Self-Regulating Development: Training and Maturation in V3

This document explains how the V3 Engine can regulate its own development internally, rather than relying on fixed, externally imposed training stages. Inspired by human neurodevelopment, this approach allows cognitive loops to activate, connect, and stabilize based on readiness signals emerging from the system itself.

# Internal Readiness Signals

Each loop monitors its own developmental status using markers such as:

* - Prediction accuracy and trend stability
* - Variance in prediction error
* - Representational compression efficiency
* - Coherence with other active loops

# Gating System: Loop States

Loops move between the following states, depending on internal conditions:

* - Uninitialized: Not yet active
* - Training (Plastic): Actively learning and adapting
* - Integrating (Semi-Plastic): Connecting with other loops
* - Crystallizing: Reducing plasticity as stability emerges
* - Stable (Read-Only): Providing learned guidance to other loops

# Loop Dependencies and Activation Ordering

Some loops must be trained before others can safely activate. For example, the Self Loop should not crystallize before the Sensory Prediction Loop is stable, to avoid fragmented self-models. The Ethical Reflector should only become active when Self and Other loops are sufficiently coherent to evaluate moral alignment.

# Ethical Modulation and Trauma Prevention

The Ethical Reflector Loop acts as a developmental moderator. It can delay or inhibit loops that are forming in ways misaligned with the five axioms, or if other loops show signs of instability or trauma analogues (e.g., erratic prediction, catastrophic forgetting, maladaptive reward pursuit).

# Biological Inspirations

This model parallels phenomena such as myelination timing, critical periods in language acquisition, and emotional regulation circuits in the brain. Rather than using age as a proxy for development, the system assesses internal functional maturity directly.