Integrity-Tracked Traversal Drift Detection

by Nick Clark | Published March 27, 2026 | PDF

As a discovery object traverses the index, it may gradually drift from its original intent. Each individual step seems reasonable, but the cumulative effect is a traversal that has wandered far from what was requested. The integrity field tracks this semantic drift, measuring the deviation between the current traversal trajectory and the declared intent, and triggering correction when drift exceeds policy thresholds.

What It Is

Integrity-tracked drift detection applies the architecture's integrity field to the discovery traversal itself. The integrity field measures the deviation between the discovery object's declared intent and its actual traversal trajectory. Each step contributes to a cumulative drift measure that quantifies how far the traversal has wandered from its original purpose.

Why It Matters

Semantic drift is a subtle failure mode. A discovery object searching for medical research might follow a chain of citations into pharmaceutical marketing, then into financial analysis, each individual transition being semantically related to the previous one. Without drift detection, the object reports financial analysis as the result of a medical research query.

Integrity tracking detects this gradual drift even when each individual step appears reasonable, because it measures cumulative deviation from the original intent rather than step-to-step coherence.

How It Works

At each traversal step, the integrity field computes the semantic distance between the current traversal state and the original intent. This is not a simple keyword comparison but a structured evaluation using the discovery object's full cognitive state. The cumulative drift measure increases when traversal moves away from the intent domain and decreases when it moves back.

When drift exceeds a policy-defined threshold, the system triggers correction: alerting the operator, adjusting traversal parameters, or reverting to a recent low-drift checkpoint. Severe drift may terminate the traversal.

What It Enables

Drift detection enables long-running discovery operations that maintain intent fidelity across thousands of traversal steps. Research agents can explore broadly without losing their original purpose. Autonomous discovery can operate for extended periods with assurance that results will be relevant to the original query. The integrity field provides the structural guarantee that discovery produces what was asked for.

Semantic Discovery All 21 steps →

Search, inference, and execution as one governed step.

Primary Technical Disclosure
○ Governed Semantic Discovery: Search, Inference, and Execution Through Adaptive Traversal
Secondary Technical
○ The Adaptive Index as Unified Search-Inference-Execution Substrate○ Three-in-One Traversal: Search, Inference, and Execution in a Single Step○ The Discovery Object: A Traversal-Native Semantic Agent○ Post-PageRank Semantic Ranking: Relevance Through Governed Traversal○ Persistent Semantic State: Eliminating Prompt Reconstruction○ Traversal Lineage as Index Evolution Signal○ Anchor Semantic Neighborhood Publication○ Inference-Time Execution Control as Traversal Primitive○ Anchor Self-Organization Under Entropy and Load Pressure○ Alias Resolution as Navigational Traversal○ Three Discovery Operating Modes: Human Search, Agent Reasoning, Answer Synthesis○ Model-Agnostic Semantic Discovery○ Affect-Modulated Discovery Traversal○ Confidence-Gated Discovery Traversal● Integrity-Tracked Traversal Drift Detection○ Biological Identity-Scoped Access During Discovery○ Rights-Grade Anchor Governance for Content Discovery○ Forecasting-Shaped Discovery Traversal○ Capability-Constrained Anchor Accessibility○ Collaborative Multi-Object Discovery Traversal
Applications (General)
○ Enterprise Knowledge Management Through Governed Traversal○ AI-Native Search That Replaces PageRank With Contextual Relevance○ Semantic Discovery for Scientific Research○ Semantic Discovery for Legal Case Research○ Semantic Discovery for Patent Landscape Analysis○ Semantic Discovery for Medical Literature Search○ Semantic Discovery for Competitive Intelligence○ Semantic Discovery for Regulatory Compliance Search
Applications (Specific)
○ Google Search Retrieves Results, Not Understanding○ Perplexity Answers Questions Without Discovery State○ Elasticsearch Indexes Documents, Not Discovery○ Algolia Optimizes Relevance Without Discovery State○ Pinecone Finds Vectors, Not Understanding○ Weaviate Stores Semantics Without Discovery Governance○ You.com Answers Questions but Does Not Govern Discovery○ Brave Search Built an Independent Index Without Governed Traversal○ Kagi Charges for Better Results, Not Governed Discovery○ Metaphor Systems Predicts Links but Does Not Govern Traversal○ Glean Indexes Enterprise Knowledge Without Governing Its Discovery○ Coveo Personalizes Retrieval, Not Discovery Governance
Semantic Discovery overview →
AQ
deterministic
autonomy

