

Effective communication among intelligent agents within a system is crucial for exchanging information, coordinating actions, and achieving shared goals. Dedicated languages have been developed to facilitate this communication, each offering unique features and advantages. This summary post provides an overview of learnings from research and reading posts and replies on this collaborative discussion.

One well-known language is KQML, which enables flexible and structured message exchange and querying. It simplifies information transfer and facilitates efficient dialogue management among agents. Another language, KIF, focuses on formalized knowledge representation, allowing logical assertions, facts, and rules to be exchanged among intelligent agents. (aiforanyone.org, 2023).

Castro (2003) gave a compelling summary of the comparison between ACLs and OOP in Java, C#, Kotlin, and Python, stating that agents are decoupled from each other in agent-based systems, meaning they do not require knowledge of other agents' implementations. They only need to agree on a communication protocol to exchange data and collaborate or negotiate to achieve their goals. On the other hand, method invocation typically occurs within the same language, with a few exceptions like Java and Kotlin. Agent Communication Languages (ACLs) provide rich messages and flexible communication channels, supporting synchronous, asynchronous, and broadcast communication paradigms.

Furthermore, there are dedicated communication languages for intelligent agents, including KQML, KIF, FIPA-ACL, FIPA-SL, and AgentSpeak. These languages facilitate information exchange, querying, and coordination among agents. KQML enables structured information transfer, KIF focuses on knowledge representation, FIPA-ACL enhances interaction capabilities, FIPA-SL specifies agent properties, and AgentSpeak defines agent behaviour. Rizzo (2023) provided additional ACLs beyond KQML that have been discussed, stating their advantages and disadvantages.

In conclusion, communication languages designed for intelligent agents play a vital role in enabling effective collaboration, knowledge exchange, and coordination. They offer standardization, flexibility, and higher-level abstractions that enhance the capabilities of intelligent agents in distributed systems. While challenges exist, the benefits of these languages outweigh the difficulties, making them valuable tools in building intelligent agent systems.

References

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