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Presentation Title
No-Regret Mechanisms for No-Regret Agents
(with Jason Hartline and Aleck Johnsen)

Abstract
A rich class of mechanism design problems can be understood as incomplete information games between a principal who commits to a policy and an agent who responds, with payoffs determined by an unknown state of the world. Traditionally, these models require strong and often-impractical assumptions about beliefs (a common prior over the state). In this paper, we dispense with the common prior. Instead, we consider a repeated interaction where both the principal and the agent may learn over time from the state history. We reformulate mechanism design as a reinforcement learning problem and develop mechanisms that attain natural benchmarks without any assumptions on the state-generating process. Our results make use of novel behavioral assumptions for the agent -- centered around counterfactual internal regret -- that capture the spirit of rationality without relying on beliefs.

Keywords
Mechanism design; learning in games; no-regret; common prior; robustness; calibration

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