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Peer Review

Review of: "Top Ten Challenges Towards Agentic Neural Graph Databases"

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The paper explores the challenges in developing Neural Graph Databases (NGDBs), which integrate Graph Neural Networks (GNNs) with Graph Databases (GDBs) to enhance reasoning, scalability, and predictive capabilities.

Strengths

- The paper does a great job of systematically outlining the key technical and practical barriers in NGDB development.
- With the rise of Agentic AI systems and multimodal data processing, NGDBs are gaining focus, making this paper highly relevant for both academia and industry.
- The discussion on data security in NGDBs is critical, especially for fields like biomedicine, finance, and cybersecurity.

Weaknesses

- While the paper outlines challenges, it does not offer specific techniques or frameworks to overcome them. A comparison of existing approaches (e.g., how Neo4j or TigerGraph) would have been useful.
- The paper is more conceptual and lacks empirical validation (e.g., benchmarks, case studies, or performance analysis of current NGDB implementations).
- The term "Agentic" suggests NGDBs could autonomously reason and act, but the paper does not fully explain how this would be achieved in practice.

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Declarations

Potential competing interests: No potential competing interests to declare.