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Recovering shape and metric object properties through spatiotemporal interpolation: What effects seeing an object that is never present in the stimulus?

Spatiotemporal interpolation (STI) refers to perception of complete objects from fragmentary information across gaps in both space and time. Palmer, Kellman & Shipley (2006) found that STI for both illusory and occluded objects produced performance advantages in a discrimination paradigm. In my talk I will describe this process followed by empirical studies that show that metric properties can be accurately perceived in representations obtained through STI. Then I will cover some of the recent studies from my lab where we study interaction between contour-based and surface-based processes for STI. Contour-based processes interpolate between visible edge fragments and surface-based processes interpolate regions across gaps in visual information based on similar surface properties, such as, color, texture, etc. They are complementary mechanisms that provide information for unit-formation from fragmentary visual information available for object-formation. The goal of this study is to investigate the nature of spatio-temporal object formation when contour and surface-based processes are either congruent or incongruent.