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New Trust Model for Online Auction Depend on Intelligent Swarm

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Abstract: Online auction is so necessary today because millions of dollars change daily through this market .this allows fraud to occur by malicious users , so trust relationships is important ,this paper investigate new trust model for C2C auction market, proposed a framework depend on seller rating , analysis for Increase Price and using social network to ask about participants than store all in data base than using on swarm intelligence such as Ant colony optimization and Particle swarm Optimization for more high performance.

Keywords: Trust Model, Online Auctions, Rating, Social Network, Ant Colony Optimization**.**

I. INTRODUCTION

Online auction one of E-business type it can be classified into two ways. First is open auction and the Scand is closed auction, also we can see it as business-to-consumer (B2C), consumer to- consumer (C2C), and business-to-business (B2B) environments. [1] Auction environments show how participants sharing with other to make this deals. As shown in figure 1.

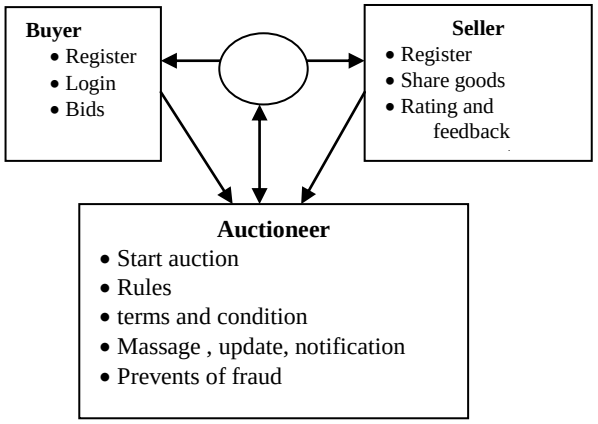

Figure1. Auction flow chart

Buyer environment

We can see impotent deal from buyer as make register, login and make bids

For register:

If (invalid login (user id, password, auction id))
Forget user id, password
else
Make register
}

For login:

If (valid login (user id, password, auction id))
Deal auction
else
Forget user id, password, Make register

For bids:

Login (user id, password, auction id)
Bid =0
repeat {
if (bid <=price quote) {
bid = price quote+ increment
if (bid<=valuation AND time remaining)
submit (bid) = bid
else
check bid price
}
}

Bid activity seller is (%) with this seller: (This shows the percentage of all bids from this bidder to specific seller.)[2] Bid activity (%) with this category: (This shows the percentage of all bids from this bidder to specific category.)[3] We can see bid Strategy System in figure 2

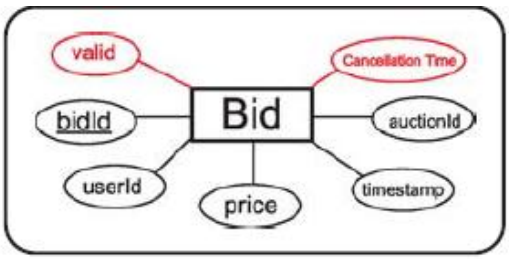

Figure2. Bid Strategy System

Seller environment

We can consider login and register as buyer, and he can share his goods to be sell on online auction, the most important here for seller is rating, this rating can be one good indication for trust management it depend on feedback comment which consider most analysis for Trust and Reputation System for an online auction site [4] Trust management is necessary or users of online auction sites will continue to be victims of fraud. The purpose of feedback comments that honest information is provided by both parties in a C2C transaction. [5]Ratings models are needed to predict whether or not the ratings reflect honest

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reactions also emotions which is physiological parameters reflecting the activity of the autonomic nervous system, how you fell this seller not honest, not send goods as its specification and What do you feel if I heard that this item was sold at auction for less than the price that now exists and is still ongoing auction? [6] Rating system shown in figure 3

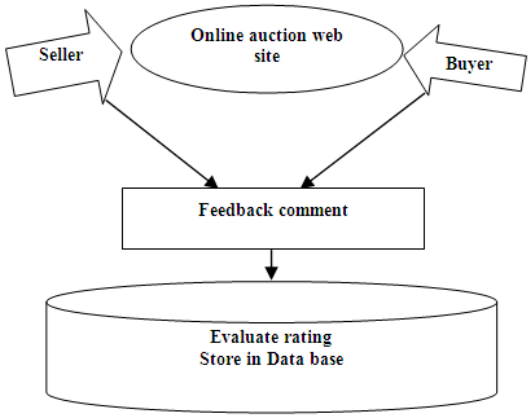

Figure3. Rating system

Auctioneer environment

Hypothetically trust administration can be upgraded by processing the Trust and Reputation System for an online auction webpage [7]. Trust administration is important or clients of online auction locales will keep on being casualties of misrepresentation. The reason for trust administration is to make sure that fair data is given by both sides in a C2C exchange. Final we can see Winner Pseudo code as shown in figure 4

```
if data base time >= expiration {
        Set auction statue is inactive
        Select highest bid from auction
      if bid > reserve
         declare this bid the winner
      else
         auction is void
}
      else {
    expiration = data base time + time
out
}
```

