

# Luke Eyles

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## Education

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**Bachelor of Mechanical and Mechatronic Engineering (Honours),** 2017 – 2022  
**Diploma in Professional Engineering Practice**  
*University of Technology Sydney*

- GPA: 6.56/7.00, High Distinction Average.

## Experience

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**Graduate Acoustic Engineer** Mar 2023 – Present  
*Octave Acoustics*

- Applying Australian and international standards in performing field measurements and analysis.
- Modelling environmental acoustics with CadnaA and performing calculations using Strutt with Excel.
- Preparing acoustic reports for clients and advising design changes to ensure regulatory requirements are fulfilled.

**Technology Consulting Intern** Nov 2021 – July 2022  
*Isle Utilities*

- Performed comprehensive horizon scans to identify standout technologies on areas including water conservation, advanced sludge treatment, and waste to energy.
- Identified common technology needs between water utilities by assisting in design and running of workshops with water utilities and performing post-workshop analysis.
- Communicated with technical and non-technical clients by creating reports, newsletters, videos, and presentations.

**Research and Development Intern** Aug 2019 – Feb 2020  
*Jenkins Engineering Defence Systems*

- Developed resilient data logger system for an adverse environment, which autonomously recorded sensor data to a single board computer using C++.
- Streamlined testing processes by creating the Signal Generator GUI application in MATLAB, which interfaced with software defined radios to transmit pre-set or user defined signals.
- Improved maintainability of Signal Analyser application by porting from GUIDE to App Designer, refactoring code and adding detailed documentation.

**Assistant Lab Tutor for Introduction to Electrical Engineering** Mar 2018 – Jun 2018  
*University of Technology Sydney*

- Communicated verbally and by drawing diagrams to explain electrical engineering concepts.
- Debugged students' circuits and walked through how to fix the error.

## Skills

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- **Programming languages/tools:** MATLAB, C++, Embedded C, Python, ROS, Bash, Git, VSCode.
- **Hardware:** Audio and Acoustic Analyser, Arduino, Raspberry Pi, FPGA, Oscilloscope, 3D Printer.
- **Software:** CadnaA, NTi Software, Microsoft Excel, SolidWorks, Blender, AutoCAD, Intel Quartus Prime.

### **JEXO Exoskeleton Arm (Capstone)**

- Redesigned and programmed control software for the JEXO exoskeleton arm at UTS Robotics Institute, using C++ with ROS.
- Implemented a seamless and extensible controller switching system, enabling testing different control schemes or switching to remote control without restarting.
- Created extensive documentation to reduce onboarding time to the project, improving the functionality of JEXO as a research platform.
- Integrated a Gazebo simulation to enable offline testing of control schemes.

### **Underwater Robot Localisation (Mechanical and Mechatronic Design)**

- Researched and designed a unique localisation method for autonomous underwater vehicles (AUVs) as part of a team in collaboration with Thales.
- Calculated mean and worst-case localisation error for the method using MATLAB, and proposed an iterative solution to overcome large error values.
- Documented the solution in a detailed report, and developed a simulation in C++ with ROS as a proof of concept to demonstrate the method in action.

### **Marker-Finding TurtleBot (Sensors and Control)**

- Led team to program a TurtleBot to recognise markers, determine their position and orientation and drive towards them, using MATLAB with the ROS Toolbox.
- Exercised leadership by dividing the project between team members and developing a specification for each part, which ensured clear responsibilities and resulted in the project achieving a distinction overall.

### **Spotify Playlist Generator (Personal Project)**

- Programmed a Python script to pull popular posts from a music forum and create a Spotify playlist of the featured songs.
- Used Regex to analyse post titles for artist and song name.
- Interfaced with the Spotify API to search for each song and add it to the playlist, using fuzzy matching to account for mistakes or differences between the forum and Spotify listing.
- Improved performance by creating a database of previously matched songs using pandas.

### **Tic-Tac-Toe Bot (Robotics)**

- Led team to program a DOBOT Magician robot arm to play tic-tac-toe with a person, controlled using MATLAB with the ROS Toolbox.
- Utilised the Image Processing Toolbox in MATLAB to analyse the Tic-Tac-Toe board and determine the game state.
- Developed a model of the DOBOT arm using Peter Corke's Robotics Toolbox and programmed an analytical inverse kinematics function for the unique structure of the DOBOT arm.
- Implemented a GUI in App Designer to interface with the robot and provide user feedback.