Abstract

In this paper we study the implementation challenge in an abstract interdependent values model and an arbitrary objective function. We design a mechanism that allows for approximate optimal implementation of *insensitive* objective functions in ex-post Nash equilibrium. If, furthermore, values are private then the same mechanism is strategy proof. We cast our results onto two specific models: pricing and facility location. The mechanism we design is optimal up to an additive factor of the order of magnitude of one over the square root of the number of agents and involves no utility transfers.

Underlying our mechanism is a lottery between two auxiliary mechanisms – with high probability we actuate a mechanism that reduces players influence on the choice of the social alternative, while choosing the optimal outcome with high probability. This is where the recent notion of *differential privacy* is employed. With the complementary probability we actuate a mechanism that is typically far from optimal but is incentive compatible. The joint mechanism inherits the desired properties from both.