

# Online Auction Systems State of Art Survey 2016

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## ABSTRACT

Auction has generally acknowledged as an efficient way to measure value by market. Online auction is an auction system which is held on the internet. It is a famous method for trading products and services. This article contains the study of different auction systems. We study multi-product auctions where bidders who have either specific single or multi-product demand. Mostly English auction and survey of different bidding strategies in auction which bidder place high value, he will get the product. This is the prevalent way used in the auction systems.

*Index Terms:* Online Auction System, Traditional Auction System, Auction system types, Auction system fraud prevention.

## 1. INTRODUCTION

Internet auction systems have become very important for online traders to sell their products. The participants in the online auction not only simply buy the products online but also they can experience the competitiveness of interacting with other participants. Thus, in comparison to fixed-price offers, auction has the likely to given better shopping experience, that is, to convoke emotions and high levels of stimulation in the auction process.

In traditional auction less number of peoples are involved in auction process but in online auction each and every internet users can be easily involved in auction commerce. It will increase the comforts of buyers and sellers and reduce cost of transaction.

Real Time Bidding (RTB) is a popular business model of online advertising markets now a day.

## 2. LITERATURE SURVEY

### 2.1. Traditional Auction System

Auction is a concept which is originated from western country. Traditional auction system is a market procedure where the price is specified by fair rules and regulations as well as buyers bidding, and to assign resources at specific price. In traditional auction the prices are determined according to the participants which participated in the auction. Friedman is the one who published the first paper on auction theory in 1956. In traditional auction system a certain time and place is decided by a certain organization for specific goods which is transferred to the buyers in the form of minimum bid [1].

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## 2.2. Online Auction System

An on-line auction is defined as the process of bidding of participants against one another to buy items offered for sale at an Internet auction platform. On-line auctions can be achieved for business to business, business to customer, or customer to customer. In online auctions, the auction web sites are acts as an intermediate system which connects buyers and sellers. The sellers retain control of the products or stuff as well as complete responsibility for completing the sale and delivery of the product or stuff [6].

Online auction can reach target audiences through different channels such as search, display, mobile, video and social advertising [7].

Online auction has very different characteristics as compared with traditional auction system. Traditional auction literature is comparatively large than online auction literature. Earlier online auction is known by few people because of most people thought that payment security and information dissemination.

There is the system called automatic agent system in the online auction. This automatic agent system gives an maximum amount of price, which that bidder can bear, that price amount is not displayed immediately on the site that price amount is also kept secret from the bidders and auctioneers. If the highest bid which is accepted is greater amount than that of the auction price, the system automatically place bid for this bidder at the higher level of price amount with increase in minimum unit based on the current auction price amount and let that new bidders become new winners.

## 2.3. Characteristics of Online auction system

There are two characteristics of online auction system:

1. Geographical Distribution of Participants
2. Asynchronous time of entering the auction process

The first characteristic of online auction system is the Geographical Distribution of Participants it is determined by the form of network. This characteristic also gives pros of online auction system. It is very different from traditional auctions, in online auction bidders need to gather in specific place where auction is going to held. This is a big advantage of online auctioning system; by this characteristic of auction system is being very convenient to all other participants or bidders. Participants can bid from any place they want. This characteristic of online auction system also reduces the cost of journey to travel at auction places this leads to increase popularity of the auction.

The second characteristics of online auction system are asynchronous time of entering the auction process. It is not possible that all bidders can bid at exact same time so the auction process is the lengthy process, this characteristics of online auction system provide feature that is the bidder can join the auction process to at some limit that bidders can enter in auction process at random moment that means they have the option to access and choose [1].

According to a research paper there is a concept of 'shill bidding which is important in the study of bidding strategies.

## 2.4. Shill bidding

Auction process in which order to increase prices of auction, auctioneer must be pretend himself as a legitimate buyer to complete(or submit) bid, or hire the buyers for submitting bid to conciliate the buyers to pay higher price bids[2].

There are some Auction types that we surveyed from an paper, we are going to see that types briefly.

