Collaborative Discussion: Agent Communication Languages

by Maria Ingold

Summary Post

I gained better clarity on this post both after receiving Lambert's (2023) response and posting my reply to his. Lambert's primary concern is that Knowledge Query and Manipulation Language (KQML) is based on an older design. He feels similarly about Java and Python's relevance for the future of Artificial Intelligence (AI), but acknowledges requirements drive suitability.

I partially concur. While KQML shares knowledge between intelligent agents through common language and protocols, it is an older model and bult on an even older concept of a speech act (Searle, 1969; Finin et al., 1994). However, although Foundation for Intelligent Physical Agents' (FIPA) FIPA-ACL, FIPA-compliant middleware including Java Agent Development Framework (JADE) and Smart Python multi-Agent Development Environment (SPADE) have all superseded KQML, I wondered if I was on the right track (Poslad, 2007; Donancio et al., 2019).

I realised Wooldridge (2009) says object-oriented programming languages can invoke public methods in another class, whether that method wants to be invoked or not. Whereas agents do not have the concept of method invocation. Each agent performs an action, but another agent can not invoke it to do so. Agents are autonomous, controlling their own state and behaviour, and can decide whether performing an action is in its best interest.

Lambert's (2023b) further point is that, given the range of languages, he believes researchers are seeking glory. While I would like to think that innovation happens purely to solve problems, glory-seeking is a valid thought to entertain, and sometimes it feels that way.

The debate proved insightful and made me think less linearly about my answer. Given the possibilities with Generative AI, I am curious to see what happens with future language development, including in machine-to-machine (M2M) communication.

References:

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