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Guided Search 4.0: Current Progress with a model of visual search

Visual input is processed in parallel in the early stages of the visual system. Later, object recognition processes are also massively parallel, matching a visual object with a vast array of stored representations. A tight bottleneck in processing lies between these stages. It permits only one or a few visual objects at any one time to be submitted for recognition. That bottleneck limits performance on visual search tasks when an observer looks for one object in a field containing distracting objects. Guided Search is a model of the workings of that bottleneck. It proposes that a limited set of attributes, derived from early vision, can be used to guide the selection of visual objects. The bottleneck and recognition processes are modeled using an asynchronous version of a diffusion process. The current version (Guided Search 4.0) captures a wide range of empirical findings.

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