

# Kelvin Le

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## Summary

[Kelvin](#) is an **undergraduate Mechatronics Engineer**, pursuing the bachelor degree at **Queensland University of Technology**. He has a strong passion on addressing real-world challenges with an engineering mindset, particularly through the application of robotics.

## Technical Skills

- **Robotics & Control System:** ROS2 (Docker, ros2\_control framework, ...), **MATLAB & Simulink** (Control).
- **Embedded Systems:** STM32, ESP32, **IOT systems**, AVR Series, Raspberry Pi, **Linux-based Embedded System**.
- **Hardware Design:** CAD Design (SolidWorks, Inventor), **Circuit & PCB Design** (Altium Designer, LTSpice)
- **Machine Learning & Computer Vision:** Computer Vision with **OpenCV**, LLM and Machine Learning on **AWS & Google Colab**.
- **Programming Languages:**, C/C++ (Embedded systems, ROS2 integration, System Programming), **Python** (ROS, Computer System, Data Analysis, Machine Learning), **HTML/CSS/JavaScript** (Web Development).

## Qualifications & Certifications

[Generative AI with Large Language Models](#) issued by DeepLearning.AI

- **Coursework & Skills:** Computer Architecture, Comparison of Learning Algorithms, Computational Theory

[Introduction to Machine Learning on AWS](#) issued by AWS

- **Coursework & Skills:** Artificial Intelligence, Machine Learning, AWS SageMaker, Large Language Models

## Experience

**Robotics Engineer Intern, [QUT Motorsport Design Internship](#)** – Brisbane, QLD Nov 2024 - Feb 2025

- System Performance ([QEV-4D](#)) improved by **20%** – measured by lap time reduction, by replacing the custom ROS 2 controller with controllers from the ros2\_control framework.
- Migrated and optimized the existing ROS2 Humble base to the ROS2 Jazzy, enhancing **system stability**.
- Optimized LiDAR ground segmentation and refined cone detection, improving **detection accuracy by 25%** and reducing **false positive rates by 40%**, leading to better object recognition in dynamic environments.
- Implemented a CAN bus package for real-time data exchange between the vehicle's hardware and ECUs, achieving **99.8% transmission reliability** and reducing latency, enhanced communication reliability.

**CAD/PCB Designer, AAA Salon Supply** – Brisbane, QLD Dec 2022 – Nov 2023

- Designed CAD, PCB models for salon equipment, including UV lamps, towel warmer, tools, ensuring functionality.
- Optimized and finalized designs by validating 3D-printed prototypes and final products, providing design enhancements for improved performance.
- Decreased **manufacturing time by 20%** by supervising production processes, optimizing assembly workflows.

**Robotics/STEM Instructor, [Junior Engineers](#)** – Brisbane, QLD Nov 2023 – Now

- Guided students to complete over **15 real-world STEM projects**, with an **85% project success rate** in coding, robotics, and engineering challenges
- Developed and implemented STEM curriculum, modules in AI, robotics, and web programming for after-school classes and holiday camps, leading to a **20% increase in student enrollment** over two semesters.
- Designed and manufactured over **50 custom PCBs and 3D-printed robot parts**, enhancing hands-on learning experiences for students.
- Achieved a **95% student satisfaction rate**, based on post-program surveys from parents and participants.

**STEM Lead Instructor**, [CodeCamp](#) – Brisbane, QLD

Nov 2023 – Now

- Led STEM after-school classes and full-day holiday camps for 8-12-year-old students, focusing on coding, drone robotics, and web programming, with an average class size of 18 students.
- Received an average satisfaction score of 4.8/5 from parents and students, demonstrating strong feedback and program success.

## Education

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**Queensland University of Technology**, BS in Mechatronics/Aerospace

Jan 2023 – Dec 2026

- GPA: 6.7/7.0 ([Academic Transcript](#))
- **Coursework:** Computer Architecture, Comparison of Learning Algorithms, Computational Theory
- **Achievements & Certifications:** QUT Dean's Scholar, Executive Deans' Commendation for Academic Excellence (2023-Now), Virtual Peer Learning Leader (2023-Now)

## Projects

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**"SmileBot" Autonomous Warehouse Robot (TRL3 Prototype)**

[github/smilebot](#)

- Ensured vision system accuracy by implementing a RGB camera and an object detection using OpenCV.
- Developed and manufactured development board PCB for the robot, connecting Embedded systems and sensors, actuators, I/O terminal via I2C communication protocol.
- Design and manufactured robot chassis and gripper ensuring the robot's stability and durability.
- Tools Used: ROS2, Python, C, OpenCV, Altium Designer, Google Colab, SolidWorks.

**ROS2-based "Diff-bot" Robot**

[github/diff-bot](#)

- Hardware developed from "SmileBot" Autonomous Warehouse Robot, adding a display for GUI.
- Implemented ROS2 Differential Drive controller from ros2\_control framework.
- Set-up and optimized the ROS2 navigation stack for the robot. YOLOv5 trained for object detection.
- Hardware Interface with the robot's sensors and actuators.
- Tools Used: ROS2, Python, XML, ros2\_control, C/C++, OpenCV, Google Colab.

**Mini DC Power Supply (Finished)**

[view/mini-dc-power-supply](#)

- USB Type-C for charging/discharging and banana plug for output.
- OLED display for GUI, voltage/current monitoring, and 3D-printed industrial case.
- 4× 21700 Li-ion batteries (16,000 mAh) with IN/OUT circuit, delivering up to 100W.
- Tools Used: PCB design, C, Altium Designer, SolidWorks, 3D-printing.

**"Quadro" Quadcopter (Further Developemnt Planned)**

[github/quadro-quadcopter](#)

- **Kalman filter** for IMU sensor fusion, PID control for stabilization.
- Designed, 3D-printed frame, propeller. [Toroidal Propeller](#) to increase Efficiency & Thrust while reducing noise.
- AutoPilot Board developed and manufactured for the quadcopter, using ESP32 and IMU9250.
- Tools Used: C/C++, AutoDesk Eagle, SolidWorks, PID control, Kalman Filter Computer Vision.