Random Assignment Problems

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An assignment problem refers to the situation where a finite set of objects need to be allocated to a group of agents and money transfers are prohibited. For this problem, incentive compatible and efficient mechanisms exist (Svensson, 1999; Papai, 2000; Pycia and Unver, 2017). In order to achieve (ex ante) fairness, randomization is introduced to the model. Then a desirable mechanism refers to one satisfying jointly fairness, (ex ante) efficiency, and (ex ante) incentive compatibility. On one hand, the random priority mechanism is fair, incentive compatible, but not efficient (Abdulkadiroglu and Sonmez, 1998). On the other hand, the probabilistic serial mechanism is fair, efficient, but not incentive compatible (Bogomolnaia and Moulin, 2001). Moreover, there is no desirable mechanism on the universal domain when there are at least four objects and four agents. Recently, this impossibility is established on almost all well-studied restricted domains (Kasajima, 2013; Chang and Chun, 2017; Liu and Zeng, 2018). However, on the so-called sequentially dichotomous domains, the probabilistic serial mechanism is incentive compatible (Liu, 2018). Besides the mainstream, some generalizations of the model will also be briefly discussed.

Readings

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