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Information Flow and Usage in an E-shop Operating within an Agent-based E-commerce System

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Utilization of software agents in e-commerce is a subject of a lot of interest. In our work we are developing a complete agent-based e-commerce system in which agents play all major roles representing both buyers and sellers. The aim of the paper is to describe flow and usage of information in a virtual e-shop operating within the proposed e-commerce system.

Key words: agent-based e-commerce system, e-shop operating

1. Introduction

Currently, we are developing a model agent-based e-commerce system. This system varies from other work found in the literature at least in the following ways:

1. Typically, only price negotiation of a single item (or collection of items treated as subject of a "single transaction") is contemplated (even though the negotiation itself may follow a very complicated set of rules; e.g. two stage negotiation found in [22]). Once the negotiation is over, agents that participated in it complete their work and the process ends. We are interested in a more realistic scenario when a number of items of a given product are placed for sale one after another, e.g. 90 Canon EOS cameras are to be sold by an e-store.

2. Since a collection (sequence) of items is sold we treat price negotiations as a "discrete process" in which buyers are "collected" and released together in a group to participate in a price negotiation. While the negotiation takes place buyer(s) are allowed to communicate only with seller(s). At the same time the next group of buyers is collected (as they arrive) for the next negotiation. This process is similar to such forms of real-life auctions where auctioneers gather in a room and stay in it until the auction ends.

3. Since multiple subsequent price negotiations (involving the same product; e.g. Canon EOS cameras) take place, price negotiation mechanisms can be dynamically changed. For instance, first 55 items may be sold using English Auction, next 22 using iterative bargaining, while the remaining 13 may be sold using fixed (bargain) price.

From this setup follows that we assume that shops in the system have to adapt to changing market conditions; and change of price negotiation mechanism is an example of such adaptation.

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