XML-based agent communication, migration and computation in mobile agent systems

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Abstract

This article presents the research work that exploits using XML (Extensible Markup Language) to represent different types of information in mobile agent systems, including agent communication messages, mobile agent messages, and other system information. The goal of the research is to build a programmable information base in mobile agent systems through XML representations. The research not only studies using XML in binary agent system space such as representing agent communication messages and mobile agent messages, but also explores interpretive XML data processing to avoid the need of an interface layer between script mobile agents and system data represented in XML. These XML-based information representations have been implemented in Mobile-C, a FIPA (The Foundation for Intelligent Physical Agents) compliant mobile agent platform. Mobile-C uses FIPA ACL (Agent Communication Language) messages for both inter-agent communication and inter-platform migration. Using FIPA ACL messages for agent migration in FIPA compliant agent systems simplifies agent platform, reduces development effort, and easily achieves inter-platform migration through well-designed communication mechanisms provided in the system. The ability of interpretive XML data processing allows mobile agents in Mobile-C directly accessing XML data information without the need of an extra interface layer.

Keywords: Mobile agents; Agent communication; Mobility; XML