Lachlan Wallbridge

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Profile & Summary

Graduate Mechatronics and Computer Science engineer from UNSW (Class of 2025). Completed a Software Engineer Internship at Saber Astronautics, gaining hands-on experience in cloud infrastructure, embedded systems, and robotics software development. Brings a strong blend of hardware and software expertise developed through academic projects and industry experience. Highly motivated by robotics and automation, with experience designing and implementing multi-disciplinary engineering systems. Seeking graduate or early-career roles in robotics, control systems, computer networks, or software engineering.

Education

University of New South Wales **Jan 2021 – Dec 2025**

Bachelor of Mechatronics Engineering (Honours) & Bachelor of Science in Computer Science

- High Distinction WAM (86.4) & Dean's Merit List recipient
- Graduated December 2025

Experience

Software Engineer Intern **Jan 2025 – Jun 2025**

Saber Astronautics

- Deployed scalable AWS cloud infrastructure for satellite telemetry capture and routing using Pulumi (IaC) and Python.
- Integrated hardware and developed network protocols for client projects, including products intended for future deployment to the International Space Station.
- Built a multithreaded, object-oriented API to control wearable sensors over a network.
- Programmed UART, SPI, and I2C interfaces with support for NMEA and ICMP packet types.
- Ported sensor libraries to Python to enable compatibility with an unsupported FPGA platform.
- Developed a Slack bot using AWS services to relay Health alerts across production, staging, and dev environments.
- Migrated mission control software from Docker Compose to Kubernetes with Pulumi-managed deployments.
- Set up a local Kubernetes development cluster with Minikube to streamline containerised testing and dev workflows.

Freelance Mechatronics Engineer **Nov 2023 – Dec 2023**

Industrial Engraving Solutions

- Set up 3D printers and custom workstations for rapid prototyping and part manufacturing.
- Trained staff in printer set-up, maintenance, and slicing techniques including print parameter tuning.
- Designed and delivered robust replacement parts in CAD for a TROTEC laser cutter, reducing costs by over 90%.

Customer Service & Online Supervisor **Sep 2018 – Present**

Coles Supermarkets

- Managed a team of 5+ online shoppers and 10+ service staff to ensure timely and accurate order fulfilment.
- Maintained a 90%+ perfect order rate through quality control measures and team coaching.
- Conducted daily performance reviews to identify inefficiencies and drive operational improvements.
- Improved order speed and accuracy by 20% through targeted process enhancements.

Technical Skills

Languages: Python, Java, C, C++, C#, Kotlin, JavaScript, Shell, MATLAB, HTML/CSS

Technologies/Frameworks: React, Cypress, ROS2, OpenCV, Docker, Kubernetes, AWS, Pulumi, Linux

Developer Tools: Git, Bitbucket, Jira, Confluence, VS Code, Android Studio, Unity, Unreal Engine, Microsoft Suite

Hardware Platforms: Arduino, ESP32, Raspberry Pi, Galil PLC

CAD & Simulation: SolidWorks, MATLAB Simulink, RViz, Gazebo

Technical Domains: Robotics, Control Systems, Wireless Networks, Neural Networks, Optimisation Algorithms

Projects and Relevant Coursework

Honours Thesis: Multi-UAV Mesh Networks for Search & Rescue | *UAVs, Wireless Networks, Optimisation, Python* **2025**

Project grade: *94 (HD)*

- Designed a drone-based FANET to extend connectivity for search & rescue teams operating in difficult terrain.
- Built a simulation model to evaluate how multiple drones can relay data between ground teams and a base station.
- Developed an optimisation framework to automatically place drones for maximum network coverage and throughput.
- Conducted field tests of Wi-Fi HaLow mesh networks to validate drone connectivity and performance in real terrain.
- Visualised network performance in 3D using real terrain data to support system design and evaluation.

Autonomous ROS2 Dice-Playing Robot | *ROS2, Python, Computer Vision, Robotics, MoveIt, React* **2024**

Project grade: *97 (HD)* ***Subject grade:*** *93 (HD) Awarded 3rd Place, Best Project*

- Developed a UR5e robot system to autonomously play and manage a dice-based casino game.
- Implemented a multi-node ROS2 pipeline integrating multiple computer vision pipelines, motion planning, and game logic for closed-loop operation.
- Designed a custom linear gripper using CAD and perception stack to reliably handle dice with real-time feedback.
- Built a web dashboard and player database displaying and tracking game state, player bets, and results.

