

# Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features



It has become common knowledge that if there is a unifying principle that enables the human brain to realize its tremendous capabilities, then it is its highly parallel organisation of underlying processes. However, the mystery of integration of all these distributed processes into the single, coherent consciousness that we experience, also referred to as the binding problem, is still one of the most controversial research topics in modern cognitive neuroscience. This thesis aims to contribute methodological as well empirical advances to the understanding of general, formalised properties of different types of integration mechanisms for visual featural information, which are supposed to be involved in early as well as in late processing stages of the visual system. It focuses on developing mathematical methods that employ behavioural reaction time data to differentiate between different implementation variants of integrational mechanisms. These methods are developed with respect to their application in the visual search paradigm. A modified version of the visual search paradigm, which involves feature change asynchronies to temporally separate featural manipulations in the presentation of stimuli, is applied to investigate into current research topics of pre-attentive feature integration. In a series of experiments recent findings about the temporal organization of feature integration and binding processes are addressed. In the focus of this experimental investigation is the question in how far differences in processing delays between dimension-specific featural information, like color, motion or orientation information, can account for temporal misbindings as has been recently reported in the literature.

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**Page 1 Guided Search 4.0: Current Progress with a model of visual** The target is either present or absent, and the observers task is to make a original work and her recent work, she argues that focused attention is used in feature binding. There is also evidence that preattentive processing can extract more visual features, so that the essential operations of object recognition are left to **Perceptual-binding and persistent surface segregation - ScienceDirect** Here we show that feature integration initially occurs within retinotopic being easily identified when presented alone, a target object in the periphery can be .. In temporally asynchronous conditions, flanker onsets preceded the target . To date, there has been no strong evidence that visual features are integrated across **Visual Processing in Rapid-Chase Systems: Image Processing** : Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features (9783832516154): Bernd Schonwalder: Books.

**Mechanisms of Target Selection and Feature Binding in Visual** If an object casts a shadow on a surface the visual system discounts the shadows in We would like to know if attentional mechanisms in feature-binding are also involved in . Asynchronous presentation of color and motion (Experiment 1b) did not . Transparency between distracter and target surfaces provides a cue for **Spatial structure affects temporal judgments: Evidence for a** Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features by Bernd **Five factors that guide attention in visual search : Nature Human** Mar 1, 2014 Costs for targets appearing in an old majority surface were abolished when Cave, & Franzel, 1989) mechanisms in mediating feature-based selection in search. Additionally, there is evidence that the preview benefit depends on limited . to the computation of features, but prior to object recognition. **Mechanisms of Target Selection and Feature Binding in Visual** Visual binding is the process by which the brain groups the elements implements a mechanism that synchronizes response onsets to object parts and The Temporal Correlation Hypothesis of Visual Feature Integration: Still Alive and Well. phase relationship (synchronous or asynchronous) of two flickering targets, **A Neurodynamical cortical model of visual attention and invariant** May 21, 2014 despite being easily identified when presented alone, a target object in mentary features of visual objects are integrated over time and critical timing of feature integration (Experiment 1), as well as . which there was an asynchronous offset (Fig. .. Binding temporally asynchronous features into letters. **Saccade target selection and object recognition: evidence for a** **Mechanisms of Target Selection and Feature Binding in Visual** Later, object recognition processes are also massively parallel, matching a visual object derived from early vision, can be used to guide the selection of visual objects. relevant target features are processed in working memory (target identification). **Neural Architecture for Feature Binding in Visual Working Memory.**

**Asynchronous presentation of global and local information reveals** Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features by Bernd **The Role of Neural Mechanisms of Attention in Solving the Binding** Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features: Bernd **Visual search and selective attention: Visual Cognition: Vol 14, No 4-8** Jan 13, 2015 How early in visual processing does attentional selection of 1996 Hillyard and Anllo-Vento, 1998), feature-based (Hopf et al., . The procedure consists of presenting a matrix of place-holding figures (that also functions as a mask). (focused attention) with recognition of targets when both levels had to **Surface-based constraints on target selection and distractor** The RT is the time required to respond that a target is present or absent. . In AB experiments, directing attention to one item in a rapidly presented visual sequence can of selection and object recognition is modeled as an asynchronous diffusion .. 3: Binding As noted earlier, the starting point for Treisman's Feature **The Role of Neural Mechanisms of Attention in Solving the Binding** Influential models of visual search assume that dimension-specific feature contrast signals The main source of evidence for coactivation models, and against parallel race In Experiment 1, we used a double-factorial design with singleton targets .. Mechanisms of target selection and feature binding in visual on object **Five factors that guide attention in visual search : Nature Human** Saccade target selection and object recognition: evidence for a common

attentional The spatial interaction of visual attention and saccadic eye movements was in discriminating between the symbols E and E, presented tachistoscopically mechanism selects objects for perceptual processing and recognition, and **Guided Search 4.0: Current Progress with a model of visual search** Mar 8, 2017 If object recognition requires attention, and if the number of objects is Guidance based on the perceived value of some items or features. .. that is repeated in priming of pop-out, but the target-defining or selection feature. .. for scene context and memory for the binding of target object to scene location . **Mechanisms of Target Selection and Feature Binding in Visual** One key observation is that different features of an object are processed to a . the ventral visual stream that underlies object recognition (Ungerleider and . there is therefore an increasing number of erroneous feature bindings to rule out. .. and it is evidence for a bias in favor of neurons representing the target stimulus. **The detection of feature singletons defined in two dimensions is** Mar 8, 2017 If object recognition requires attention, and if the number of objects is Guidance based on the perceived value of some items or features. .. Preview methods have been very useful in examining the mechanisms of scene search. repeated in priming of pop-out, but the target-defining or selection feature. **Five factors that guide attention in visual search : Nature Human** Find great deals for Mechanisms of Target Selection and Feature Binding in Visual Object Recognition : Evidence from the Asynchronous Presentation of Target Features by Bernd Schonwalder (2007, Paperback). Shop with confidence on **Mechanisms of Target Selection and Feature Binding in Visual** recognition processes are also massively parallel, matching a visual object with a in which an observer looks for a target object among some number of distracting items. Classically, models have described two mechanisms of search: serial and .. the idea that attention was needed to bind features together (Treisman **Visual search and selective attention - Semantic Scholar** We describe a model of invariant visual object recognition in the brain that the new model presented, is to combine the feedforward feature hierarchy approach an object search target, and identification of an object given a spatial location as . of features detected at the preceding stage, thus helping to solve the binding **Guided Search: An outline of the architecture - Scene** The physiological evidence for the binding problem comes from studies of neurons in . Subjects were asked to detect the presence of a texture-defined target, which Unlike most visual tasks, performance on this detection task is poorer at the .. Thus, attention to an object feature apparently has effects on competitive **Mechanisms of Target Selection and Feature Binding in Visual** Mechanisms of Target Selection and Feature Binding in Visual Object Recognition: Evidence from the Asynchronous Presentation of Target Features **Integrating Retinotopic Features in Spatiotopic - NCBI - NIH** current theories of visual search has been Treismans feature integration theory of of these mechanisms in the brain and (4) the simulation of visual search processes paradigm, the observer is presented with a display that can contain a target . features, so that the essential operations of object recognition are left to. Evidence from the Asynchronous Presentation of Target Features Mechanisms of Target Selection and Feature Binding in Visual Object Recognition A modified version of the visual search paradigm, which involves feature change asynchronies to temporally separate featural manipulations in the presentation of stimuli,