Multi-Unit Auction in Social Networks with Budgets

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Time: 11:00AM(Time in Beijing)
4:00PM(Time in Auckland)
December 10, 2020 (Thursday)
VooV meeting ID: 710 154 974 Password: 1936
Link: https://meeting.tencent.com/s/4tJ9yWPh8LfK

Abstract: We study multi-unit auctions via social networks, where each buyer has a budget constraint and can spread the sale information to her neighbors in the social network. This paper designs a mechanism for this model to encourage buyers to tell truthfully and spread the sale information. Our proposed mechanism uses the idea of the clinching mechanism to decide the transaction price and it can be regarded as a social network version of the clinching mechanism. Different from most previous clinching mechanisms that search for the transaction prices by continuously increasing the current price, the proposed mechanism directly computes the transaction prices in polynomial time. Furthermore, the mechanism applies some techniques to iteratively activate new buyers in the network, which will guarantee the utility of former buyers and also benefit the seller. Several nice properties, including no-positive-transfers, individually rational, incentive compatible, and non-wastefulness are proved for the mechanism. Joint work with Yuchao Song.

Chengdu Algorithms and Logic Seminar is a series of online seminars organized by School of Computer Science and Engineering, University of Electronic Science and Technology of China, and School of Computer Science, University of Auckland that aims to promote collaborations in a broad range of topics in algorithms and logic.

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