

# Alan Huynh

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## SKILLS

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**Data Science:** PyTorch, TF, TensorRT, Quant Trading, Time-Series, Stats Models

**Languages/Libs:** Python, SQL, JavaScript/TypeScript, C/C++, Java; NumPy, Pandas, SciPy, PySpark

**Tools:** AWS, Azure, GCP, Docker, MongoDB, Firebase, Next.js, Django, Git, CI/CD, Linux, Terraform, Pulumi, GDAL

## EXPERIENCE

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### Machine Learning Engineer

Dec. 2024 - Mar. 2025

*Fair Dinkum Systems*

*Melbourne, VIC*

- Enhanced battery RUL prediction accuracy through advanced machine learning development, enabling cost-effective battery systems.
- Improved model robustness and out-of-domain generalization using diverse time-series analysis techniques (wavelet, spectrogram, Fourier, contrastive learning).
- Achieved a 30% prediction accuracy increase by developing and optimizing deep learning architectures (Vision Transformers, dual-stream) with PyTorch.

### Software Engineer

Sep. 2024 - Present

*Math Song Pty Ltd*

*Melbourne, VIC*

- Enhanced operational efficiency through full-stack Django system development, automating key processes.
- Maintained 99.99% uptime, processed \$200k+ monthly transactions, and integrated multiple payment gateways via REST APIs.

### Machine Learning Engineer

Feb. 2024 - Sep. 2024

*A.I.gorithm*

*Melbourne, VIC*

- Adapted European geospatial crop models for Australian conditions, maintaining high performance and accuracy.
- Developed a near-unsupervised deforestation detection system using remote sensing and advanced machine learning.
- Engineered a system estimating Australian CO2/Methane concentrations using remote sensing and vector data analysis.
- Conducted QGIS-based data analysis, providing environmental insights for Coles' Net Zero and NAB projects.

### Data Scientist

Jan. 2022 - Jan. 2024

*LUX Aerobot*

*Melbourne, VIC | Hybrid*

- Engineered complete gondola system (hardware, firmware, software) for aerial data collection.
- Deployed optimized ML models for real-time aerial/atmospheric analysis on NVIDIA Jetson using PyTorch, ONNX, TensorRT.
- Developed aerial wildfire prediction system for Canada, achieving 92% multi-province testing accuracy.
- Reduced geospatial analysis processing time by 75% via remote sensing segmentation models for balloon imagery.

## EXTRACURRICULARS

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### Green Battery Hack - First Place (Innovation Track)

Apr. 2024 - May 2024

*MLAI Aus*

*Melbourne, VIC*

- Engineered ML model for AEMO spot market trading using simulation and reinforcement learning-inspired strategies.
- Implemented a custom loss function that quantified the difference between realized profits and maximum achievable profits, driving the model to learn optimal trading decisions.
- Experimented with Q-Learning variations, time series, indicator-based models (EMA), and Optuna optimization to enhance trading strategies.

### Public Speaker - Machine Learning and Artificial Intelligence

Various Dates

*DDD, AICamp*

*Various Locations*

- Presented technical ML/AI concepts to 50+ at DDD and AICamp events, promoting community understanding.

### Mentor

Feb. 2025

*CISSA | Melbourne University*

*Melbourne, VIC*

PROJECTS

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<b>Microplastics Estimation</b> <i>Python, PyTorch, AWS</i> <ul style="list-style-type: none"><li>Achieved 80% accuracy in microplastic estimation across Europe using a PINN with meteorological and land data.</li><li>Enhanced model robustness via custom loss functions integrating advection-diffusion physics.</li><li>Optimized spatio-temporal analysis by comparing FNOs, GNNs, and CNNs.</li></ul>	Feb 2025 – Present
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<b>Torch Activations</b> <i>Python, PyTorch, Poetry</i> <ul style="list-style-type: none"><li>Developed and published a comprehensive PyPI library, 'Torch Activations,' implementing 300+ activation functions for PyTorch from mathematical representations.</li><li>Ensured 100% test coverage and implemented robust CI/CD pipelines using GitHub Actions and Poetry for automated deployment and continuous integration.</li><li>Established and managed a structured open-source project, including detailed issue tracking, pull request guidelines, and contribution documentation, fostering community involvement.</li></ul>	Apr. 2023 – Present
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<b>Natural Language Geocoding</b> <i>Python, OpenAI, MapBox</i> <ul style="list-style-type: none"><li>Developed an LLM-powered (GPT4o-mini) geocoding system using OpenAI and OSMx, converting natural language queries into precise geographic multi-polygons with advanced prompt engineering.</li></ul>	
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PUBLICATIONS

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<b>Battery ML Researchers: Beware the Stanford Fast Charging Battery Dataset</b> <i>Fair Dinkum Systems</i>	Feb. 2025
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EDUCATION

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<b>Melbourne Polytechnic</b> <i>Bachelor of Information Technology</i>	Feb. 2024 - Present Melbourne, VIC
<b>Deakin University</b> <i>Accelerated Program</i>	Feb. 2023 - Oct. 2023 Melbourne, VIC
<b>Northcote Highschool</b> <i>VCE Program</i>	Feb. 2022 - Oct. 2023 Melbourne, VIC

CERTIFICATION

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<b>AWS Certified Machine Learning - Specialty Certification (MLS-C01)</b>	Mar. 2025
<b>Microsoft Azure for Data Engineering</b>	Jan. 2024
<b>Terraform for Google Cloud</b>	Feb. 2024