A Population's Feasible Posterior Beliefs

Itai Arieli (Technion), Yakov Babichenko (Technion)

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Abstract

We consider a population of Bayesian agents who share a common prior over some finite state space and each agent is exposed to some information about the state. We ask which distributions over empirical distributions of posteriors beliefs in the population are feasible. We provide a necessary and sufficient condition for feasibility. We apply this result in several domains. First, we study the problem of maximizing the polarization of beliefs in a population. Second, we provide a characterization of the feasible agent-symmetric product distributions of posteriors. Finally, we study an instance of a private Bayesian persuasion problem and provide a clean formula for the sender's optimal value.