Argument Polarity Classification with Neural Networks | *Python, PyTorch, NLP* **2024**

Project grade: *100 (HD)* ***Subject grade:*** *88 (HD)*

- Built a machine learning system to classify arguments as supporting or opposing a claim.
- Modelled debate structure as a graph to incorporate surrounding context rather than analysing statements in isolation.
- Designed and trained neural network models to efficiently process large-scale text data.
- Achieved high classification accuracy, outperforming baseline models on a real-world debate dataset.

Teleoperated Food Delivery Robot (Capstone) | *Java, Kotlin, OOP, CANBus, SCRUM, ROS, React, Robotics* **2024**

Project grade: *98 (HD)* ***Subject grade:*** *90 (HD)*

- Led SCRUM-based redevelopment of a retired delivery robot for research and remote operation.
- Engineered a multi-threaded backend interfacing with LiDAR, cameras, CANBus, and reverse-engineered firmware.
- Built a responsive React frontend for robot monitoring, data visualisation, and instruction delivery.
- Surpassed project goals by 35%, enabling stretch features including ROS integration.

Personal Portfolio & Resume Website | *React, TailwindCSS, Framer Motion, JavaScript, Git* **2024**

Personal Project

- Built and deployed a responsive portfolio website showcasing projects and work experience.
- Leveraged Framer Motion for animations and styled with TailwindCSS.
- Optimised for performance, accessibility, and cross-device compatibility.

Vision-Guided Puzzle Solving with UR5e Robot Arm | *MATLAB, Computer Vision, UR5e, Robotics, Algorithms* **2024**

Project grade: *100 (HD)* ***Subject grade:*** *92 (HD)*

- Programmed a 6-DOF UR5e robotic arm with vision-based puzzle-solving capabilities.
- Applied a custom A* pathfinding algorithm to control precise block manipulation.
- Engineered fault tolerance for block misalignment and user interference.

ChromaCapture: Unreal Engine Puzzle Game | *Unreal Engine, C++, Game Development, Simulation* **2024**

Project grade: *92 (HD)* ***Subject grade:*** *94 (HD) Awarded Best Project award*

- Developed a 3D puzzle game in Unreal Engine featuring physics-based photo-capture mechanics.
- Optimised performance and memory usage for smooth gameplay on multiple platforms.
- Led development via weekly standups, Git version control, and code reviews.

SLAM with Stochastic Estimation & Sensor Fusion | *MATLAB, Sensor Fusion, SLAM, Simulation* **2024**
Project grade: *100 (HD)* ***Subject grade:*** *96 (HD)*

- Developed algorithms for robot localisation in unknown environments using Kalman filter-based SLAM.
- Combined LiDAR, gyroscope, and odometry data to accurately estimate robot position in real-time.
- Built MATLAB simulations to test multi-sensor robotic systems and validate performance.

PLC-Controlled Multi-Sensor Robot | *PLC, Multi-threading, GPS, LiDAR, PID, OOP, Watchdog, Robotics* **2024**
Project grade: *100 (HD)* ***Subject grade:*** *86 (HD)*

- Programmed a robust multi-threaded PLC control system with watchdog safety mechanisms.
- Tuned wheel PID controllers to meet safety and operational specifications.
- Enabled remote control via Xbox controller, integrating GPS, LiDAR, and IMU feedback.

Autonomous Maze Mapping with ROS2 | *ROS2, SLAM, Computer Vision, Autonomous Navigation* **2023**
Project grade: *100 (HD)* ***Subject grade:*** *93 (HD)*

- Built a ROS2-based system to autonomously map mazes using LiDAR and visual markers.
- Programmed wall-following and obstacle-avoidance algorithms for reliable navigation.
- Implemented OpenCV-based blob detection and coordinate transforms for accurate mapping in RViz.

Maze Mapping and Traversal Robot | *Arduino Mega, SLAM, Computer Vision, Pathfinding, Robotics* **2023**
Project grade: *98 (HD)* ***Subject grade:*** *94 (HD)*

- Developed an autonomous Arduino Mega robot capable of exploring and mapping unknown mazes using SLAM.
- Implemented vision-based map verification and Bluetooth override for manual control.
- Programmed heuristic pathfinding to compute and follow the shortest route through the maze.
- Integrated perception, control, and navigation algorithms to enable fully autonomous operation.

Visit my website to view the source code and demo videos of these projects!