

# Tom Pollak

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## EXPERIENCE

- Graphcore**  
*Machine Learning Engineer – Applied AI*

April 2025 – Present  
Bristol, UK

  - Authored Triton kernels (MXFP4 MoE, Flash Attention, RoPE) targeting our custom hardware. Performance profiling helps inform Triton compiler and PyTorch teams.
  - Develop pre-training infrastructure for large MoE models, focusing on load-balancing.
  - Presented workshop paper at NeurIPS: [Variational Entropy Search is Just 1D Regression](#).
  - Contributed to PyTorch: Pipeline parallelism deadlock fix with Gloo ([#152938](#)), SDPA MATH backend reference implementation fix: ([#163508](#)).
- Cisco Meraki**  
*Machine Learning Engineer – Camera Intelligence Team*

June 2023 – April 2025  
London / Remote, UK

  - Led cross-camera tracking from inception to Beta release; presented at Cisco Live 2025.
  - Technical lead of 6 engineers across firmware, model training, inference optimization, and system architecture.
  - Designed high-performance C++ inference engine and distributed k-NN search across camera mesh networks, enabling real-time search & retrieval scaling to thousands of devices with zero backend load.
  - Built multimodal dataset (200K+ objects, synthetic and human-labelled) and fine-tuned CLIP-based models for zero-shot object retrieval.
- University of York**  
*BEng. Computer Science – First Class with Honours*

June 2023

## PROJECTS

- On-Policy quantization**

December 2025

  - Quantizing LLMs via on-policy distillation. FP32 teacher guides MXFP4 student on its own generations rather than static datasets.
- GPUMODE NVFP4 GEMM Competition**

November 2025

  - Fastest Triton implementation (25µs vs 100µs PyTorch baseline; winner's PTX: 18µs). [Annotated NVFP4 GEMM](#).
- Parscale Cross-Attention**

August 2025

  - Extension to [PARSCALE](#) enabling data-dependent communication between parallel replicas via cross-attention.
- Nano Diffusion LLM**

July 2025

  - "Nano" training and inference script for diffusion language models that generate text via iterative denoising. Implements [masked diffusion](#) (LLaDA-style) and [Duo](#) (flow-based, self-correcting).
- Blender Copilot**

January 2025

  - Blender plugin for generating 3D meshes from text prompts. Modal for inference, FastAPI / FastHTML backend.
  - [Demo](#).
- xverify – GBNF structured generation**

March 2025

  - Auto-generated GBNF grammars from Pydantic models. Integrates with RLVR for tool use / structured outputs.
- Interpretability Research**

Aug 2024 – Jan 2025

  - Trained SAEs on ARC-AGI like puzzles. Contributed to SAELens activation caching ([#321](#), [#367](#)).
- Claudette Pydantic**

July 2024

  - Extended Claudette with structured outputs via tool use.

## SKILLS

- Languages**

Python, C++.
- ML**

PyTorch, Triton, TorchTitan, Faiss, Slurm, Kubernetes.