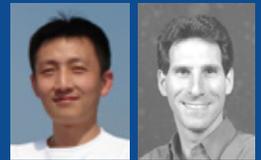


Agent-Based Trust Management for Trust Re-Evaluation in Online Auctions



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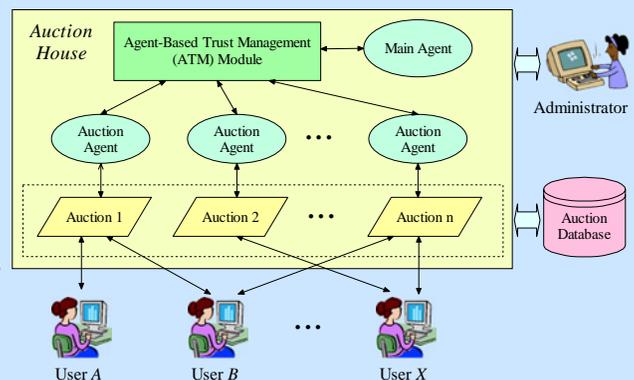
<http://www.cis.umassd.edu/~hXu/Projects/ATM/>

Problem

Current electronic commerce applications such as online auction systems are not trustworthy due to a lack of effective trust management mechanisms. A trustworthy online auction system requires a dynamic trust management module that can detect abnormal bidding activities (e.g., shilling behaviors) in real-time, notify the involved users, and cancel the corresponding auction immediately.

Approach

We develop an agent-based trust management (ATM) module to support trustworthy computing in online auctions. The ATM module supports real-time detection and verification of shill bidders, who disguise themselves as legitimate users in order to drive up the bidding price in online auctions. Our agent-based trust management approach can be applied in both agent-based online auction systems and conventional online auction houses such as eBay and Yahoo!Auctions.



A trustworthy online auction house

Approach and Impact

New approach

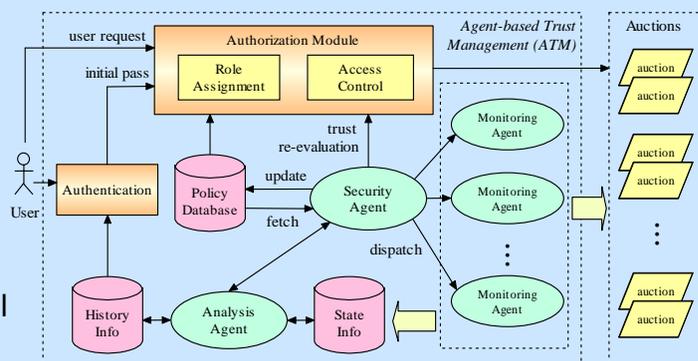
- Agent-based trust management
- Real-time shill detection
- Shill verification using Dempster-Shafer (D-S) theory

Research Impact

- New real-time trust model
- Efficient auction data analysis
- Reasoning with uncertainty for shill detection in online auctions

Technical Descriptions

In an ATM module, a security agent can dispatch monitoring agents to watch for real-time bidding activities and detect suspicious users; meanwhile, an analysis agent is responsible for analyzing users' bidding behaviors using real-time auction data and users' history information. Based on the analytical results, the security agent can re-evaluate a user's trust values in order to verify whether a suspect is a shill bidder. Since the agent-based trust management module supports real-time detection and prevention of shilling behaviors, it provides a strong and secure model for development of trustworthy online auction systems.



Agent-based trust management (ATM)