Module 4: "Static games of incomplete information"

Lecture 28: "Auctions"

The Lecture Contains:

- Static games of incomplete information: Application: Auctions

Previous Next

Static games of incomplete information: Application: Auctions

- Auction is an example of static game with incomplete information
- Auction involves a simultaneous move game where players simultaneously submit their bids to win the item put up for auction.
- It is a game of incomplete information as each bidder does not know the exact valuation of all the other bidders for the subject put up for auction.
    - hence payoff functions of rivals are not known to the players

Auctions	
First price Auction Highest bidder wins, pays the highest bid & gets the object. Loser pays nothing & gets nothing.	Second price Auction Highest bidder wins, pays the second highest bid & gets the object. Loser pays nothing & gets nothing.

Previous Next

First Price Sealed Bid Auction

- Payoff by winning = Valuation- Bid
  Payoff by losing = 0
- Important features **:**
  Players always underbid (i.e. bid less than their valuation of the object).
  - nobody will bid more than what the good is worth
    - even if one wins, one is worse off and gets a negative payoff.
  - If one bids the exact valuation.
    - even if he/she wins, payoff=0
- Hence one always bid less than what one values
- Trade off in deciding the bid amount
  - Lower the bid, the greater the payoff if one wins
  - Higher the bid, greater the chance of winning
- Optimal bid strategy is taken keeping this trade off in mind.

Previous Next

Second Price Auction

- This type of auction is used on e-Bay
- Here bidder bids the exact valuation.

Consider the following example

Bidder	Amount Bid
Sachin	₹100
Sourav	₹90
Rahul	₹30

Here Sachin wins the auction and pays ₹90

Suppose the good in auction is worth 100 to Sachin.

Sachin will always bid ₹100 if a second price auction is used.

Previous Next

Bidding ₹100 Vs bidding some amount less than ₹100

Comparing bidding ₹100 versus ₹99 (say)

- If the highest bid > ₹100
  - Does not matter, whether you bid 99 or 100 – lose in both cases
- If the highest bid other than Sachin's < ₹99
  - Does not matter again
  - in both cases, Sachin wins and pays the second highest bid.
- If the highest bid other than that of Sachin is between ₹99 & ₹100 - say ₹99.50
  - If Sachin bids 100
    - Sachin wins & gets the good and payoff
      = 100-99.5 = 0.5 > 0
  - If Sachin bids 99
    - Sachin loses and payoff=0
    - Hence in this case, Sachin is better off by bidding ₹100

Hence Sachin is either as well off or better off by bidding ₹100 then by bidding something less than ₹100

Previous Next

Bidding ₹100 versus bidding something more than ₹100

Bidding ₹100 versus ₹105 (Say)

- If somebody else bids more than ₹105
  - Than Sachin will lose in both cases
- If the highest bid other than Sachin's is less than 100.
  - then Sachin wins in both cases and pays the second highest bid- so payoff is same by bidding ₹100 as well as by bidding ₹105
- If the highest bid other that of Sachin is between 100 and 105, say at ₹104
  - Payoff to Sachin by bidding ₹105
    - Sachin wins the auction and payoff = 100 - 104 = -4
  - Payoff to Sachin by bidding ₹100
    - Sachin loses the auction and Payoff=0
  - Hence in this case, Sachin is better off by bidding ₹100

Hence to sum up, in Second price auction, Sachin will always be either better off or stay as well off by bidding ₹100 (his exact valuation) then by bidding anything else.

Previous Next