Abstract

In most organizations two factors play a crucial role: managing the knowledge that is necessary for doing the business and managing the hardware and software infrastructure that supports the business processes. Usually, business processes and infrastructure are not optimally aligned. Today computer networks are rapidly increasing in size, in complexity of applications, and their management requires new paradigms and new tools. In fact, centralized approaches suffer several limitations with regard to flexibility and scalability. Even traditional distributed solutions do not completely solve the problems. In such cases, mobile agents can be exploited to realize a fully distributed, scalable and flexible network management model. In this Research work, the author wishes to address the various issues of Mobile-agents’ application V/S traditional approach in:

- Network resource discovery.
- Knowledge discovery process (distributed data-mining).

The advances of Network applications and computing technologies have resulted in an explosive growth in computing systems called Ubiquitous Computing [Ubicomp] and also the applications that impact on all aspects of our life. Everyday things communicate with each other and also with the Internet things available today. People have an increasing desire for such ubiquitous access to information, anywhere, anyplace, and at anytime. As ubicomp occurs everywhere, there may be a very large number of objects interacting with each other simultaneously in future. This necessitates the question of how to uniquely provide identity to infinitely growing ubiquitous objects and standard towards the uniformity of the data being exchanged among the various objects and security issues of such objects.

Specific issues addressed in this thesis include:

1. Limitation of the knowledge that the mobile-agents carry during migration.
2. Suitable context for the mobile-agents’ application?
3. Performance of mobile agents in distributed data mining/ knowledge discovery compared with traditional approach.
5. Security issues in pervasive systems.
6. Agent tracking; an essential aspect of data-mining query design/context-aware services in ubiquitous applications.
7. Standard for object identification and data exchange for autonomous systems.

The results presented in this work will help the application designer to enhance their design in the following areas:

- Distributed applications, Ubiquitous/Pervasive systems.
- Resource identification in grid computing/ network management,
- Knowledge discovery in distributed data-mining.