William Glazer-Cavanagh

APPLIED ML ENGINEER | BRIDGING RESEARCH & PRODUCTION

I'm a Software Engineer / ML Scientist bridging the gap between research and production systems. I can deconstruct state-of-the-art papers, profile GPU bottlenecks, iterate on experimental hypotheses, and translate technical complexity into plain English.

CONTACT INFORMATION

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SKILLS

Modeling: PyTorch | JAX | Transformers (BERT/ESM) | Object Detection | RAG | Fine-tuning
Infrastructure: Docker | Modal (Serverless) | Dask | Parquet/Zarr | Distributed Systems
Core Stack: Python | SQL | Bash | ML System Design | A/B Testing | GPU Profiling

WORK EXPERIENCE

AbCellera, Montreal/Vancouver | Machine Learning Scientist II | 05/2023 - Current

Project: ML for Protein Engineering (Risk Assessment & Inference)
- **Translated complex science into working software:** Learned the biology domain to bridge Machine Learning, engineering, and research. Converted open-ended goals from Principal Scientists into clear engineering plans.
- **Shipped risk assessment product:** Led the full product lifecycle from prototype to production. Enabled users to filter high-risk sequences, reducing downstream failure rates by 30%.
- **Engineered risk calibration system:** Validated custom data normalization strategies on noisy biological data with ablation studies. Applied this pipeline to calibrate Foundation Model probabilities, ensuring confidence scores aligned with empirical failure rates.
- **Accelerated Transformer inference by 30x:** Removed serial bottlenecks and vectorized pre-processing to saturate GPUs for multiple Foundation Models.
- **Optimized distributed systems:** Reduced container startup latency by 90% by using volume caching to enable linear scaling during serverless fan-out.

Project: High-Throughput Computer Vision (100k+ images/day)
- **Maximized imaging throughput (400 to 1200 images/s):** Designed a lightweight deep learning architecture (MobileNet backbone + detection head) to replace heavy legacy models, hitting the imaging hardware's physical limits.
- **Doubled performance on edge cases (0.4 to 0.8 mAP):** Built a tool for experts to flag model failures. Used this feedback to fine-tune the model on hard examples, fixing errors on unseen data.
- **Automated data labeling:** Built a semi-supervised pipeline to label complex multi-class assays. Validated quality with blind A/B tests, achieving an 80% preference rate from human experts over the previous baseline.
- **Eliminated Training Bottlenecks:** Engineered a sharded data format (separating metadata in Parquet from tensors in Zarr) for 1TB-scale microscopy data. Leveraged Dask for parallel processing to fully saturate GPU utilization during training.
- **Saved weeks of engineering time:** Ran ablation studies on noisy imaging data to demonstrate that simpler clustering architectures matched Deep Learning performance, saving engineering time and reducing inference costs.

Croesus, Montreal | Research Intern | 05/2021 - 08/2021

- **Evaluated Retrieval-Augmented Generation (RAG) feasibility:** Assessed early methods for injecting Knowledge Graphs into BERT-based architectures to define the research group's roadmap for grounding NLP models in factual data.

EDUCATION

MSc. Machine Learning, Professional Masters | Graduation Year 2023 | University of Montreal (MILA)
- **Benchmarked JAX vs. PyTorch:** Re-implemented reinforcement learning algorithms (TD3/VPG) using JAX (Haiku/Optax) to evaluate JIT compilation benefits. Accelerated training by 5x using XLA compilation compared to standard PyTorch (JIT Vs. Eager).

BEng. Software Engineering, Artificial Intelligence Profile | Graduation Year 2022 | Polytechnique Montreal
- **Published Research:** Co-authored *Change Taxonomy for ML Pipelines* (Empirical Software Engineering, 2023).
- **Community Leadership:** Co-founded PolyAI, a student initiative for Applied AI.