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| Alastair Knowles | *+61 428 570 072*  *kno0001@gmail.com*  [*github.com/Aloz1*](https://github.com/Aloz1)  [*linkedin.com/in/Alastair-K4*](https://www.linkedin.com/in/Alastair-K/) |

# Career Objective

Enthusiastic Electronic Engineering and Computer Science student nearing completion of my degree. Hard working, loves challenging problems, always striving for quality workmanship, enjoys picking up new tools and tricks. Seeking an embedded software position at a unique workplace as a start to my career.

# Key Skills

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| Problem Solving |  | In depth troubleshooting often required at my previous workplace to ensure in house services and software remained operational. Numerous university assignments, personal projects, and cyber security CTFs have also helped me further hone my problem-solving abilities. |
| Leadership |  | Have been in several leadership roles in the past, such as an assistant leadership position at the local Scout group, and the treasurer of Swinburne’s Cyber Security Club. Additionally, I was a YMCA UNO-Y Youth Leadership participant in 2012. |
| Self driven |  | Often found tinkering with ideas and curiosity driven mini projects. Topics I’ve dabbled in on weekends include Bluetooth BLE, PXE boot, Docker, Linux. |

# Employment History

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| 2018 - Present |  | **Engineering and IT Consultant**.   * Ported and enhanced embedded applications for the NetComm Bovine Linux platform. * Setup of FreeIPA authentication systems. |
| 2015 - 2019 |  | **Systems Administrator**, *KTI Pty Ltd*.   * Contributed towards development of several in house software applications including the premesis’s intranet, webERP and product testing utilities. * Setup and maintained many internal services including BIND-DNS, multi-gateway failover system (OpenWRT), OpenProject management software, WebERP accounting package and FreeIPA centralised authentication server. * Managed on site VM environments including XenServer, VirtualBox, VMWare and Docker. * Developed an integrated laser engraving utility using python, PyQt5, PyTest and SQLAlchemy. |
| 2011 - 2015 |  | **Process Worker**, *KTI Pty Ltd*.   * Product serial number assignment and laser engraving. * Soldering through hole components and component leads. * Battery pack tab welding, bottle fly-cutting, waterproof testing. |

# Education and Qualifications

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| 2015 - Present |  | **BEng(Electronics & Computer systems) (Hons)**, Swinburne University.  **BCompSci**   * Embedded microcontroller programming, Freescale ARM Cortex M4 * FreeRTOS systems programming * Analog and digital circuit design, BJTs, MOSFETs, Op-amps, filters * FPGA/CPLD programming in VHDL, hardware – software interfacing, CPU architecture * Basic signal processing using MATLAB and Simulink * Numerous software projects with C/C++, C#, Java, PHP, Python * Unit testing and Agile/SCRUM * SPICE (Multisim/LTspice) simulation, VHDL simulation (Modelsim, ISim) * Test equipment, DSOs, Logic Analysers, VNAs, multimeters |

Alastair Knowles

# Projects

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| 2019 |  | **Computer vision bus passenger tracker**.   * Prototype software for tracking passengers as they enter and leave a bus. * Built on a Raspberry Pi + Intel Neural Compute Stick platform. * Configuration app with live video streaming via GStreamer RTSP. * Master/Slave devices with HTTP communication to the cloud. * Written in C & C++ using GCC and CMake. |
| 2019 |  | **IoT Vehicle tracking system**, [github.com/Aloz1/iot-report.](https://github.com/Aloz1/iot-report)   * A proof of concept IoT vehicle tracking system with wireless BLE nodes and cloud data storage. * Includes an ESP32 based GPS node and an Arduino based IMU node with BLE GATT communications to an edge device (raspberry pi). * Edge device utilises Redis data caching, for intermittent internet connectivity. * Communications between edge and cloud is via MQTT, with data stored in DynamoDB. * Firmware for nodes written in C++, edge services written in Python, web client uses a combination of Python, JavaScript and HTML, the report is written in LATEX. |
| 2018 |  | **Zynq Space Invaders**, [github.com/Aloz1/Zybo-SpaceInvaders.](https://github.com/Aloz1/Zybo-SpaceInvaders)  University project demonstrating how a Zynq FPGA may be used with FreeRTOS and custom logic to build a small space invaders clone.   * Custom FPGA logic for direct communications with a PlayStation controller. * Designed such that each space invader operates in their own thread/task to demonstrate concurrency and task scheduling. * FPGA logic developed with VHDL and Vivado block designer. * Space invaders game written in C++ and is designed to run on top of FreeRTOS |

# Extracurricular

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| 2015 - Present  2017, 2018  2012  2011, 2012 |  | Various CTFs *SquareCTF, OverTheWire, Cybar, PicoCTF, CSAW*  Cyber Security Challenge Australia (CySCA)  YMCA UNO-Y Youth Leadership Program  YMCA Youth Parliament Victoria |

# References

*Available upon request*