

• EARLY DEVELOPMENT PREVIEW • APRIL 2026

# Stream. Infer. Persist. Prove.

Introducing **StreamKernel's** Delta Lake + MLflow profile — a single Java process that pulls a model from a registry, runs **AI inference inline**, and commits enriched records to a **cloud-native Delta table** with full Spark read-back verification. Zero record loss. Zero glue code.

Java 21

ONNX / DJL

Delta Lake

MLflow Registry

MinIO / S3

Apache Spark

// RUN SUMMARY — STREAMKERNEL\_DELTA\_MLFLOW\_LOCAL\_5M

**3,360**

RECORDS  
PROCESSED

**3,360**

DELTA ROWS  
WRITTEN

**0**

DLQ  
LEAKAGE

**105**

ACID DELTA  
COMMITTS

**5.32**min

WALL-CLOCK  
RUNTIME

**74.5**ms

AVG ONNX  
/ RECORD

demo\_after\_delta\_mlflow.ps1

- ✓ MLflow alias resolved `streamkernel-minilm-onnx / champion → v1`
- ✓ Delta table `s3a://streamkernel-delta/enriched-tickets`
- ✓ Spark read-back `3,360 rows confirmed — all queryable`
- ✓ Parity check `processed = embedded = out = delta rows`

**PROOF**

An independent Spark session read back **exactly 3,360 rows** from the Delta table — confirming ACID durability end-to-end, from ONNX inference to cloud object storage.

// WHY THIS MATTERS

- 01** **No inference sidecar, no separate embedding service.** StreamKernel runs the MiniLM model in-process via ONNX Runtime — the same JVM that consumes, enriches, and persists the stream. That's the whole point.

- 02 **MLflow as the model authority.** The engine resolves a named alias (*champion*) at startup — no hardcoded paths, no manual artifact management. Promote a new model in the registry and the next run picks it up automatically.
- 03 **Delta Lake as a first-class sink.** Every enriched record lands in a versioned, ACID-compliant Parquet table on S3-compatible storage — ready for Spark, Databricks, or any lakehouse query engine. 105 commits. 20 checkpoints. No data loss.
- 04 **This is early — and that's the point.** The benchmark suite is running, the integration contracts are proven, and the architecture is holding. The throughput numbers will come. The foundation is already real.