

## **A novel approach to the problem of cue integration**

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The current approach to the problem of cue integration in the perception of 3D shape postulates that the outputs of (fairly) independent depth-processing modules are combined in a statistically optimal fashion. An alternative to the modular architecture of the Modified Weak Fusion Model has been proposed by Domini and Caudek (2006) by hypothesizing that the visual system combines the information provided by different image signals (e.g. velocities, disparities, texture gradients ...) prior to the extraction of depth information. Such approach has been termed the Intrinsic Constraint Model. The aim of this chapter is twofold. First, we will carry out an ideal observer analysis showing that the IC model yields optimal performance for the recovery of the affine structure.

Second, we will discuss novel empirical findings showing that, in recovering 3D information from the retinal images, the visual system relies on the mutual constraints among image signals. Such findings are consistent with the predictions of the IC model.