History Effects in a Minimalistic Explore-Exploit Task

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Presentation Abstract Summary Balancing exploration and exploitation is an important aspect of decision-making. Multiple studies have compared human to optimal behavior, but deviations from optimality have typically not been explained due to the complexity of the tasks used, such as reward stochasticity even when exploiting, and the need to learn parameters of reward distributions. We introduce a minimalistic task in which subjects can always go back to the best observed option, and the reward distribution is known. We ran this experiment in both laboratory and online subjects, with consistent results. We found that people used relevant state information to make decisions in a way that is qualitatively but not quantitatively optimal. We examined history-dependent cognitive biases and found a strong effect of the preceding action, and weak effects of preceding reward, history length, regret and average reward. Our results demonstrate the usefulness of minimalistic paradigms in studying exploration-exploitation dilemmas.

Paper Upload (PDF) ccn abstract explore-exploit final.pdf

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