

Coordination of Multiple Intelligent Agents in the Infosphere

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The current explosion of data and information on the Internet-based Infosphere has made the problem of locating information sources, accessing them and combining information from them a very critical task. The notion of Intelligent Software Agents has been proposed to address this challenge. Intelligent Software Agents are programs that must act on behalf of their users in order to perform laborious information gathering tasks, such as locating and accessing information from various on-line information sources, resolve inconsistencies in the retrieved information, filter away irrelevant or unwanted information, integrate information from heterogeneous information sources and adapt over time to their users' information needs and the shape of the Infosphere. These tasks are performed automatically or with little help from the users. Most current research on Intelligent Agents has focused on the development of a single information gathering agent. It is clear, however, that the Infosphere is the natural playground of Multiple Intelligent Coordinating Agents. This arises from the vastness of the available information, the heterogeneity of the information resources, the diversity of information gathering and problem solving tasks that the gathered information supports, and the presence of multiple users with related information needs.

This talk will address issues involved in designing multiple Intelligent Agents that coordinate and learn from each other in order to support information gathering and integration. In addition, the talk will discuss opportunities in the Infosphere for multi-agent research and development. We will draw examples from our work on the PLEIADES project which is developing distributed collections of Intelligent Agents that cooperate, negotiate and learn from each other in performing goal-directed information retrieval and integration to support a variety of problem solving tasks.