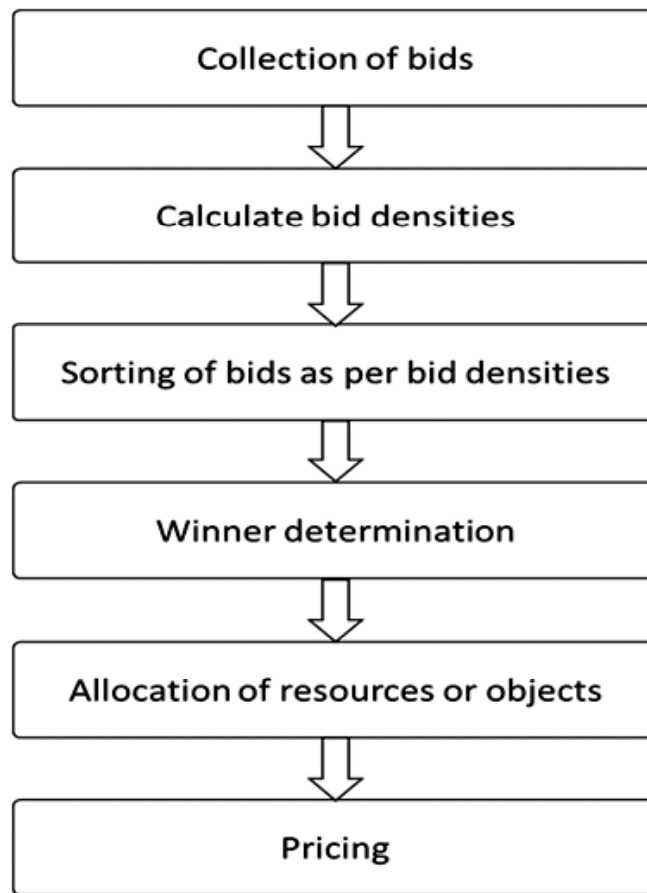


Figure 1: Flowchart of Auction Algorithm

## 2.5. English Auction

English auction is similar to the traditional auction. Particular auction time is given in English auction; bidders allow submitting bids one or more time before close the auction. Who place the higher bid in the given auction time is considerate as winner and he will pay the highest bid price. In this type of auction every bidder can be able to watch each other's bid. When the bidder which is true bidder wins the bid placed by himself, his closing price of bid is great than the valuation of himself or true bidder.

## 2.6. First price sealed bid auction

In this type of bidding strategy provides the feature to bidders submit their bids by electronic mail that is E-mail, and once place the bid, any changes in that bid is not done. When the bidder which is true bidder wins the bid placed by himself, his closing price of bid is great than the valuation of himself or true bidder.

## 2.7. Second price sealed bid auction

Second price sealed bid auction is the type of auction which can also be called as Vickrey auction. In this type highest bid is payable by bidder is equal to second highest bid [2].

There are internal related types are represented by the bidding that bidder maintain certain idea in mind across various stages of an online auction system.

An important searching from studies recognition there are five classes of bidders: Evaluators, it is the class of bidders in which the bidder often place just one bid at the first stage of online auction. Opportunists: This is the class of bidders which are late at online auction. Sip-and-dippers: This is the class of in which bidders are different than opportunists (They are the bidders which are places two bids- One at the starting

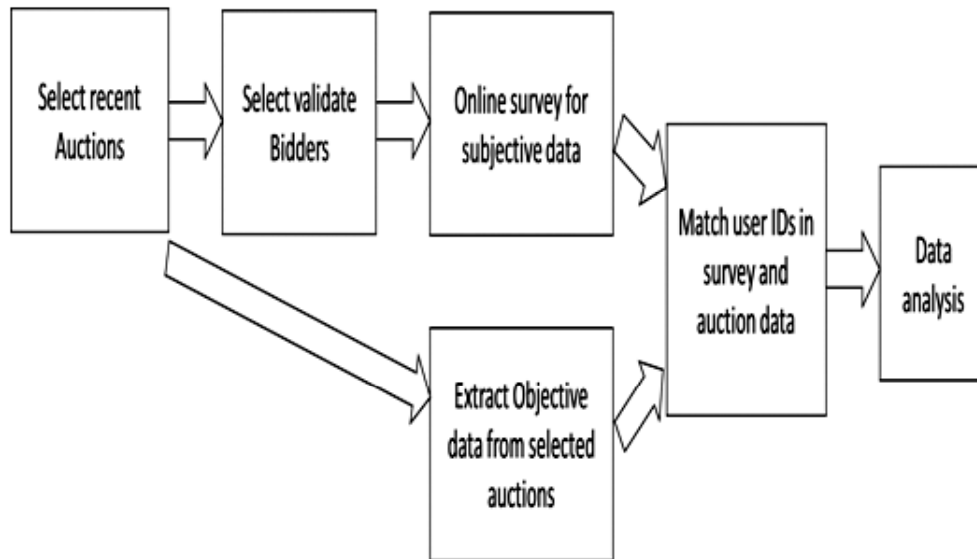


Figure 2: Data Collection Process

of the auction and other one is at Ending of an auction). Participators :( Mostly two bids are placed First one is recent in online auction to establish time precedence and another one is towards end to revise recently) the bidders which are uses the automatic bidding agents for auctions which are provided by the auctioneers. Those agents normally bid at minimum level which is required to outbid the current bidder until the bid exceeds the reserve price they previously set [3].

