YUPENG CHAO

Software engineering · Geospatial analytics · Scientific computing

Canberra ACT | 0452 101 367

henrychao553@gmail.com | u7264498@anu.edu.au

linkedin.com/in/yupeng-chao/ | github.com/chaoyupeng

PROFILE

AI software engineer and ANU graduate building Python software for environmental modelling, satellite analysis and a geospatial platform. Experience includes forest-model training, flood-monitoring APIs and a shared GPU training service used by colleagues, supported by automated tests and practical technical documentation.

TECHNICAL SKILLS

Scientific computing: Python, NumPy, Xarray.
Machine learning: PyTorch, CNNs, random forests, ONNX Runtime.
Services and delivery: FastAPI, REST/gRPC, Git/GitHub, testing, CI/CD, technical documentation.
Infrastructure: Linux, GCP/Cloud Run, Docker, Kubernetes, Ray, KVM/QEMU.

PROFESSIONAL EXPERIENCE

AI Software Engineer | Haizea Analytics Feb 2024 – Nov 2026

Canberra, ACT, Australia

VMAP forest detection · vmap.au/map

- Contributed to training forest-detection models for VMAP v2.1, a 10 m satellite mapping product. The project's published validation achieved median Kappa scores of **0.762 (Australian definition) and 0.814 (FAO)** against 3,200 LiDAR reference samples.

Yass water monitoring and flood warning · yassflooding.live

- Corrected rainfall aggregation to retain all five-minute sensor readings, resolving under-reported totals; one validated 48-hour total changed from **7.8 to 22.4 mm**.
- Integrated rainfall, river-gauge and forecast data with WBNM flood simulations through Python APIs for trigger-based predictions, uncertainty bands and event archiving.
- Moved flood simulations into on-demand Cloud Run jobs and documented their deployment and maintenance.

Terrak.io geospatial platform · terrak.io

- Implemented parallel, tiled zonal statistics in Python, aligning raster datasets at different resolutions and combining results without double-counting tile boundaries.
- Repaired incomplete Sentinel-2 imagery, increasing mean valid-pixel coverage from **28.4% to 60.3%** across 63 affected dates in an evaluation region; validated **939 image slices** in the final audit.
- Developed model-training APIs and cloud/on-premises execution workflows; implemented satellite-band classification using NumPy, Xarray and ONNX Runtime.
- Wrote setup guides, deployment instructions and API documentation to help colleagues operate and maintain the platform.

PROFESSIONAL EXPERIENCE — CONTINUED

Haizea Analytics | GPU training infrastructure

- Built and deployed a shared training and job-queue service using Ray, KubeRay and Kueue across **four GPUs on three worker machines**, enabling colleagues to submit and monitor resource-controlled workloads.
- Updated the GPU communication library to reduce a two-GPU smoke test's submission-to-completion time from **290 to 85 seconds (71%)**.
- Configured Linux GPU passthrough with KVM/QEMU, integrated Ray workers and maintained monitoring and troubleshooting guidance.

Software quality

- Added **205 unit-test functions** covering parsing, raster processing and temporal operations; integrated linting, type checks and coverage reporting into pull-request workflows.

EDUCATION

Master of Machine Learning and Computer Vision Jul 2023 – Jul 2024

Australian National University | Canberra ACT

Bachelor of Advanced Computing Honours Jul 2021 – Jul 2023

Australian National University | Canberra ACT

Second Class Honours Division A (H2A).

Bachelor of Computer Science and Information Technology Sep 2019 – Jul 2021

Shandong University | China

ACADEMIC PROJECT

Event cameras for robotic control Jul 2022 – Jul 2023

- Used ROS and event cameras to capture light signals, convert them into binary information and implement a robotic vehicle control system.

ADDITIONAL EXPERIENCE AND DEVELOPMENT

ACS Professional Year Program | QIBA, Canberra | Completed 2026

- Study Australia Industry Experience Program, Our Big Kitchen, Bondi NSW (Oct 2023): collaborated with a multidisciplinary team on proposals to improve kitchen workflows.

Australian Computer Society (ACS) | Languages: English and Mandarin Chinese.

REFERENCES

References available upon request.