Shill-proof rules in object allocation problems with money*

Hiroki Shinozaki†

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Abstract

We consider the object allocation problem with money. The seller owns multiple units of an object, and is only interested in her revenue from an allocation. Each buyer can receive at most one unit of the object and has preferences over the set of pairs consisting of consumption of the object and payments. We study the seller's incentives to increase her revenue by introducing false-name buyers, a practice commonly referred to as *shill bidding*. An (*allocation*) *rule* is *shill-proof* if the seller never benefits from introducing false-name buyers. A rule is a *price-based weak priority rule* if there is a profile of posted prices such that buyers who are willing to receive the object at their own prices do so in descending order of price We show that a rule is *revenue undominated* among the class of rules satisfying *shill-proofness*, *strategy-proofness*, and *non-imposition* if and only if it is a price-based weak priority rule. Our result provides justification for the use of posted-price-type rules―widely adopted by a number of online marketplaces, including major auction houses―over auction-type rules in terms of *shill-proofness*.

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