Timothy Alder

Electrical Engineer

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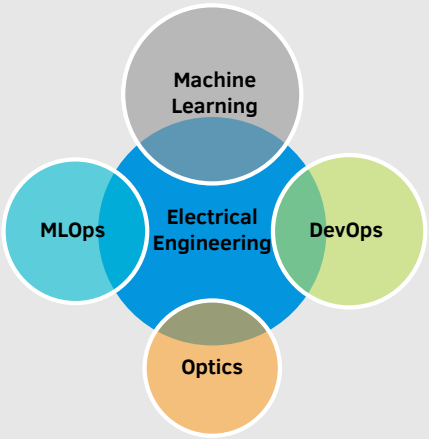
/in/timothyalder

timothyalder

Technical Skills

Overview



Programming

$0\ LOC \longrightarrow 5000\ LOC$

Python • MATLAB • Starlark

C • C++ • Verilog

Simulink • LabVIEW

Education

Bachelor of Engineering (Research & Development) (Honours) (GPA: 6.531)
Major: Electronic and Communication Systems
Minor: Mechatronics
Australian Excellence Scholarship
Australian National University
2021 - 2024 | Canberra, Australia

Experience

Feb 2026 - Present — **Hardware Engineer** — Department of Defence

- Building a stronger, more resilient Australia.
- **Skills:** Threat Modelling, Embedded Design, Hack the Box
- **Tools:** Verilog, Vivado, Vitis

Jan 2025 - Jan 2026 — **Machine Learning Engineer** — Seeing Machines

- Technical lead; 3D vision-based solutions for biosensing.
- Technical lead; generative AI for identity anonymisation and synthetic data generation.
- Technical lead; parallelised, scalable algorithm validation system.
- **Skills:** Machine Learning, MLOps, DevOps, Project Management
- **Tools:** Docker; AWS S3, Batch, ECR

Mar 2022 - Dec 2024 — **Undergraduate Optical Engineer** — Seeing Machines

- Automated all major optical test procedures using Python and C++ to control a spectrometer, goniometer, and camera frame grabber hardware; as well as Zemax and Imatest software. Developed user-friendly GUIs using PyQt, improving accessibility and reducing manual errors.
- Programmatic implementation of ISO12233, achieving >10x speed improvement over existing industry-standard software while eliminating >$20,000/year licensing costs.
- **Skills:** Optics, Test Automation, OOP, CI/CD
- **Tools:** Python, C++, OpenCV, Bazel, Jenkins

Research

2020 - 2020 — **B.Eng. (R&D) (Hons.), Undergraduate** — Australian National University
Thesis: *DepthPhys: Near-Infrared Remote Photoplethysmography in Driver Monitoring Systems*

- Novel deep learning approach to remote photoplethysmography using bespoke three-dimensional vision system.
- Collection of a large dataset of naturalistic driving data with varying ambient illumination, behavioural, and physiological conditions.

2022 - 2023 — **B.Eng. (R&D) (Hons.), Undergraduate** — Australian National University
Harnessing coherent illuminator properties to detect subsurface scattering

- Vertical-cavity surface-emitting lasers (VCSELs) for material classification under varying ambient illumination conditions.

2022 - 2022 — **B.Eng. (R&D) (Hons.), Undergraduate** — Australian National University
Power Requirements of Ground-Based Bushfire Detection Devices

- Literature review investigating the power requirements of various sensors for application in a remote distributed IoT bushfire detection network.

Hobbies

Sports — **Martial Arts** — Dark Carnival, Club Lime
Muay Thai, Brazilian Jiu Jitsu
Strength Training

Technical — **Home Automation**
Home Assistant, Networking

Misc. — **Motorbikes, music, puzzles, bread, ... mint chocolate**