

As someone familiar with method invocation and object-oriented programming, the concept of agent-oriented programming discussed in this unit, which emphasises organising software designs around agents and their communication, takes much work to grasp.

An agent communication language (ACL) is a higher-level abstraction for agents to exchange information and knowledge effectively. Unlike the object-oriented approach, ACL enables the exchange of more intricate knowledge, including plans, agent goals, and beliefs that cannot be easily shared using traditional object-oriented methods. (Soon, et al., 2018).

Meanwhile, Method invocation is used to power The communications between different objects in Object-Oriented Programming (OOP), where programmers divide the software applications into small objects, each responsible for performing part of the work. (Lun et al., 2003).

KQML offers a well-designed communication language with several advantages. Its declarative and readable syntax ensures simplicity and ease of parsing. The language's extensibility allows seamless integration with a variety of systems. Additionally, KQML's formal semantics provide a shared understanding for application designers, supporting efficient implementation and interoperability with modern networking technology. (Finin et al., 1995).

Compared to method invocation in OOP, The complexity, steep learning curve, and limited availability of tooling and libraries are significant drawbacks of KQML. Another disadvantage is the performance overhead due to message serialisation and network communication. Other disadvantages of KQML include a restricted communication environment, lack of clarity regarding processing and receiving, and dependency on pre-established permissions. (Moore, 2000).

References

Finin, T., et al. (1993). KQML as an agent communication language. University of Maryland Baltimore County, Baltimore, MD USA.

Soon, G. K. et al. (2018) A Review on Agent Communication Language. *Fifth International Conference on Computational Science and Technology 2018*. Kota Kinabalu, Malaysia, 29–30 August. Manhattan: SpringerLink. 481–491.

Lun, M. P. et al. (2003). Method manipulation in an object-oriented processor. *ACM SIGARCH Computer Architecture News*, vol. 31, no. 5, pp. 10–15, 2003.

Moore, S. (2000). KQML and FLBC: Contrasting Agent Communication Languages. *International Journal of Electronic Commerce*, Vol. 5, No. 1, Formal Modeling for Electronic Commerce (Fall, 2000), pp. 109-124.