

Brokering Agents : Kasbah

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산업공학과
이영복

질문

- Agent에서 사용되는 control parameter의 기능은?

Contents

- Agent의 필요성
- Consumer Buying Behavior
- Buying behavior model
 - Agent의 사용
 - Shopping recommendation
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Necessity of Brokering Agent

- Human Buying Process
 - Collecting and interpreting information on merchant and products
 - Making decisions on merchants and products
 - Purchase and payment information
- Agent : automate several of most timing stages of the buying process

Consumer Buying Behavior(1/2)

- Problem Recognition } personalization
- Information Search } brokering
- Evaluation of Alternatives } brokering
- Purchase Decision } negotiation
- Purchase } negotiation
- Post-Purchase Evaluation } feedback

Consumer Buying Behavior(2/2)

- Personalization
 - User models of product preferences
- Ontologies
 - Standardized product names and features
- Reputation and Trust
 - Mechanisms for assuring quality & reliability

Buying Behavior Model

1. Need Identification
2. Product Brokering
3. Merchant Brokering
4. Negotiation
5. Purchase and Delivery
6. Product Service and Evaluation

Use of Agents

- ⌘ Automatically build models of shoppers
- ⌘ Recommend products to shoppers
- ⌘ Negotiate on behalf of the shoppers
- ⌘ Personalize the shopping experience

Shopping Recommendation

- ⌘ Each shopper rates product he/she likes or buys in any domain, e.g. music
- ⌘ The system:
 - clusters together shoppers with similar interests
 - allows each shopper to get recommendations from people with the same taste
- ⌘ The shoppers are able to communicate with other shoppers like them

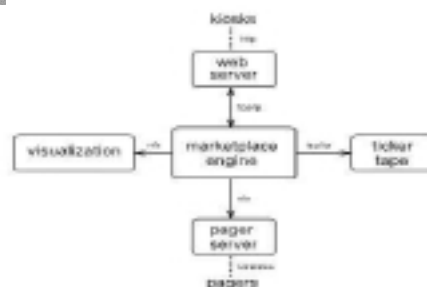
Brokering and Negotiation: Kasbah, a Marketplace

- ⌘ Initial model: “intelligent classified ad.”
- ⌘ The ad is an agent. Given key data it:
 - Searches out compatible agents in a marketplace
 - Negotiates price with other agents
 - If given permission, finalizes the deal
- ⌘ Main Functions: Brokering & Negotiation

Kasbah

- ⌘ An ongoing multi-agent research project
- ⌘ The First-Generation of Agent Marketplaces
- ⌘ A system where software agents do much of the work on a user's behalf in transaction of goods
 - A user wanting to buy or sell a good creates an agent
 - gives it some strategic direction
 - sends it off into the agent marketplace
 - Kasbah agents pro-actively seek out potential buyers or sellers and negotiate with them on their creator's behalf
 - Each agent's goal is to make the 'best deal' possible, subject to a set of user-specified constraints, such as a desired price, a highest (or lowest) acceptable price, and a date to complete the transaction

Architecture



Marketplace Engine

- ✦ Manages User Interfaces
 - Add a new user
 - Create a new selling or buying agent
 - List all of a user's agents
 - Delete a specified agent
 - Modify agent parameters
 - Get marketplace data
- ✦ Maintains Marketplace Data
 - Brokers(e.g., "with whom can I negotiate?")
- ✦ Schedules Agent Negotiation
 - Randomly selects next agent to "do its things"

Buying and Selling Agents

- ✦ Marketplace-owned software agents
- ✦ One-to-one mapping of agents to goods
- ✦ Parameters used for brokering
 - One of 9 good type
- ✦ Parameters used to negotiate
 - Initial price(i.e.,desired but realistic price)
 - Lowest/highest acceptable price
 - Deadline to complete transaction
 - Negotiation strategy(frugal,cool-headed,greedy/anxious)