Firstly in the auctioning process objects are auctioned by bidders and after that the bidders can exchange the objects with each other.

We are going to see the auction type which we are mentioned above.

## 2.8. Vickrey auction

Consider that there are  $N$  numbers of markets and each one is having single object kept for auction that is  $N$  number of objects which are sold in one auction. Local bidders submit their bids for an particular object. Global bidders also submit their bids for each possible package of objects. The object is getting allocate to the bidders which has highest rate or which is placed higher rate bidding. Each bidding agent pays a price which is equal or similar to the externality.

In the auction process after all give and take that means after auction process is over there is one winner and others are losers, winner can offer a price for an object to the losing bidder in the corresponding market. This offer given by the bidder who won the bid is cannot be ignored by the losing bidders. If deal is done between bidders then the transaction takes place at offered price and if the offer is rejected or deal is not done with any bidder then the object is kept by the bidder who won the auction process. The timing of offers is decided as follows: If the bidder which is present in all markets wins the all objects in the auction that can also be called as global bidder makes  $N$  simultaneous offers to the local bidders. If local bidder's wins 'n' number of objects as well as global bidders wins 'N-n' number of objects, firstly local bidders which win the 'n' objects will make offer to the bidders which are present in all markets, sequentially. Local bidders offer orders that are randomly determined, Every local bidder observes the offers made by each local bidders. After the global bidders which are present in all markets sees the offers which are made to them and before deciding whether to accept them or not global bidders make simultaneous offer to local bidders who are losing. After all the offers are made the first chance for deciding whether to accept the offer or not is for losing bidders. After this all process global bidders observes the decisions made by the local bidders and then they decide whether to accept the offers or not which are made to them [4].

### 3. MATH

Efficiency of an auction is rated as the ratio of the total surplus of the allocation to the highest possible surplus among all allocations, where total surplus is the sum of bidder profit and auctioneer revenue. Then, for every auction, the ratio is normalized by the average surplus of all feasible allocations as follows:

$$\text{Efficiency} = \frac{\text{The actual total surplus} - \text{average surplus}}{\text{Highest possible surplus} - \text{average surplus}}$$

### 4. ONLINE ASCENDING AUCTIONS

#### 4.1. Online Iterative Auction

Iterative auction regularly maintains present price and present winner win object for every item object. Price set to zero and according to players, actions in time samples are as follows:

Every bidder, when his turn, may place his name as the temporary winner of some item samples, causing the previous winner to be eliminated, and the price to increment by some static function. A bidder cannot perform this action, and must give up his turn, if he is already a pro temporary winner. When none of the bidders that are permanent winners wishes to place his name some-where, the sometime t phase ends: item t is sold to the player win t for a price. At time object the cost and temporary winners from time kept. If additional bidders come then the auction remains start according to the above rules.

#### 4.2. The sequential Japanese auction

Sequential Japanese auction for specific item-set the price is continually increasing and bidder may only take action to eliminate from the auction. When bidder eliminated he not enter again in the auction system, when remaining all bidders are eliminated, the price rise stops and last person wins the object at that price [5].

### 5. ONLINE AUCTION FRAUD

Fraud is done for financial profit, bidders are provide misinterpretation or wrong information which is related to transaction with cheating intension.

Symmetry information can not used to describe increased risk in online transaction of fraud, sellers has significant amount of information than buyers about the items which are sold in the auction process. Due to this bidders or sellers don't provide right or appropriate information about their products therefore it leads to rise in online fraud.

For avoiding such types of online auction system frauds the reputation systems are the easy way.

In reputation system the data of seller behavior is gathered and on that data analysis is done after the analysis points are given to the sellers according to the behavior and fraud can be avoided by that mechanism [6].

### 6. CONCLUSION

In this paper we surveyed different types of auction system and difference between traditional and online auctions. We also surveyed different bidding strategies of players from different research papers. We have also surveyed how to calculate the efficiency of auction algorithm. In this survey paper the issue in online auction system is also mentioned that is auction system fraud.

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