Department of Economics – Neuroeconomics Seminar

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Diversity of dopamine neurons: Multiple axes and parameterized vector prediction errors

The behavior of the animal is strongly shaped by the outcome of actions. It has long been thought that dopamine neurons in the midbrain broadcast a scaler teaching signal called reward prediction errors to drive associative learning. Recent studies have shown, however, that the activity of dopamine neurons is more diverse than originally thought. In this talk, I will present our recent results and discuss how the diversity of dopamine neurons provides computational advantages. First, dopamine signals differ across regions of the striatum, which define multiple "axes" of reinforcement with which distinct types of behavior are acquired. Second, more subtle differences in dopamine signals provide a basis for learning fine-grained information of the outcome such as the entire distribution of reward, not just the mean.