

Peer Review

Review of: "Is DeepSeek a Metacognitive AI?"

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The article presents an interesting and timely discussion on the potential relationship between DeepSeek models and metacognition, offering a broad conceptual overview of reinforcement learning–driven reasoning in modern AI systems. However, the manuscript remains largely speculative and lacks empirical validation, as it relies heavily on secondary sources such as media articles, blogs, and commentary rather than primary experimental or benchmark-based evidence. The argument frequently assumes that behaviours such as the “aha moment” indicate metacognitive capability without clearly defining measurable criteria or differentiating between emergent optimisation behaviour and true metacognitive processing. Structurally, the article is overly descriptive, with repetition across sections and limited critical comparison with alternative AI architectures or competing theoretical frameworks. Additionally, the discussion does not sufficiently address methodological limitations, ethical considerations, or counterarguments such as interpretability gaps and the known disconnect between chain-of-thought reasoning and actual computational processes. To improve the manuscript, the author should incorporate stronger theoretical grounding supported by cognitive science and AI benchmarking literature, include comparative experimental analysis or case studies, critically evaluate opposing viewpoints, reduce reliance on non-peer-reviewed sources, and provide clearer operational definitions and evaluation metrics for metacognition in AI systems.

Declarations

Potential competing interests: No potential competing interests to declare.