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Governed Fine-Tuning With Verifiable Provenance

by [Nick Clark](#) | Published March 27, 2026 | [PDF](#)

Fine-tuning adapts a base model to specific tasks using specialized data. Governed fine-tuning extends the full training governance framework to fine-tuning operations, producing cryptographically verifiable lineage that links every parameter change in the fine-tuned model back to the specific training examples that caused it, through which governance policies they were admitted.

What It Is

Governed fine-tuning applies the complete training governance framework, including admissibility evaluation, depth profiling, gradient routing, and memorization detection, to the fine-tuning process. Additionally, it produces a verifiable provenance record that cryptographically links fine-tuned parameter changes to their source training examples.

The provenance record enables any party to verify what data contributed to a fine-tuned model's behavior and under what governance policies.

Why It Matters

Fine-tuning is often performed on sensitive, proprietary, or rights-governed data. Without provenance, there is no way to verify that a fine-tuned model was trained only on authorized data or that training governance was properly applied. Verifiable provenance provides this assurance, enabling trust in fine-tuned models by making their training process auditable.

How It Works

During fine-tuning, the governance framework records each training example's admission, depth profile assignment, gradient routing configuration, and resulting parameter changes. These records are cryptographically linked to form a verifiable chain from training corpus to model parameters.

A verification protocol allows any authorized party to check that the chain is complete and consistent: every parameter change is attributable to an admitted training example, and every admission complies with the applicable governance policy.

What It Enables

Verifiable fine-tuning provenance enables a market for trusted fine-tuned models. Model consumers can verify that fine-tuning was performed responsibly, on authorized data, under appropriate governance. This is essential for regulated industries where model provenance is a compliance requirement and for rights-governed domains where training corpus authorization must be demonstrable.

[Training Governance All 21 steps →](#)

Govern what the model learns, at what depth, with what provenance.

Primary Technical Disclosure

[◦ Depth-Selective Training Governance for Machine Learning Systems](#)

Secondary Technical

[◦ Training Examples as Proposed Semantic Mutations](#)[◦ Entropy-Band-Indexed Training Depth Profiles](#)[◦ Depth-Selective Gradient Routing for Governed Training](#)[◦ Training-Level Memorization Detection](#)[◦ Differential Privacy Through Depth-Selective Routing](#)[● Governed Fine-Tuning With Verifiable Provenance](#)[◦ The Training Loop as a Governed Execution Environment](#)[◦ Policy-Governed Knowledge Retention and Suppression](#)[◦ Provenance-Traceable Training Dynamics](#)[◦ Curriculum-Integrated Depth Scheduling](#)[◦ Affect-Modulated Training Depth](#)[◦ Training-Inference Governance Integration](#)[◦ Training Governance for Human-Relatable Agents](#)

Applications (General)

[◦ Rights-Compliant Model Training Through Depth-Selective Routing](#)[◦ Regulated Industry Model Governance With Provenance](#)[◦ Training Governance for Medical AI](#)[◦ Training Governance for Legal AI](#)[◦ Training Governance for Financial Model Training](#)[◦ Training Governance for Defense AI](#)[◦ Training Governance for Educational AI Models](#)[◦ Training Governance for Creative AI](#)

Applications (Specific)

[◦ OpenAI's Training Pipeline Has No Depth-Selective Governance](#)[◦ Constitutional AI Training Lacks Depth-Selective Control](#)[◦ Stable Diffusion's Training Has No Provenance Layer](#)[◦ Midjourney Trains Aesthetics Without Governed Depth](#)[◦ Scale AI Labels Data Without Governing What Models Learn](#)[◦ Labelbox Manages Annotation Workflows, Not Learning Dynamics](#)[◦ Snorkel AI Programs Labels but Does Not Govern Gradient Depth](#)[◦ Weights & Biases Tracks Experiments, Not Learning Governance](#)[◦ Determined AI Orchestrates Compute, Not Learning Depth](#)[◦ MosaicML Optimizes Training Efficiency, Not Learning Governance](#)
[Training Governance overview →](#)

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- nick@qu3ry.net
- 72 28 14 36 01



[Invented by Nick Clark](#) | Founding Investors: Devin Wilkie