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**Talk Title:** From spatial perception to self-discovery

**Abstract:**

Each of us has a distinctive psychological identity, or sense of self. The sense of self begins with one's own body, and is always fundamentally linked to it. We experience our own body as the most familiar object of our perceptual lives, yet very few experimental studies have investigated how our experience of the body is formed, and mechanistic models are lacking. In particular, it remains unclear whether the dominant ingredient in sense of self is the body's sentience (the fact that we feel things in and through our body) or agency (the fact that we can move our body, and only our body, at will). I will report a series of experimental studies of self-touch, which we have used to investigate the relative importance of sensory and motor information. When we use the hand to touch some other part of our body, there is a strong coupling between the movement information, and touch information from the touched body part. We have used two robots in a leader-follower coupling to manipulate this coupling experimentally, in order to investigate whether motor information dominates touch, or vice versa. Existing computational models make dramatically contrasting predictions, but our results suggest none of these theories is correct: neither motor nor sensory information has particular priority in bodily self-perception.