Entropy-Governed Valence Stabilization

by Nick Clark | Published March 27, 2026 | PDF

Damping mechanism that progressively increases decay time constants when rapid oscillation is detected, preventing affective instability in autonomous agents.

What It Is

When an affective dimension oscillates rapidly, the entropy-governed stabilization mechanism progressively increases the decay time constant, damping the oscillation. This prevents affective instability where an agent cycles rapidly between cautious and open states without settling into coherent behavior.

The stabilization operates by monitoring the rate of sign changes in each dimension's delta over a rolling window. When the rate exceeds a policy-defined threshold, the damping factor increases, slowing the dimension's responsiveness to new inputs.

Why It Matters

In multi-agent environments, rapid affective oscillation in one agent can propagate through delegation and contagion channels, destabilizing connected agents. Entropy-governed stabilization acts as a circuit breaker at the individual agent level, preventing local instability from becoming systemic.

Rapid oscillation also degrades decision quality. An agent that flips between high and low risk sensitivity on successive evaluation cycles produces inconsistent promotion decisions, undermining the coherence that the affective field is designed to provide.

How It Works Structurally

The oscillation detector tracks the sign of the change delta for each dimension over a configurable window. When reversals exceed the policy threshold, a damping multiplier is applied to the decay time constant, effectively making the dimension slower to respond. The damping multiplier itself decays once oscillation subsides, restoring normal responsiveness.

This mechanism is applied per-dimension, so stabilization of one dimension does not affect others. The damping parameters are part of the agent's policy reference and can be adjusted for different operational domains.

What It Enables

Reliable affective modulation in high-frequency environments where events arrive rapidly and could otherwise cause erratic behavior. Stabilization ensures that the affective field acts as a smoothing function over experience rather than a raw signal relay.

Multi-agent systems gain stability guarantees: even under adversarial or chaotic conditions, individual agents cannot enter unbounded oscillation, limiting the propagation of instability through the agent network.

Affective State All 21 steps →

Emotion as a computational primitive, not a simulation.

Primary Technical Disclosure
○ Affective State as a Deterministic Control Primitive for Semantic Agents
Secondary Technical
○ Affective State as Seventh Canonical Field○ Named Control Field Modulation Architecture○ Affect-Modulated Promotion Thresholds○ Deterministic Affect Encoding and Update Mechanics○ Emotional Decay Curves With Hysteresis● Entropy-Governed Valence Stabilization○ Affective Inheritance in Delegation Chains○ Emotional Quarantine and Volatility Management○ Affect-Modulated Trust Slope Validation○ Biological Signal-to-Affective Coupling○ Affective Contagion in Multi-Agent Systems○ Affect-Modulated Discovery Traversal○ Affect-Governance Separation○ Policy-Bounded Affective Updates○ Affect as Cross-Primitive Input○ Affect-Modulated Inference Integration○ Substrate-Agnostic Affect Deployment○ Pseudonymous Emotional Operation○ Temporal Cognition Field
Applications (General)
○ Companion AI That Maintains Emotional Consistency Across Sessions○ Therapeutic Agent Affect Management Under Clinical Constraints○ Affective State for Customer Service Agents○ Affective State for Elderly Care Companion Agents○ Affective State for Crisis Response Agents○ Affective State for Negotiation Agents○ Affective State for Educational Tutoring Agents○ Affective State for HR and Recruitment Agents
Applications (Specific)
○ Replika's Emotional Memory Is Stateless○ Character.ai's Personality Problem Is Deeper Than Prompting○ Woebot's Therapeutic Affect Has No Persistent State○ Elomia's Empathy Resets Every Session○ Hume AI Measures Emotion but Cannot Govern It○ Affectiva Reads Faces but Not Emotional Trajectories○ Cogito Scores Conversations Without Emotional State○ Beyond Verbal Decoded Voice Without Building Emotional Memory○ EmotiBit Captures Physiology Without Affective Governance○ RealEyes Measures Attention Without Emotional Persistence
Affective State overview →
AQ
deterministic
autonomy

Legal

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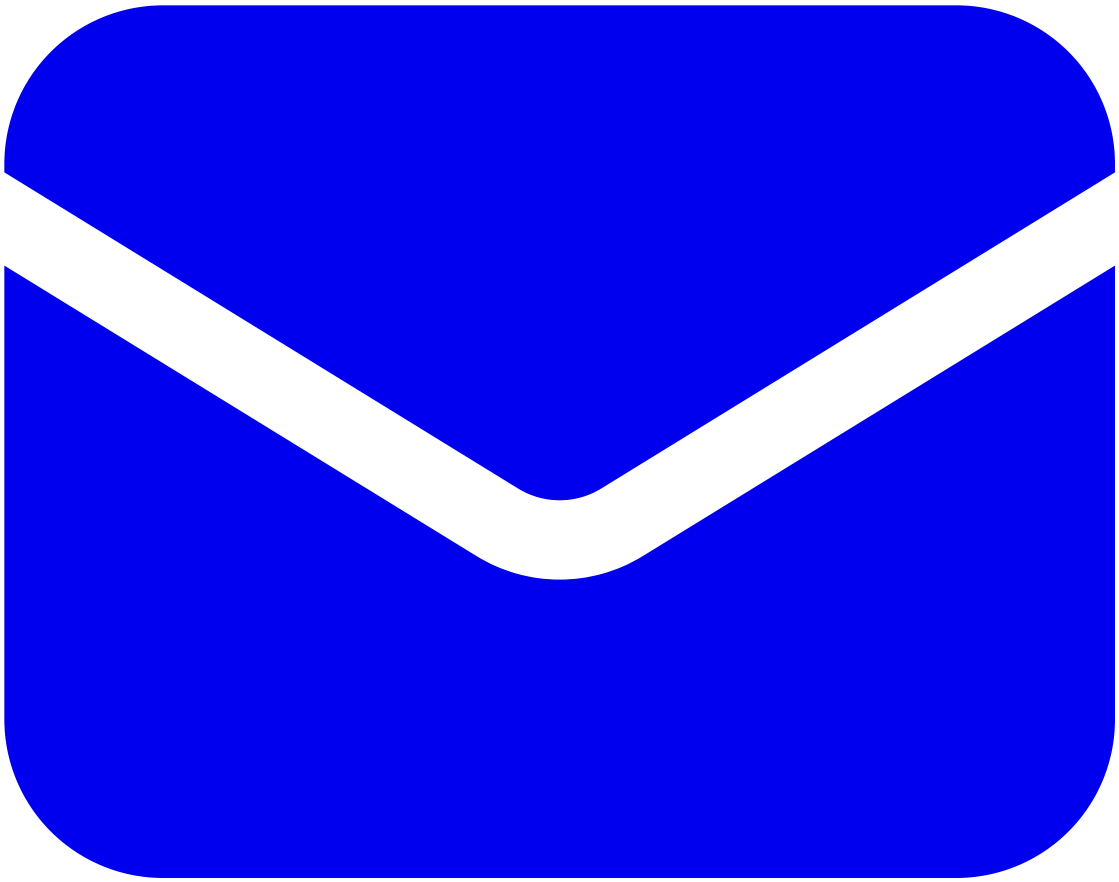

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- nick@qu3ry.net
- 72 28 14 36 01

Invented by Nick Clark | Founding Investors: Devin Wilkie