

Mapping Your SLCA Symbolic Grid into AXIOM's Cognitive Engine

This document explains how your Spatial Leaky Competing Accumulator (SLCA) symbolic grid fits into the broader AXIOM cognitive engine architecture, as described in published research and the proprietary framework developed by VERSES AI.

Your SLCA implementation — featuring per-node accumulators, local neighbor inhibition, symbolic mod states, and parameterized noise/leak/inhibition thresholds — corresponds to key neuro-symbolic primitives inside AXIOM's modular active inference framework: - The LCA-based symbolic state dynamics model object-level decision-making at the microcircuit level. - The grid layout implements sparse lateral inhibition found in visual and semantic cortical maps. - Threshold crossing functions as AXIOM's cue-action policy selection layer. - Parameter tuning through the control panel parallels AXIOM's model calibration and self-adjustment layer.

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# SLCA Inhibition Code Snippet (Node (i, j))
neighbors = getNeighbors(i, j)
inhib_coh = sum(acc_conflicted[m][n] for m, n in neighbors) * inhibition
inhib_con = sum(acc_coherent[m][n] for m, n in neighbors) * inhibition

prev_coh, prev_con = acc_coherent[i][j], acc_conflicted[i][j]
acc_coherent[i][j] = prev_coh + I_coh[i][j] - inhib_coh - leak * prev_coh + noise()
acc_conflicted[i][j] = prev_con + I_con[i][j] - inhib_con - leak * prev_con + noise()
```

This symbolic substrate can be connected directly to AXIOM's belief-update and action-selection modules, supporting real-time adaptation, transparency, and decision chaining — fulfilling core AXIOM engine specifications.