Exploring inductive bias of visual scenes

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Abstract: When people encode a representation of a scene, they do not necessarily represent the exact locations and orientations of the constituent elements. Instead, people rely on preexisting inductive biases to simplify their encoding of new scene configurations. We investigated people's inductive biases in their memory for configurations of simple 2D shapes (such as circles, triangles, etc.) using a serial reproduction paradigm (Bartlett, 1932). This paradigm establishes an iterative process in which information is transmitted through a chain of people (like the "telephone" game). In our experiment, we asked people to memorize configurations of simple shapes (which were either generated at random or by other participants) and then asked them to reproduce those configurations. In analyzing the final generation of reproductions, we found that people have strong preferences for the scale of individual shapes, as well as the alignment, distance, overlap, and relative rotation between pairs of shapes.