Re: Peer Response

by Mariam Ibrahim Ismail Hasan Almarzooqi - Friday, 17 October 2025, 4:39 PM

Hi,

Thank you for your insightful post on Agent Communication Languages (ACLs) and their role in facilitating interaction among autonomous agents. I agree that ACLs like KQML provide a critical standard for enabling heterogeneous agents to communicate effectively across diverse platforms, which is essential in today's distributed multi-agent environments (Finin, McKay, & Fritzson, 1992).

Your point about the richness of ACLs in supporting complex interactions such as negotiation and task delegation highlights their importance in intelligent multi-agent systems (Hai-long & Tie-jun, 2001). This semantic depth, grounded in AI research and speech act theory, certainly sets ACLs apart from simpler communication methods (Chalupsky et al., 1992).

However, as you noted, the trade-off between expressiveness and computational efficiency is a practical challenge. The reliance on shared ontologies for semantic interoperability remains a significant hurdle, often limiting ACLs' applicability in real-time or performance-sensitive applications (Hendler & Saltz, 1995). Your comparison with method invocation in programming languages, which offers efficiency but lacks flexibility and openness, accurately captures this trade-off (Luo, Zou, & Luo, 2012).

Overall, your analysis clearly shows that choosing between ACLs and traditional communication methods depends largely on the system's needs—whether prioritizing heterogeneous multi-agent coordination or tight, efficient software integration (Drasko & Rakic, 2024). This nuanced understanding is crucial for designing effective agent communication strategies.

References:

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Hai-long, L., & Tie-jun, W. (2001). Analysis of the KQML model in multi-agent interaction. *Journal of Zhejiang University-SCIENCE A, 2*(2), 132-136.

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