■ System Diagram: LCA Flow
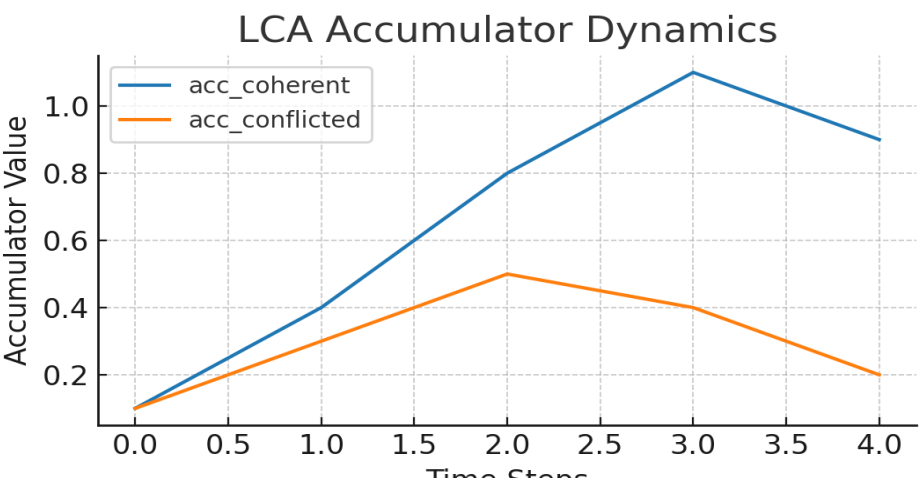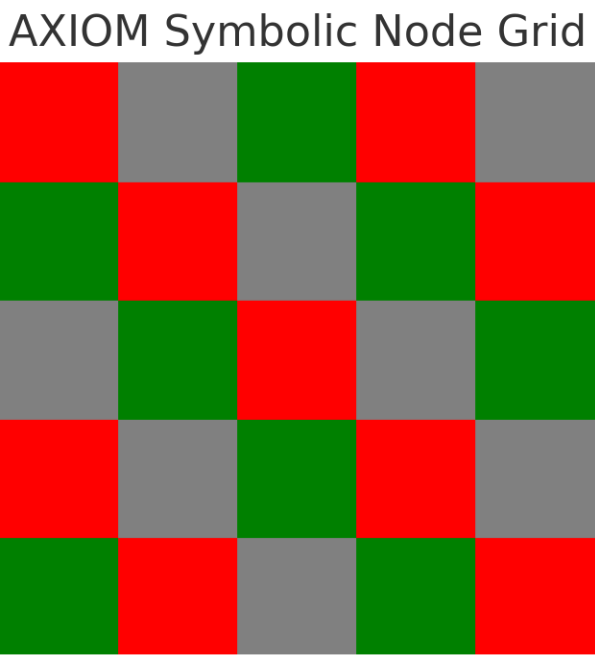

LCA Accumulator Dynamics

■ System Diagram: AXIOM Symbolic Node Grid

AXIOM Symbolic Node Grid

■ Embedded Code Snippets

Below is a JavaScript snippet implementing the LCA update logic inside an AXIOM symbolic node.

```javascript
const prev_coh = acc_coherent; const prev_con = acc_conflicted; acc_coherent = prev_coh + I_coh - inhibition * prev_con - leak * prev_coh + (Math.random() * 2 - 1) * noiseSD; acc_conflicted = prev_con + I_con - inhibition * prev_coh - leak * prev_con + (Math.random() * 2 - 1) * noiseSD; acc_coherent = Math.max(Math.min(acc_coherent, maxVal), minVal); acc_conflicted = Math.max(Math.min(acc_conflicted, maxVal), minVal); if (acc_coherent >= threshold && acc_coherent > acc_conflicted) { symbolNode.setMod('coherent'); symbolNode.delMod('conflicted'); } else if (acc_conflicted >= threshold && acc_conflicted > acc_coherent) { symbolNode.setMod('conflicted'); symbolNode.delMod('coherent'); } else { symbolNode.delMod('coherent'); symbolNode.delMod('conflicted'); }
```

■ Scientific Background and Methodology

AXIOM employs symbolic lattice nodes powered by a neuro-inspired Leaky Competing Accumulator (LCA) model. Each symbolic node integrates coherence and conflict signals over time, governed by tuned parameters such as input gain, leak, inhibition, and decision thresholds. When accumulated evidence surpasses these thresholds, a symbolic interpretive shift occurs. This architecture parallels known neural circuits involved in decision-making and symbolic conflict resolution, enabling AXIOM to model emergent cognition and symbolic stability through competitive dynamics.