Figure4. Auction winner Pseudo code

Final we can see many benefits of using online auction such as

- less number of suppliers
- one sourcing process
- Help organizations standardize contract terms and conditions
- Buyers can have the best price for competitive

But also possibility of fraud is found so trust model is needed [8]

Swarm Optimization

Artificial life and swarm intelligence techniques are increasingly being used for solving optimization problems. The notion of complex collective behaviour emerging from the behaviour of many comparatively simple units, that interaction between them, is fundamental to the field of artificial life. To understand these systems offers these ideas in creating artificial systems which are controlled by such emergent collective behaviour; one of the most uses is Ant colony optimization [9].

Ant colony optimization (ACO)

Ant colony optimization or ACO is a Meta inference algorithm optimization that can be used to find approximate solutions to difficult incorporation problems of optimization In ACO artificial ants build solutions by moving on the problem of restore data base and they, mimicking real ants, put artificial pheromone on arrange large database can give us one of the best solution. ACO has been successfully applied to an impressive number of optimization problems. [10]

II. ONLINE AUCTIONS CHALLENGES

The Internet makes it easy in make deal between people, all can be connected from different distributed areas**.** However, also some problems that not are exist in the physical market so to protect online auctions from being disturbed, some security measures should be taken to ensure that an auction site cannot be attacked by hacker's auction sites should give an access control system. . We can make cryptographic techniques to ensure that a bid submitted is not tampered with, but finally still how we can measure trust and reputation is most important in the auction rules. [11]

III. TRUST

Trust is the adoption of the relationship between people, the person entrusted with it is supposed to fulfil his promise, and is a symbol of moral value and fulfilled the promises. They include lack of confidence in doubt good personal belief, intentions or ethics of the other person. The trust does not require being present in people with good intentions, we see that the only people involved in criminal acts usually trust in each other. Trusts also do not require movement involving you and the other person. Trust is the expectation of goodwill, based on the knowledge of one other man. Trust is the word for what is unknown-for example, because it cannot be verified at this time but it is possible to see the results in the future. [12]

IV. REPUTATION

Reputation management is the process of know what other people are saying or feeling about you or your business. Activities performed by someone who attempt to maintain or create a certain frame of mind regarding them in the public eye. This is (bad or good). [13]

V. RELATED WORK

A lot of studies discussed how to protect the participants from fraud using many techniques

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- Trust models to calculate each participant trust. [14]
- Algorithms to predict that the auction users are trusted or un trusted.[15]
- Third party like payment services as escrow services.[16]

Some studies discuss aim of trusted models as calculate the participants trust using intelligent agent technology as follows.

- The user reputation is built during its activity starting with minimum reputation value.
- No matter how unreliable the user is the reputation value of a user doesn't fall below the reputation of a new user
- Feedback comment give induction for value of reputation by the others to reflect the last trustworthiness
- The system keeps the most recently submitted rating in the case of two users may interact more than once.
- Smaller rating change happened with the users with high reputation value.[17]

VI. THE PROPOSED MODEL

This model consists of 4 stages. As shown in figure (5) to improve the performance of trust measurement, the first depend on analysis of buyer increase price, the Scand ask about participants depend on social network, the third collect rating for each participants store all data in data base final use ACO to optimize this data base for more high performance. As shown in Eq. (1)

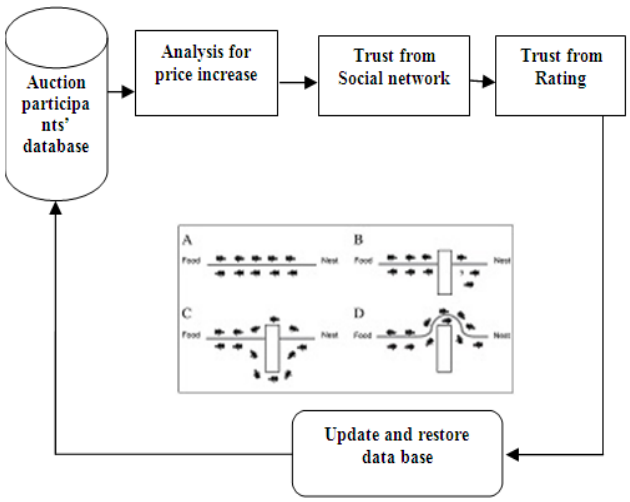

Figure5. Trust model framework

$$T_t = T_p + T_s + T_r \qquad \text{Eq (1)}$$

T_t = Trust Total
T_p= Trust from increase price
T_s = Trust from social network
T_r = Trust from rating

Buyer increase price

This depend on analysis all winner increase price for this item than store all in data base. As shown in table 1

Table1. Winner increase price

Current price	Bid increment
$ 0 : $0.99	0.05$
$1:$4.99	0.25$
$5:$24.99	0.50$
$25:$99.99	1$
$100:$249.99	2.5$
$250:$499.99	5$
$500:$999.99	10$
$1000:$2499.99	25$
$2500:4999.99	50$
Up to $5000	100$

This mean all winner for this item increase price in this range so if we have over increase price from one of buyer in this auction that not real bid , this buyer may know this seller and want make fake increase price ,so we can ask friends about this person .

