LACHLAN WALLBRIDGE

MECHATRONIC ENGINEERING & COMPUTER SCIENCE

CONTACT

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GRADUATE ROLE APPLICATION

I am a student at the University of NSW seeking a graduate opportunity within a mechatronics engineering, computer science, or associated discipline. I will complete my studies in late 2025, and am looking forward to applying myself and my learning and experience in a full time industry role.

SKILLS

PROFESSIONAL

- Effective Time Management
- Leadership & Teamwork
- Strong Communication skills
- Project Management
- Problem Solving
- Agile and Scrum methodologies

TECHNICAL

- C, C++, Java, Python, MATLAB and Shell.
- ROS2 and OpenCV for robotics and computer vision
- CAD for additive and subtractive manufacturing
- App development (Kotlin & Java based apk's for Android)
- Frontend development (HTML, CSS, JavaScript, ReactJS, Cypress)
- FPGA experience (Moku:Go)
- Microprocessors (Arduino, ESP32, Raspberry Pi)
- Computer networks & communication for terrestrial & space applications
- PLC's for robot design (GALIL RIO)
- Cloud Infrastructure (AWS, Pulumi)
- Control systems including quadcopters

EDUCATION

BACHELOR OF ENGINEERING (HONOURS)
BACHELOR OF COMPUTER SCIENCE

MAJOR | MECHATRONIC ENGINEERING

UNSW SYDNEY | 2021 - CURRENT

- Currently completing a double degree
- Dean's Merit List student
- Current WAM of 85.44 (High Distinction)
- Graduation year 2025 T3

SCHOOL EDUCATION

ST IVES HIGH SCHOOL | 2015 - 2020

- NSW Education HSC Distinguished Achiever - ATAR 94.5

WORK EXPERIENCE

IINFRASTRUCTURE & MISSION DESIGN INTERN (DIIP):

SABER ASTRONAUTICS | 2025 - CURRENT

- Deployment of cloud infrastructure to capture, process, and delegate satellite telemetry.
- Integrate hardware & develop network protocols for client projects. Product to be deployed to the Int. Space Station.

INDUSTRIAL ENGRAVING SOLUTIONS (FREELANCE):

- Setting up a 3D printer and workstations.
- Operational educating and training for staff.
- Utilising CAD to design robust replacement parts.
- Machine replacement part costs reduced by over 90%

CUSTOMER SERVICE & ONLINE SUPERVISOR:

COLES SUPERMARKETS | 2018 - 2025

- Managing a small team and customers.
- Monitoring efficiency & highlighting growth opportunities

UNDERGRADUATE PROJECTS

COMPUTER SCIENCE CAPSTONE: REVERSE ENGINEERING A INDUSTRIAL DELIVERY ROBOT

Project Goal: Reverse engineering a Pudutech Bellabot with closed source software, such that it can be utilised as a research platform for research students.

- SCRUM approach to product development for a client. Frequent team stand ups and client check ins.
- Developing a new control system surrounding the goal of remote teleoperation. Utilising OO principles to create a scalable multithreaded system.
- Reverse engineering the decompiled code to understand the transmission protocols. TCP, Serial, etc.
- Interfacing with a range of sensors and input devices, including LiDAR, external cameras, battery control boards, and the wheels via CANBus.
- Full stack android development. My work was predominately on the backend and control system but assisted with frontend integration and API calls.
- Completed primary deliverables well before schedule (60% into allocated time) and provided multiple stretch goals and extra deliverables to the client.

Project grade: 100 (HD) **Subject grade:** 90 (HD)

ROBOTICS FINAL PROJECT: ROBOTICS MANIPULATORS IN THE REALM OF AUTOMATION

Project Goal: Utilise a 6 axis robot arm to manipulate a game board and complete a colour puzzle.

- Utilised computer vision libraries and a heuristic based AI in MATLAB to control a 6-axis manipulator to autonomously solve a random puzzle.
- Able to pick and place components when subject to interference and measurement errors.

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

ROBOT DESIGN PROJECT: MAZE MAPPING, SOLVING AND TRAVERSAL

- Used computer vision to map and solve a physical maze via heuristic based pathing algorithms.
- Additionally functionality of in maze mapping, utilising sensors for SLAM capabilities.
- Utilised an Arduino Mega and a variety of sensors for localisation. CAD was used to design the chassis

Project grade: 98 (HD) **Subject grade:** 94 (HD)

ROBOT SOFTWARE ARCHITECTURE PROJECT: SLAM, NAVIGATION AND MAP ANNOTATION

- Used computer vision to detect designated markers of differing colours and position them in the map.
- ROS2 integration of multiple software systems including mapping, locomotion and computer vision.

Project grade: 100 (HD) **Subject grade:** 93 (HD)

ADVANCED AUTONOMOUS SYSTEMS FINAL PROJECT: SLAM VIA STOCHASTIC STATE ESTIMATION

- Utilisation of stochastic state estimation, sensor data fusion and optimisation to determine the location of simulated robot in an unknown environment.
- Ability to work with discrete control systems and unknowns in a system.

Project grade: 100 (HD) **Subject grade:** 96 (HD)

PLC DESIGN PROJECT: CREATED MULTITHREADED SYSTEMS FOR LARGE SCALE ROBOTS

- Implementation of a watchdog and OO paradigms to make a highly safe and fast system.
- Interfacing with a variety of data acquisition systems, motion control systems and sensors, such as inertial sensors, GPS, LiDAR and encoders.

Project grade: 100 (HD) **Subject grade:** 86 (HD)