Kasbah Screenshots

- ✦ Logging in



Home page



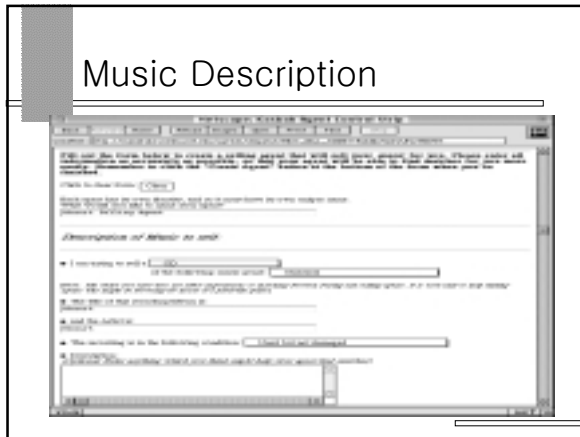
Agents Menu



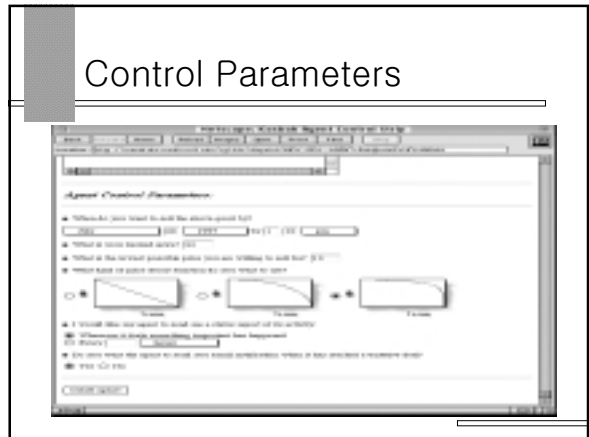
Creating a Selling Agent



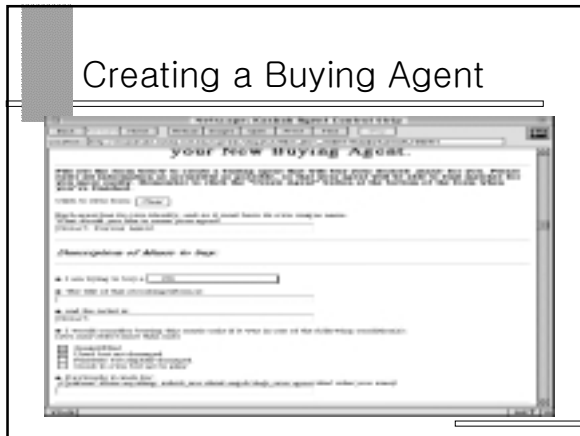
Music Description



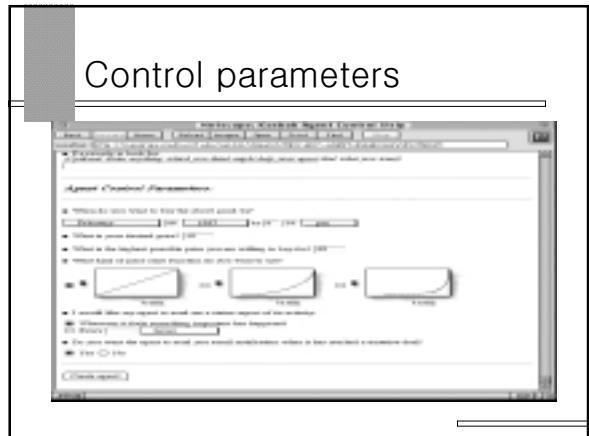
Control Parameters



Creating a Buying Agent



Control parameters



Negotiations Commerce



Buying Agent Message



View Agents



A Deal is Made -Selling Agent Message



Buying Agent Message



An Actual Marketplace Experiment

- # Scenario:
 - Digital Life Symposium, MIT Media Lab
 - 171 participants, 10am – 5pm

9 Good Types

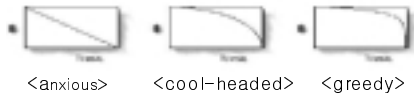
- # Camera
- # Canvas bag
- # Chocolates
- # Lunch pail
- # Mug
- # Watch
- # "Being Digital"
- # "Social of Mind"
- # "Material World"

Agent Negotiation

- # Agent symmetry
- # Two questions/answers in protocol
 - Q : "what are you currently asking for your good?"
 - A : \$x
 - Q : "I offer you \$y for your good. Will you accept?"
 - A : yes or no

Negotiation Strategies

- Price over time



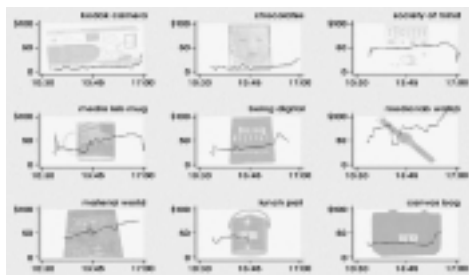
- "sometimes" interrupted by users

Results

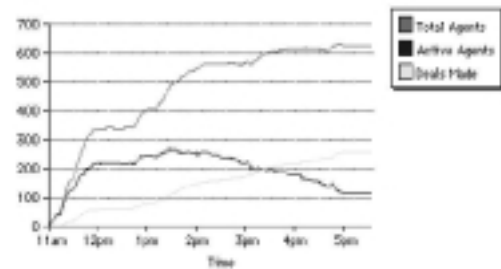
- Price of items over time
- Number of agents and deals over time
- Number of agents of each strategy for each good
- Percentage of buying agents that made deals
- Average buying price

Agent marketplace

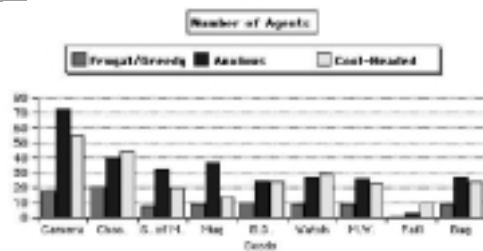
- Price of items over time



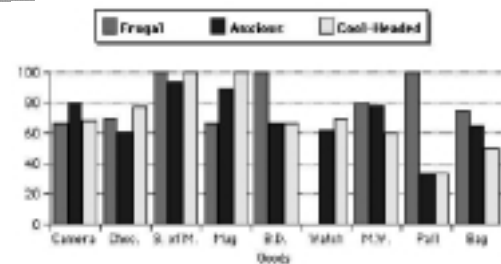
Number of agents and deals over time



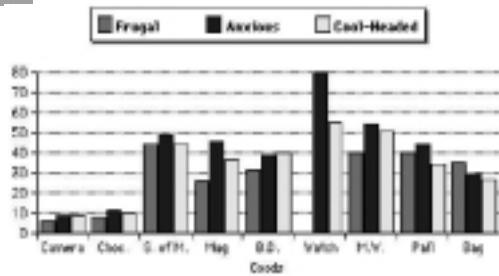
Number of agents of each strategy for each good



Percentage of Buying agents that made deals



Average Buying Price



Conclusion and Future Directions

- ✦ Create new markets
- ✦ Reduce transaction costs
- ✦ Manage ambiguous contents, personalized preferences, complex goals, changing environments, disconnected parties
- ✦ Consumer and merchant profiles
- ✦ Value-added services
- ✦ Secure payment mechanism
- ✦ Inter-business electronic forms