

Aldrick Victor Tadeo Arellano

aldricktadeo@gmail.com | github.com/aldrick-t | linkedin.com/in/aldrick-t | aldrick-t.github.io

Robotics, AI, and embedded software engineer focused on ROS 2 autonomous systems, perception, SLAM, and sensor fusion. Experienced in real-time telemetry, computer vision, embedded firmware, and robotic control software across academic and industry environments.

EDUCATION

B.S. in Robotics and Digital Systems Engineering
Monterrey Institute of Technology and Higher Education (Tecnológico de Monterrey)

- Academic Excellence Scholarship recipient.
- Specialization in Cyberphysical Systems

2022 — 2026
CGPA: 95/100

EXPERIENCE

Software Engineer Intern, GE Aerospace

Nov 2025 — Jul 2026

- Designed usage-event models and PostgreSQL schemas for CAD/CAE and PLM workflow analysis.
- Integrated telemetry through C#/ .NET services, REST interfaces, and NX Open plugins, ensuring reliability across any platform.
- Built Grafana dashboards to track adoption, workflow bottlenecks, and reliability trends across CAD/PLM tooling.
- Developed Frontline Spatial AR/VR prototypes to visualize maintenance and assembly procedures for aerospace components.
- Implemented Azure DevOps CI/CD pipelines for the entire telemetry tooling suite.

PROJECTS

LiDAR-Based SLAM for Autonomous Navigation, Manchester Robotics, Tecnológico de Monterrey

Mar 2026 — Jun 2026

- Developed a ROS2 LiDAR SLAM pipeline for autonomous navigation targeting real-time execution on embedded hardware.
- Built ROS 2 modules for ArUco localization, EKF pose fusion, LiDAR obstacle avoidance, and reactive motion control.
- Implemented Bug0/Bug2 wall-following behaviors and validated eight Gazebo/RViz trajectories with 1-10 cm residuals.

MORI - Delicate Ripe Fruit Harvesting Robot, IEEE RoboSoft 2026 Manipulation Challenge

Oct 2025 — Apr 2026

- developed a fruit-parameterized granular-jamming gripper for low-damage fruit handling. Built to extend commercial 2F grippers.
- Developed an experimental monolithic manufacture, silicone mold design and workflow.
- Integrated UR5e manipulation with in-hand RGB-D sensing, object detection with YOLO-11, and PnP pose estimation.

Robotic Design & Software Lead, Yeaberry - Autonomous Harvesting Robot

Aug 2025 — Dec 2025

- Created an object localization system using an in-hand RGB-D camera, YOLO11 object detection, and PnP pose estimation.
- Led design of a three-finger pneumatic soft gripper and ESP32 electro-pneumatic control PCB.
- Built a RoboDK simulation cell for UR3e manipulation, robust path planning, and collision detection and avoidance harnesses.

Computer Vision-Based Autonomous Navigation, Manchester Robotics, Tecnológico de Monterrey

Feb 2025 — Aug 2025

- Developed autonomous navigation and control systems on the MCR2 Puzzlebot platform using minimal hardware and processing.
- Implemented traffic sign and light recognition systems, improving reliability, accuracy, and environmental adaptability by 33%.
- Enhanced navigation and positioning precision by fusing visual and internal sensors for improved real-world performance.
- Built vision redundancy features, reducing false positives and lowering detection/decision error rates by 15%.
- Redesigned the ROS2 node-topic architecture, optimizing data throughput and minimizing system failure points.

SKILLS

Programming: Python, C/C++, C#/ .NET, MATLAB, JavaScript
Robotics & Autonomy: ROS2, SLAM, RGB-D cameras, LiDAR, Robot Control, Gazebo, RViz
Embedded & Hardware: Circuit Design, Embedded Systems, KiCAD, FPGAs, ESP32, STM32, Arduino
AI & Perception: Machine Learning, Deep Learning, Computer Vision, Object Detection, OpenCV
Tools: Linux, Docker, Grafana, PostgreSQL, Siemens NX, SolidWorks, Autodesk Fusion, RoboDK
DevOps: Git/GitHub, CI/CD, Azure DevOps, Azure Pipelines, Github Actions, Agile/Scrum, Unit Testing
Languages: English (Native / C2), Spanish (Native), Japanese (Limited Working Proficiency)

CERTIFICATES

Fundamentals of Deep Learning, NVIDIA
Generative AI with Diffusion Models, NVIDIA
UR e-Series Tracks (Core, Pro, Application), Universal Robots
OpenCV Bootcamp, OpenCV University

Credential ID: W-y3ytgySYGKL1ps1Yh-EA
Credential ID: x91OqtdARUWi07HsVf5Vyg
Credential ID: 65a25e083f50497dba5f5538026087