Rating

This feedback comment can be considered positive or negative this is value of rating. As shown in Eq (2) rates past clients' encounters with remarks and with evaluations, for example, from discriminating to unacceptable. A little number of remarks or evaluations that are not genuine can prompt deluding input that different clients depend upon

$$T_r = \sum \text{positive comment} - \text{negative comment} \qquad \text{Eq(2)}$$

Ask friends

Social network make world very small, by using your email list, mobile list, people you make deal before, people from your school and other. This give us a lot of people how know you then ask them about you to have accuracy we give every one of this people weight (w_p), when ask about someone we have his answer (X) with Multiplication of his weight as show in Eq(2)

$$T_s = \sum_{p=1}^{n} wp * X \qquad \text{Eq (2)}$$

T_s = Trust from social network
X = Trust which give from someone
w_p= weight of this person we can have it as T_t = Trust

Total

This mean T_t will be run recursive and store in data base always update in this section we will have big data base store so we will need ACO to make this data base optimization for more high performance.

Ant colony optimization

In this section big store of database always update and continuously run, ant works as well as a communication channel between the particles. Particles then move through the solution space, and are evaluated according to some fitness way.with time and their communication grouping. We will have better fitness values these strategies make the technique impressively resilient to solve the problem of local minima arrange data base and have good search result in good time. To reduce the influences from past experience using algorithm of pheromone control as flow.

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Volatility

With time we must remove the effect of past experience ants from exploring other (new or better) alternatives. The pheromone will have values Zij in all

"New Value of Pheromone"
For i = 0 to p top - 1
P strength (i) = p strength (i) * 0.9
Next

Aging

Past experience can also be reduced by controlling the amount of pheromone put for each ant as to its time. "Old" ants are less successful in locating ants are less successful in locating optimal paths so we can have new ant

Age of ant = 0.95
updted = 0
For I = 0 To ptop - 1
If p way (I) = way Then
updted = 1
p strength(I) = p strength(I) + ant age ^ hops
End If
Next
If updted = 0 Then
P way(ptop) = way
P strength (ptop) = ant age^ hops
p top = p top + 1
End If

VII. RESULTS

By running this model we will get following results first for trust measurement as shown in figure (6)

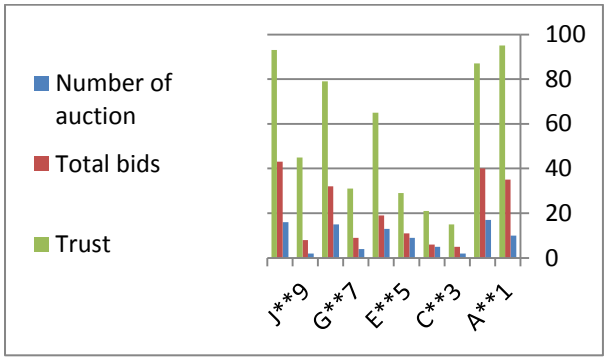

Figure (6): Trust measurement

For relation between velocity and ordering factor. As shown in table 2 and figure (7)

Table 2: relation between velocity and ordering factor

ordering factor	Average of velocity
0.05	0.92
0.10	0.85
0.15	0.82
0.20	0.71
0.30	0.64
0.35	0.43
0.40	0.001
> 0.40	0

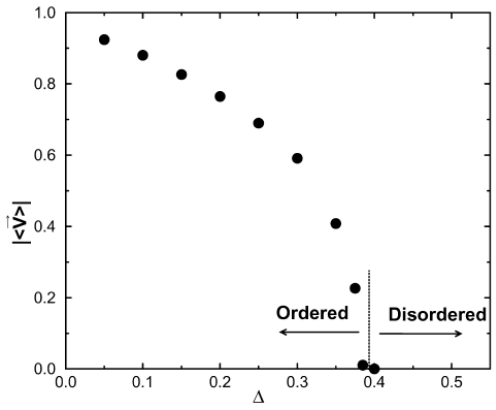

Figure (7): relation between average of velocity and ordering factor

VIII. CONCLUSION

This paper discussed different techniques of reputation and trust systems with online auctions than investigate new trust model which depend on analysis seller and buyer data. It is important that the user of e-auction be trusted, so, we should find a way that detects the user ' status if he is trusted or not depending on his historical data, transactions and feedbacks than use intelligent swarm to arrange data base and have it run fast by using ant colony optimization

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BIOGRAPHY

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