Aayush Bajaj

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Summary

- AI Engineer with hands-on experience in deep learning, computer vision, and LLM systems. Built production ML pipelines using PyTorch and HuggingFace on HPC infrastructure. Ranked 57th globally on KiTS19 medical imaging benchmark.

Experience

Machine Learning Engineer - 3D Medical Image Segmentation *KiTS19 Challenge*
Independent ML Research *Oct 2024 - June 2025*

- Achieved 0.9129 Dice score and ranked 57th globally on official KiTS19 leaderboard for kidney and tumour segmentation from 3D CT scans.
- Implemented nnU-Net pipeline with systematic hyperparameter optimisation on Nvidia H200 GPUs; published technical report with ablation studies.

AI Engineer - Full-Stack LLM Application *Production*
Independent Development *Jan 2025 - June 2025*

- Built production conversational AI with RAG pipeline, streaming responses, and persistent context using TypeScript, Svelte, and PostgreSQL.
- Integrated OpenAI GPT API with security middleware including rate limiting, input validation, and comprehensive test coverage.

Machine Learning Engineer - Satellite Image Segmentation *Remote*
Kaggle Competition *Sept 2024 - Dec 2024*

- Achieved 0.71 IoU on 97 percent imbalanced dataset by implementing U-Net from scratch (31M parameters) with Dice and Focal loss.
- Parallelised training on CUDA-enabled HPC cluster; applied morphological post-processing for boundary refinement.

Projects

Neural Networks Zero to Hero

- Built micrograd, makemore, and nanoGPT from scratch following Karpathy curriculum; implemented backpropagation and transformers in PyTorch.

Skills

Deep Learning: PyTorch, TensorFlow, HuggingFace, nnU-Net, U-Net, CNNs, LLMs, RAG

ML Engineering: Python, CUDA, HPC (H200/A200), Distributed Training, Hyperparameter Tuning

LLM and GenAI: LangChain, LangGraph, OpenAI API, Prompt Engineering, Fine-tuning

MLOps: Docker, AWS, Azure, Git, CI/CD, Experiment Tracking

Education

University of New South Wales *Sydney, Australia*
Bachelor of Computer Science (AI), Minor Mathematics *Feb 2021 - Sept 2025*

Certificates

AWS Solutions Architect (SAA-C03) *Jan 2026 - Feb 2026*
Amazon Web Services

AI Agents Course *Jan 2026 - Jan 2026*
Hugging Face