JAY HUNTER

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EDUCATION

BE(Hons)/BCompSc *Computer Engineering/Machine Learning*, University of Queensland — Expected 2027
Certificate IV *Cyber Security*, TAFE Queensland University — 2024
Certificate of Completion *Global Cyber Security Camp 2022*

EXPERIENCE

Cyber Security Analyst — Sep 2023 - Present
AUSCERT — *Brisbane, QLD*

- Working in a dynamic team to provide security warnings and assessments.

Software Engineer Intern — Apr 2023 - Jun 2023
Cyborg Dynamics — *Brisbane, QLD*

- Enhanced PX4-based firmware control system for Unmanned Ground Vehicles (UGV) in C/C++.
- Enhanced and ported simulation of UGVs from Python to C++ and started a ROS 2 interface to it.

Tutor — Feb 2023 - Present
UQ Faculty of Engineering, Architecture and Information Technology — *Brisbane, QLD*

- ENGG1100: Professional Engineering
  - Supporting students in their teamwork for the design, development, build, and testing of an unmanned firefighting vehicle prototype.
  - Supporting students by supervising their testing and final demonstration of their prototype.

Student Ambassador — Jan 2023 - Present
MathWorks — *Brisbane, QLD*

- Running on-campus events to teach MathWorks tools including
  1. Drone Simulation Modelling with MATLAB, Simulink, and Stateflow.
  2. Control System Deisgn and Signal Processing with Simulink and Simscape

Coordinator — Jan 2022 - May 2022
UQ School of Cyber — *Brisbane, QLD*

- Developed three cybersecurity challenges which tested participant's ability to critical analyse and solve complex problems using existing and self-developed scripting tools and techniques.

Research Assistant — Aug 2021 - Nov 2021
UQ School of Cyber — *Brisbane, QLD*

- Investigated the trade-off between shallow and deep learning techniques in preventing cyber-attacks on critical infrastructure by comparing the accuracy, precision, recall, and F_1 scores of various machine learning models and the time taken to process network traffic.
  1. Developed a internet traffic pre-processor in python to turn raw packets into a readable format for scikit-learn's machine learning models.
  2. Investigated the abilities of k-Nearest Neighbour, k-Means, Random Forest, and Support Vector Machine algorithms to see their viability in network intrusion detection. Each were trained and tested with variations of Shannon Entropy pre-processing on the given attack dataset

PROJECTS

Sumobot Developing the sensor and control system for the 2024 RoboRAVE Sumobot competition. The embedded software will be written using Rust for the ESP32-C3 RISC-V controller. Sensors to be utilised include a 6DoF IMU, three time-of-flight sensors, and two reflectance sensor arrays.

DRC Droid Developed the Computer Vision control system for a autonomous cat-sized line-following droid. Currently utilising colour-sensing, and gray-scale Hough Transforms as date for a PID control system that will feed back into a ROS ecosystem developed by other team members.

NES Emulator in Rust Building a NES emulated in Rust based off documentation from *NESdev Wiki* and *Nintendo Entertainment System* by Patrick Diskin.

UQCSbot Conducted Interactive Testing, Black Box Testing, Security Testing, and Sanity Testing of UQ Computing Society's Discord bot. Resolved functionality issues with the bot which disturbed the contacting of moderators.

Turbo A Discord bot for UQ Mechatronics and Robotics Society, made using Rust and Python. It is in the early stages of development but the aim is to provide society members some entertainment and quick access to support services.

RobotX - Team Mantis Configured the computer subsystems so that they have the correct libraries, drivers, and operating systems for their tasks. Operated and maintained a *Virtual RobotX* (VFX) simulation of our boat using Gazebo, Docker, and ROS.

Rover - UQ Space Assisted in the planning of the computer and sensor systems for a Lunar Rover. Most my work was configuring a NVIDIA Jetson to work as a central hub, developing a potential pose-estimation system for known objects, and investigated the viability of implementing LiDAR as a method of navigation.

Unmanned Firefighting Vehicle Designed the power, computer, and communication systems for a remote controlled fire truck. The system used an Arduino UNO as the microcontroller to interface between the operator and the drive/water distribution systems. Communication was achieved via a HC-05 Bluetooth module and an Android App.

EXTRACURRICULAR

- UQ Mechatronics and Robotics Society (UQ MARS)
  - President of UQ MARS for 2023. My goal as President was to increase member's technical skills, run the 2023 Arduino Hackathon, run the Micromouse Competition, and provide our members with connections both interpersonal and industry that they may otherwise not get. Each goal set was achieved.
  - Treasurer of UQ MARS in 2022. My role was mostly bookkeeping and budget management. My two biggest achievements were securing the society its first sponsor in three years and building a strong relationship between UQ MARS and QUT Robotics Club.
- Treasurer of UQ Cyber Squad in 2022. My role consisted mostly of budgeting, bookkeeping and supporting student during Capture the Flag events. Highlights of my role were:
  1. Provided a Ghidra Crash course to students interested in getting started in software reverse engineering.
  2. Provided a crash course on SQL Injection.