Design and Implementation of an Internet Auction System with Pricing Agents

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Contents

Introduction [1/2]

What's the problems for Internet Auction ?

o sellers decide reserve prices when auction items are registered for auction

o the reserve price is unreasonably high and low compared with the normal price

o reserve price

hidden from bidders and tells the real amount price one is willing to accept for an auction item

Introduction [2/2]

- **The Previous Systems**

the Case Similarity of Information Retrieval Theory

the Moving Average

- **Time Series Analysis**

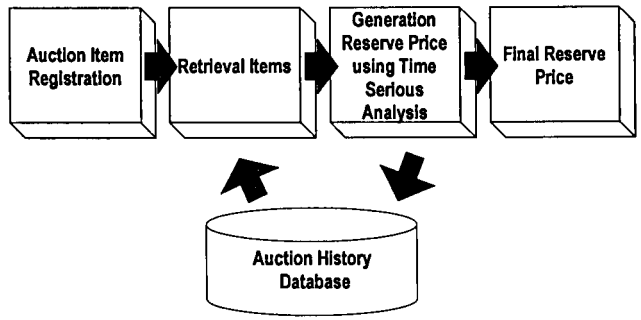
Moving average Method

Exponential Smoothing Method

Least Square Method

Pricing Agents [1/4]

Procedure



Pricing Agents [2/4]

Moving Average Method

$$V_t = \sum_{i=1}^{n} (w_{t-i} \cdot P_{t-i})$$

V_t = the Reserve Price

P_{t-i} = the Winning Bid Price of Item *t-i*

n = the Number of Month for Moving Average

w = the Weight of Item *t-i*

Pricing Agents [3/4]

Exponential Smoothing Method

$$V_t = \alpha \cdot P_{t-1} + (1-\alpha) \cdot V_{t-1}$$

V_t = the Reserve Price

P_{t-1} = the Winning Bid Price of Item t-1

α = Smoothing Constant ($0 < \alpha < 1$)

Pricing Agents [4/4]

Least Square Method

$$V_t = X + Y \cdot D_t$$

$$Y = \left(\sum_{t=1}^{n} (D_t - \bar{D}) \cdot (P_t - \bar{P}) \right) / \left(\sum_{t=1}^{n} (D_t - \bar{D}) \right)$$

$$X = \bar{P} - Y \cdot \bar{D}$$

V_t = the Reserve Price

P_t = the Winning Bid Price of Item t

D = the Selling Month of Auction Items

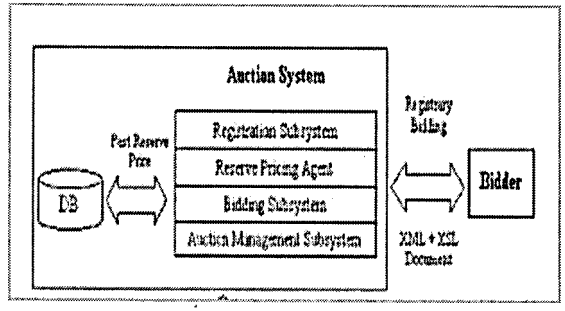
P' = the Mean of the Winning Bid Price

D' = the Mean of the Selling Month

X, Y = the Least Square Const

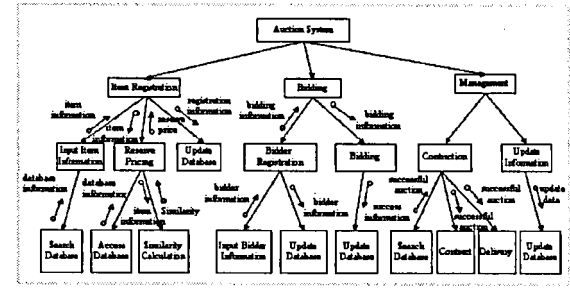
Design of an Auction System [1/2]

System Structure



Design of an Auction System [2/2]

Program Design



Implementation of an Auction System [1/4]

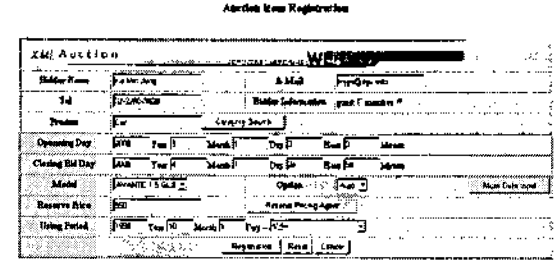
Implemental Environment

a prototype auction system has been developed on the web using JavaScript, ASP, and MS-SQL

used XML standards including XML schema, DOM, XSL, XPath, and XQL

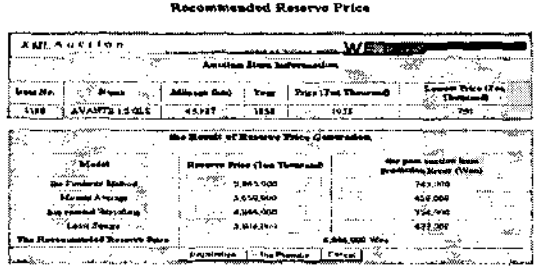
Implementation of an Auction System [2/4]

User Interface (Registration Window)



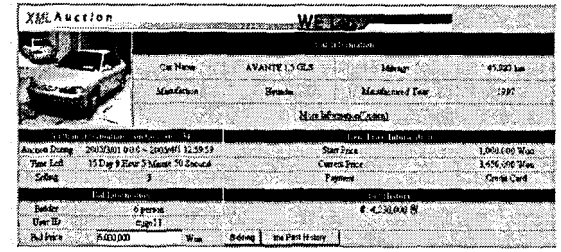
Implementation of an Auction System [3/4]

User Interface (Reserve Price Generation Window)



Implementation of an Auction System [4/4]

User Interface (Bidding Window)



Conclusion

- automatically recommends reserve prices to sellers for auction systems
- the successful bid rate can be increased by preventing sellers from making unreasonable reserve prices
- our system is suitable for recommending the reserve price in an internet auction system
- In the future, experiments of the pricing agent with a large database of various auction items are required

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Any Questions?

Thank You !!