

Constantine Gurnov

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SUMMARY

ML Platform, AI Systems and AI Infrastructure Engineer. Large-scale distributed AI/ML real-time streaming systems, infrastructure, machine learning, LLM systems, anomaly detection, AI agentic systems, observability, evaluation, reliability engineering, BCI.

AI & Machine Learning: AI Agents, LLMs, Deep Neural Networks, XGB, Feature platforms.

Languages & Stacks: Python, Java, Scala; Kafka, Flink, Spark, Druid, HBase/BigTable, Redis, Kubernetes.

Keywords: LLM Observability, LLM Reliability, Deep Learning, Machine Learning, AI, Brain Computer Interfaces, Big Data, Internet Scale, Streaming Architectures, Distributed, AI systems, ML Platforms, Infrastructure, Anomaly detection, Evaluation.

PROFESSIONAL EXPERIENCE

Mass Identity, Inc. / Hyperscale AI

2024 — Present

AI Engineer

Research and prototyping of agentic AI systems; evaluation of frameworks and approaches.

- Designed a **Production-Informed Accelerated Multi-Agentic Simulation System**: production-derived failure distributions, probabilistic environment and dependency simulation, agent trajectory and multi-stage workflow evaluation, harness validation and recovery testing, low-cost accelerated execution using smaller models and cached dependencies, anomaly discovery for behaviors absent from historical datasets, release gates and automated rollback policies.
- Established the feedback loop: production execution → telemetry and trajectories → streaming analysis → learned failure distributions → stochastic simulation experiments → evaluation gates → safer release → new production evidence.
- Designed and built an **LLM observability & reliability harness** to enable safe production use of non-deterministic systems. Improved structured output success rate from **~71% to near-100%** through prompt hardening, validation layers, normalization, and controlled recovery strategies — a deterministic contract enforced over a non-deterministic model.
- Explored end-to-end observability (logs, metrics, traces) across LLM pipelines to detect schema drift, malformed outputs, latency variance, and downstream failures. Investigated control-loop patterns (observe, detect, intervene, stabilize, measure) and failure-aware recovery: classification-based retries, bounded recovery, and cost/latency tradeoff management.

Neuralink

2022 — 2024

AI / Software Engineer

Real-time, safety-critical, physical-AI machine learning.

- Built a machine-learning platform that scaled brain-computer-interface (BCI) model training and evaluation **100x**, to billions of neural data points.
- Created BCI software and an ML model for **brain-to-text communication**; the system was presented at the Neuralink 2022 Show and Tell.
- Delivered real-time, partially observable signal pipelines under hard latency and safety constraints — directly analogous to physical-AI and edge-agent control loops (sim-to-real, graceful degradation).

Sift

2019 — 2022

Principal ML Engineer

Real-time scoring at scale; adversarial defense; internet-scale reliability.

- Designed and implemented a system for automated anomaly detection in near real-time streaming and ML scoring at scale of **billions of events per day** with peaks of **50K QPS**.
- Led the research, design, and implementation of a bot-detection system that countered adversarial attacks affecting more than **40% of Sift's traffic** — adversarial-agent defense.
- Designed and implemented a Rapid ML Modeling system that improved ML modeling and prototyping speed by more than **10x**.

Machine Zone

2017 — 2018

Lead Machine Learning Engineer

- Designed and built a large-scale distributed machine-learning platform supporting billions of events, hundreds of thousands of features, automated feature extraction, and hyperparameter search; reduced existing model-training runtime by more than **10x**.

Specta

2015 — 2017

Lead Software Engineer

- Built a real-time video-processing mobile app with analysis and classification by deep neural networks; the app automatically generated award-winning videos **accepted and nominated at international film and fashion festivals** (Denmark, NYC).
- Led R&D and built social-media and news sentiment correlation with the S&P 500, and a deep-learning platform matching startups with angel/VC funds.

Luxoft USA : UBS

2008 — 2015

Technical Delivery Manager; Head of Big Data & Agile Practices

Regulated, high-consequence financial infrastructure — irreversible actions, financial-grade correctness.

- R&D of UBS mortgage, loan, and fixed-income derivatives, Risk/PnL and trading platforms for a front-to-back solution supporting fixed income and mortgage backed securities businesses, with total combined notional on the CDS contracts in range of **\$10T+**.
- R&D of back-office platforms including subledger and clearing & settlement; led **50+ FTE** and **\$10M budgets**.

EDUCATION & CERTIFICATIONS

- Stanford MOOC, Artificial Intelligence (2011): top 5% of students.
- Stanford MOOC, Machine Learning: top 5% of class.
- B.S., Computer Science — Dnipro National University, Ukraine.

Full details and open source work at hyperscaleailabs.github.io