False-name-proof Mechanism Design without Money

**ABSTRACT**

Mechanism design studies how to design mechanisms that result in good outcomes even when agents strategically report their preferences. In traditional settings, it is assumed that a mechanism can enforce payments to give an incentive for agents to act honestly. In many Internet application domains, however, introducing monetary transfers is impossible or undesirable. Also, in such highly anonymous settings as the Internet, declaring preferences dishonestly is not the only way to manipulate the mechanism. It is often possible for an agent to pretend to be multiple agents and submit multiple reports under different identifiers, e.g., by creating different e-mail addresses. The effect of such "false-name manipulations" can be more serious in a mechanism without monetary transfers, since submitting multiple reports would have no risk. I present a case study of false-name-proof mechanism design without money. In the basic setting, agents are located on a real line (or a tree), and the mechanism must select the location of a public facility: the cost of an agent is its distance to the facility. This setting is called the facility location problem and can represent various situations where an agent’s preference is single-peaked. I first introduce a characterization of deterministic false-name-proof facility location mechanisms in this setting. I then present some results on competitive analysis for false-name-proof facility location mechanisms. Finally I will discuss how the model could be extended to the situation where the mechanism must select the locations of two public facilities.

**BIOGRAPHY**

Taiki Todo is an assistant professor at Department of Informatics, Graduate School of Information Science and Electrical Engineering, Kyushu University. He received the master and doctor degrees from Kyushu University, Japan in 2010 and 2012, respectively. From 2012 to 2013, he was a postdoctoral associate at Department of Computer Science, Duke University, NC, USA. He has been working in the fields of artificial intelligence, multi-agent systems, and micro economics, and has served as a program committee member of several top-tier international conferences, such as AAAI, IJCAI, AAMAS, and ACM-EC. His research interest generally lies at the intersection between computer science and game theory, especially designing incentive mechanisms for several market situations such as auctions, barter exchange, school choice and voting.

All are welcome!

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