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Manuscript

Diffusion auction in social networks

概要：

（1）介绍研究的基本问题

（2）一些在auction领域基本的概念

（3）diffusion auction的优势和特点 (Myerson’s lemma and 2020IJCAI)

（4）未来的发展方向

问题的出发点：一个基本的场景Promote a sale in social network

From a seller he wants to sell an item for some profit.

If he just sells item among his neighbors or cycle of his friends

A natural question raises if he can find a buyer who are willing to pay more money?

Ways to improve the sellers or bidders’ numbers

Some traditional sale promotions

1. promote in shopping centers

2. using some stages like a search engine or some sale stage

3. using ads via social media like WeChat, Facebook.

However, return of these promotions are unpredictable and make get a deficit.

It comes to an idea that how can we design a market mechanism to (1) seller will never lose; (2) all buyers are incentive to diffuse the sale information to all her friends.

Mechanism design is about allocation about the resources and auction is a part of it.

Basic setting: n bidders, one item, everyone has a valuation of the product. Every bidder also reports a bid about the item which is used to decide who will win the item. Notice that valuation does not always equal to reported bid. A terrible mechanism will lead to a mess of the auction. Seller would not sell the item to the highest bidder and he may get some deficit. All the result of the auction is unpredictable. So our target is to design an mechanism so that we can easily decide who will win the auction. We are going to make all the bidders to report truthfully. That means we let all the bidders get the maximum utility when he truthfully bids. Also IR guarantee all the bidders who report truthfully will not get negative utility.

We design an auction mechanism from two aspects: one is allocation rule and the other is payment rule. The former decides who will win and the later calculate the money that all the bidders should pay to the seller.

IC:

IR:

Allocation rule

Payment rule