and on-robot in real time.
- 3D object detection and tracking from lidar and camera; models trained in **PyTorch** and **OpenVINO**.
- **Gazebo** simulation mirroring robot behaviour; robot models (**URDF**) from CAD.

Post-Doctoral Researcher

Dec 2017 — Oct 2018

Robotics Plus / University of Auckland — autonomous navigation

Navigation software for heavy-duty vehicles in outdoor orchards.

- Integrated and tuned real-time **SLAM**, point-cloud processing and path-planning; fused lidar, cameras, radar, IMU and GNSS.
- Personally accountable for the safety of people and infrastructure around the autonomous vehicle.

Post-Doctoral Researcher

Mar 2015 — Dec 2017

Robotics Plus / University of Waikato — robotic hardware development

Designed and built a heavy-duty outdoor vehicle, a fruit-harvesting robot and a pollination robot; led the research team.

- Built **ROS** systems for robotic arms, precision spraying and an electric vehicle; full hardware design and integration.
- Managed a 6–10 person team across two universities, with budget and procurement authority.

SELECTED PUBLICATIONS

- Jones, M. H., et al. *Design and Testing of a Heavy-Duty Platform for Autonomous Navigation in Kiwifruit Orchards*. Biosystems Engineering, 2019.
- Jones, M. H., Scott, J. *Scaling of Electrode–Electrolyte Interface Model Parameters in Phosphate Buffered Saline*. IEEE Trans. Biomedical Circuits & Systems, 2014.
- Williams, H., et al. (incl. Jones, M. H.). *Large-scale evaluation of a robotic kiwifruit harvester*. Journal of Field Robotics, 2019.

Full list • markhedleyjones.com/about

OPEN SOURCE & TOOLS

Container-Magic, **dmenu-extended**, **Blender PCD I/O** — reproducible containerised dev environments and Linux/3D utilities.

Calibration checkerboard collection — widely used across the robotics & CV community.

CONTACT

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SKILLS

Robotics & Perception

ROS, SLAM, 3D mapping, point clouds, object detection & tracking

Vision & Machine Learning

OpenCV, PyTorch, OpenVINO, sensor fusion

Software

10+ years

C/C++, Python, Linux, Docker

Design & Fabrication

SolidWorks, CAD/CAM, CNC, PCB & embedded

EDUCATION

Doctor of Philosophy

University of Waikato, 2011–2015

Master of Engineering

First class honours, 2009

Bachelor of Science

Electronics & mechatronics, 2005–2008

AWARDS

- Waikato Doctoral Scholarship (2010)
- Agilent Research Scholarship (2009)
- ENZcon Best Research Paper (2011)
- ENZcon Runner-up Presentation (2014)

LANGUAGES & STATUS

Languages

English (native), Japanese (conversational, JLPT N3)

Nationalities

New Zealand & British

Residency

Japan (permanent resident)