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Optimal Decision Stimuli for Risky Choice Experiments: An Adaptive Approach

Abstract:

Collecting data to discriminate between models of risky choice requires careful selection of decision stimuli. Models of decision making aim to predict decisions across a wide range of possible stimuli, but practical limitations force experimenters to select only a handful of them for actual testing. Some stimuli are more diagnostic between models than others, so the choice of stimuli is critical. This talk provides the theoretical background and a methodological framework for adaptive selection of optimal stimuli for discriminating among models of risky choice. The approach, called Adaptive Design Optimization (ADO), adapts the stimulus in each experimental trial based on the results of the preceding trials. I will demonstrate the validity of the approach with simulation studies aiming to discriminate between Expected Utility, Weighted Expected Utility, Prospect Theory models.