Alan Huynh

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Skills

Languages/Libs: Python, SQL, JS/TS, C/C++, Java; NumPy, Pandas, SciPy, PySpark
Tools: AWS, Azure, GCP, Docker, MongoDB, Supabase, Next.js, Django, Git, CI/CD, Linux, Terraform, Pulumi
Data Science: PyTorch, TensorRT, Quant Trading, Time-Series, Stats Models

Experience

Software Engineer Sep. 2024 – Present
Math Song Pty Ltd *Melbourne, VIC*

- Led end-to-end development of a full-stack Django platform, automating operations and improving efficiency.
- Managed infrastructure on GCP with Docker, CI/CD pipelines, and VM provisioning for scalable deployment.
- Maintained 99.99% uptime while processing $200K+ monthly through integrated payment APIs.
- Oversaw database architecture using PostgreSQL (primary) and MySQL (backup), ensuring data integrity and reliability.

Machine Learning Engineer Dec. 2024 - Mar. 2025
Fair Dinkum Systems *Melbourne, VIC*

- Led experimental ML research on battery health prediction, focusing on model robustness and real-world applicability.
- Built reproducible training workflows using PyTorch with intensive Git and CI/CD integration for rapid iteration and collaboration.
- Worked in a fast-paced Agile environment with regular code reviews, sprint planning, and continuous integration testing.

Geospatial Machine Learning Engineer Feb. 2024 – Sep. 2024
A.I.gorithm *Melbourne, VIC*

- Built and adapted geospatial ML pipelines to localize European crop models for Australian environments.
- Developed a scalable, low-supervision deforestation detection system using satellite imagery and remote sensing APIs.
- Engineered geospatial data processing systems to estimate CO2 and methane emissions using vector/raster fusion techniques.
- Delivered production-ready analysis and visualizations via QGIS and Python for sustainability partners including Coles and NAB.

Data Scientist Jan. 2022 - Jan. 2024
LUX Aerobot *Melbourne, VIC | Hybrid*

- Developed computer vision models achieving 92% wildfire prediction accuracy using multi-spectral aerial imagery and transfer learning techniques.
- Optimized ML models for edge deployment on NVIDIA Jetson, reducing size by 60% through quantization and TensorRT implementation.
- Engineered geospatial ML pipeline with custom feature extraction, decreasing image processing latency by 75%.
- Implemented model training and deployment workflow using AWS SageMaker, Neo, and Greengrass, enabling real-time inference in resource-constrained environments.

Education

Melbourne Polytechnic Feb. 2024 - Present
Bachelors of Information Technology *Melbourne, VIC*

Deakin University Feb. 2023 - Oct. 2023
Year 12 Accelerated Program *Melbourne, VIC*

Northcote Highschool Feb. 2022 - Oct. 2023
VCE Program *Melbourne, VIC*

Extracurriculars

Green Battery Hack - First Place (Innovation Track) Apr. 2024 - May 2024
MLAI Aus *Melbourne, VIC*

- Engineered ML models for AEMO spot market trading using simulation environments and reinforcement learning-inspired strategies.
- Containerized the solution with Docker and delivered via CI/CD pipelines, collaborating closely via Git for iterative testing and team reviews.
- Designed a custom loss function to optimize trading performance by minimizing profit gaps relative to the theoretical maximum.
- Explored Q-Learning variants, time-series indicators (e.g. EMA), and hyperparameter tuning with Optuna to refine strategy.

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

LivingMap
Next.js, Supabase, PostgreSQL

- Developed a web application using Next.js and Mapbox to visualize amenity density data as a real-time heat scatter plot.
- Scraped and stored OpenStreetMap (OSM) data using Supabase and PostgreSQL, assigning dynamic radius-based weights to each amenity type.
- Built backend logic for efficient geospatial queries to support responsive, interactive map rendering in the browser.

Torch Activations Apr. 2023 – Present
Python, PyTorch, Poetry

- Developed and published a comprehensive PyPI library, 'Torch Activations,' implementing 300+ activation functions for PyTorch from mathematical representations.
- Ensured 100% test coverage and implemented robust CI/CD pipelines using GitHub Actions and Poetry for automated deployment and continuous integration.
- Established and managed a structured open-source project, including detailed issue tracking, pull request guidelines, and contribution documentation to ReadTheDocs, fostering community involvement.

Natural Language Geocoding
Python, OpenAI, MapBox

- 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.

Publications

Physic-Inform Neural Network for Airbourne Microplastic Concentration Estimation Apr. 2025
Indepedent Research *to be published*

Battery ML Researchers: Beware the Stanford Fast Charging Battery Dataset Feb. 2025
Fair Dinkum Systems

Certification

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