Ritesh Jain

Essays in Mechanism Design and Implementation Theory

I broadly classify my research in micro-economic theory. I am very interested and work in the area of mechanism design and implementation theory. I am also interested in testing economic theories using the tools of experimental economics.

In my job market paper titled "Rationalizable Implementation of Social Choice Correspondences," I study the implementation of social choice correspondences (SCC), in a complete information setting, using rationalizability as the solution concept. I find a condition which I call r-monotonicity to be necessary for the rationalizable implementation of an SCC. r-monotonicity is strictly weaker than Maskin monotonicity, a condition introduced by Maskin (1999). If an SCC satisfies a no worst alternative condition and a condition which we call Θ_F-distinguishability, then it is shown that r-monotonicity is also sufficient for rationalizable implementation. We discuss the strength of these additional conditions. In particular I find that, whenever there are more than 3 agents a social choice correspondence, which always selects at least two alternatives is rationalizably implementable *if and only if* it satisfies r-monotonicity. This paper, therefore, extends Bergemann et al. (2011) to the case of social choice correspondences.

In another paper titled "Symmetric Mechanism Design," (Jointly with Yaron Azrieli) we study the extent to which regulators can guarantee fair outcomes by a policy requiring mechanisms to treat agents symmetrically. This is an exercise in mechanism design. Our main result is a characterization of the class of social choice functions that can be implemented under this constraint. In many environments, extremely discriminatory social choice functions can be implemented by symmetric mechanisms, but there are also cases in which symmetry is binding. Our characterization is based on a `revelation principle' type of result, where we show that a social choice function can be symmetrically implemented if and only if a particular kind of (indirect) symmetric mechanism implements it. We illustrate the result in environments of voting with private values, voting with a common value, and assignment of indivisible goods.

I also study the issue of full implementation in public goods setting. In my paper titled "Generalized Groves Ledyard Mechanisms," (Jointly with Paul Healy) we study Nash implementation in public goods setting. Groves and Ledyard (1977) construct a mechanism for public goods procurement that can be viewed as a direct-revelation Groves mechanism in which agents announce a parameter of a quadratic approximation of their true preferences. The mechanism's Nash equilibrium outcomes are efficient. The budget is balanced because Groves mechanisms are balanced for the announced quadratic preferences. Tian (1996) subsequently discovered a richer set of budget-balancing preferences. We replicate the Groves-Ledyard construction using this expanded set of preferences, and uncover a new set of complex mechanisms that generalize the original Groves-Ledyard mechanism.