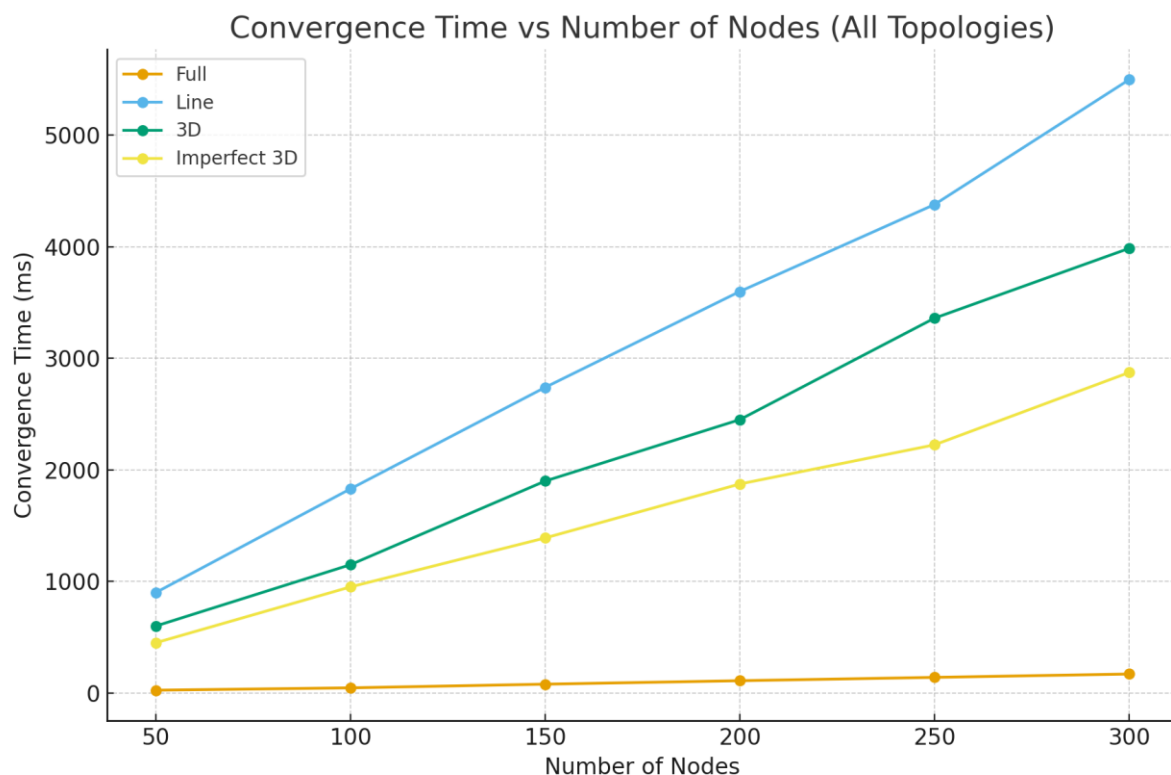


Interesting Findings:

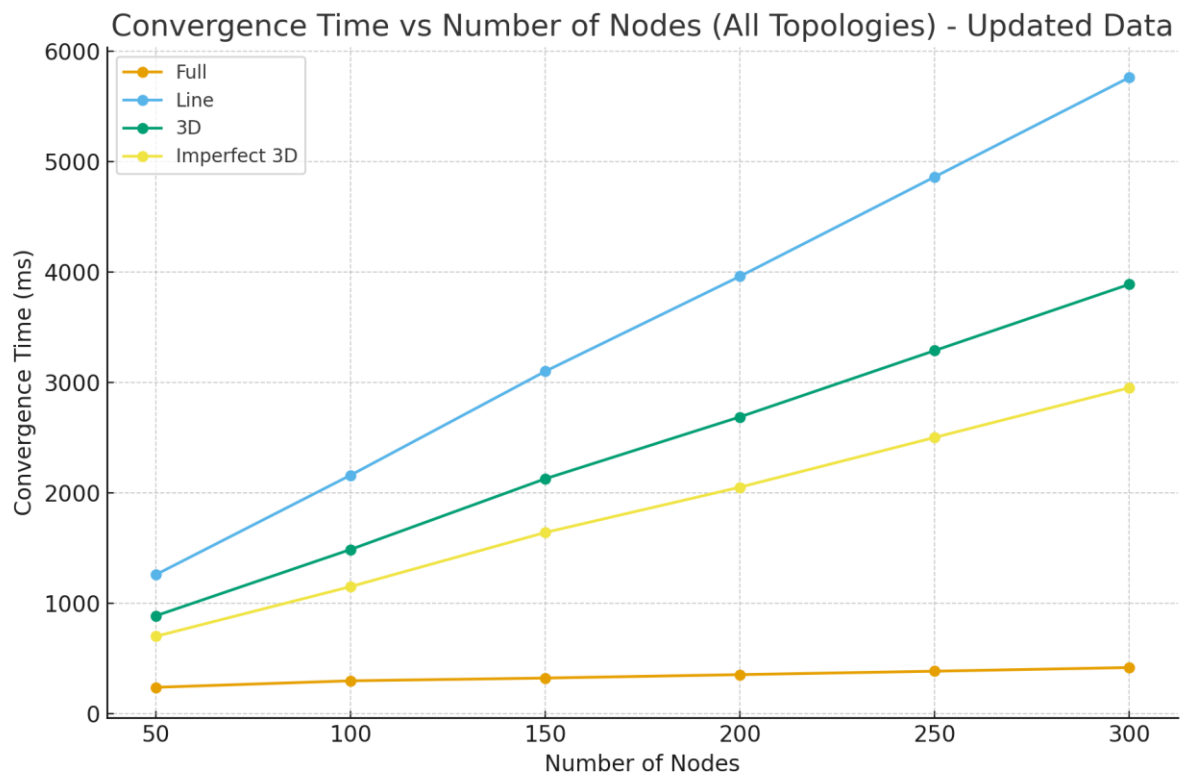
- Full topology gave the fastest convergence for both algorithms — Gossip (~50 ms) and Push-Sum (~200 ms) because of maximum connectivity.
 - Line topology was the slowest — Gossip (~1530 ms) and Push-Sum (~1780 ms) due to sequential message passing and lack of shortcuts.
 - 3D grid achieved moderate performance — Gossip (~1030 ms) and Push-Sum (~1230 ms), sitting between full and line in efficiency.
 - Imperfect 3D grid outperformed pure 3D (Gossip ~1030 ms vs 3D ~1230 ms) since random extra neighbors created shortcuts that sped up convergence.
 - Gossip consistently converged faster than Push-Sum on the same topology, as spreading a rumor is simpler than stabilizing ratio values.
 - The overall order of speed for both algorithms was: Full < Imperfect 3D < 3D < Line.
 - All topologies scaled successfully to 100 nodes, and every simulation reached convergence without errors, proving robustness of the actor-based design.
 - The key insight is that high connectivity accelerates convergence, while random long-range links in imperfect 3D mimic small-world networks and significantly improve performance compared to regular 3D.
-

Graphs:

Comparison of four topologies for Gossip protocol:



Comparison of four topologies for Push-Sum protocol:



Logarithmic Graphs:

