Aayush Bajaj

AI ENGINEER

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Education

University of New South Wales	*Sydney, Australia*
Master of Statistics	*Feb 2026 – Dec 2028*
University of New South Wales	*Sydney, Australia*
Bachelor of Computer Science (AI), Minor Mathematics	*Feb 2021 – Sept 2025*

Skills

Deep Learning & ML: PyTorch, TensorFlow, HuggingFace, nnU-Net, U-Net, CNNs, Transformers

ML Engineering: Python, CUDA, HPC (H200/A200), Jupyter, Conda, Model Optimisation, Hyperparameter Tuning

Computer Vision: Semantic Segmentation, Image Processing, Data Augmentation, Preprocessing Pipelines

Production & Cloud: Docker, Azure, MLOps, Model Deployment

Data & Research: NumPy, Pandas, Matplotlib, Experiment Tracking, Statistical Analysis

Projects

Biomedical Semantic Segmentation ⧉ *Oct 2024 – June 2025*

Production-grade kidney and tumour segmentation from 3D CT scans achieving top-tier performance on KiTS19 leaderboard.

- Implemented and compared 2D/3D state-of-the-art architectures; achieved class-leading Dice score of 78% (full marks).
- Reproduced nnU-Net end-to-end on Nvidia H200/A200; published technical report with ablation studies.
- Deployed to KiTS19 official leaderboard: ranked #57 globally with Dice score of 0.9129 through systematic hyperparameter optimisation.

Dead Tree Segmentation ⧉ *Kaggle*

Semantic segmentation of live/dead trees from satellite imagery with severe class imbalance.

- Implemented U-Net from scratch (31M parameters); combined Dice + Focal loss for 97% class imbalance.
- Achieved 0.71 IoU after morphological post-processing; parallelised training on CUDA-enabled HPC.

10,000 Hours of ML ⧉ *Aug 2024 – present*

Comprehensive repository of production-ready ML implementations across CV, NLP, and RL domains.

- Version-controlled experiments spanning supervised/unsupervised learning, modern architectures, and SOTA algorithms.
- Self-contained Jupyter notebooks demonstrating end-to-end ML workflows from data preprocessing to inference.

ABAJ.AI Infrastructure ⧉ *May 2023 – present*

Technical blog and knowledge-sharing platform with 1,073+ ML/AI research notes and tutorials.

- Automated publishing pipeline built with Hugo; deployed behind Nginx with HTTPS.
- Comprehensive ML documentation following Zettelkasten methodology for knowledge graphs.

Certifications

AWS Certified Machine Learning – Specialty

Microsoft Certified: Azure AI Engineer Associate (AI-102)