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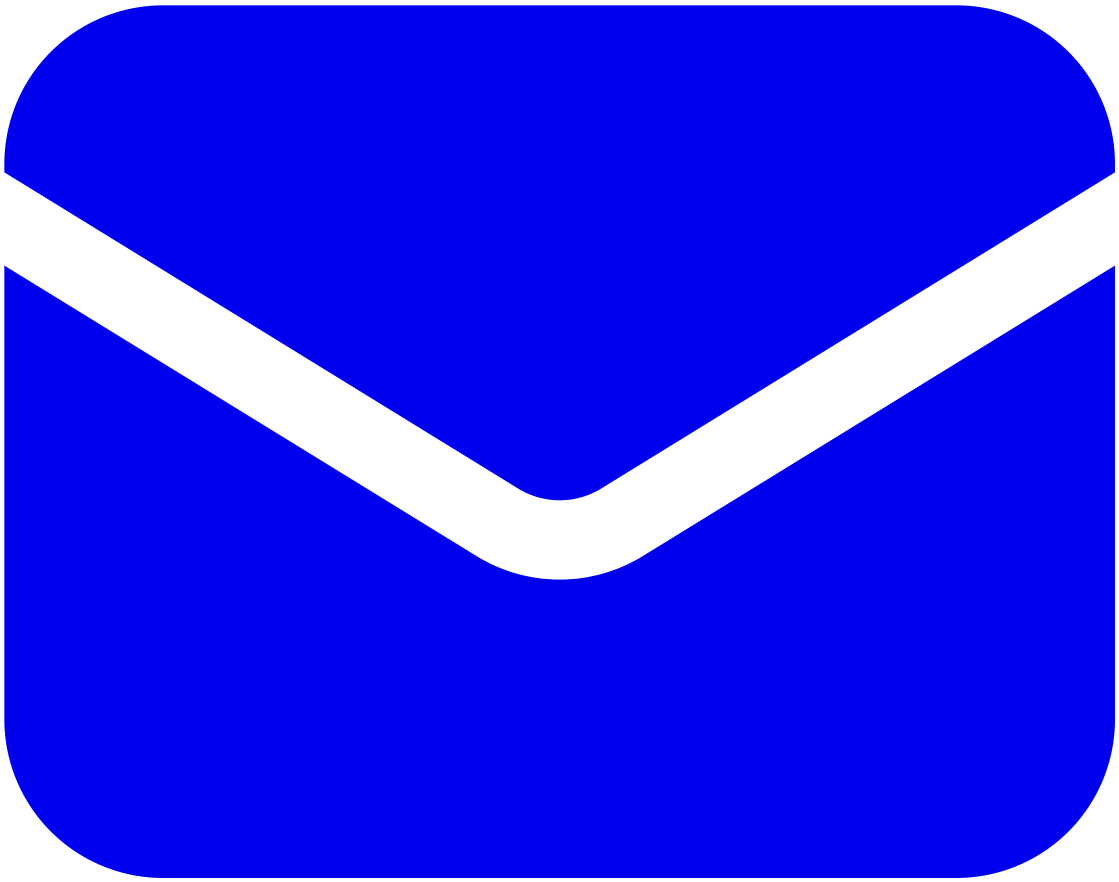

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