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**Title:** Modeling and decoding decision signals in the human brain

**Abstract:** Successful decision-making is fundamental to the survival of all animals including humans.  Optimal choices among alternative options require reliable representations of decision signals.  Such signals can reflect the predicted reward value of decision outcomes, or perceptual evidence about the physical world.  In reward-based decisions, such signals are predictions about the reward value of the possible outcome. In contrast, for perceptual decisions these signals reflect the relevant sensory features.  Moreover, reward-based and perceptual factors can interact, resulting in stimulus generalization.  A fundamental question is how choice signals are represented in the human brain, how they are learned and how reward and perceptional factors interact. This talk will cover a series of recent experimental and modeling studies which were carried out to address these questions.  These studies combine human fMRI, computational modeling, functional connectivity and multivariate decoding methods to identify representations that are encoded in distributed patterns of fMRI activity, and to test specific hypotheses about the underlying neural coding scheme