Title: Task representations, why they matter, and how we learn them

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Abstract

In recent years, ideas from the computational field of reinforcement learning (RL) have revolutionized the study of learning in the brain, famously providing new, precise theories about the effects of dopamine on learning in the basal ganglia. However, the first ingredient in any RL algorithm is a representation of the task as a sequence of states. Where do these state representations come from? In this lecture I will first argue, and demonstrate using behavioral experiments, that animals and humans learn the structure of a task, thus forming a state space through experience. I will then present some results regarding the algorithms that they may use for such learning, and their neural implementation.