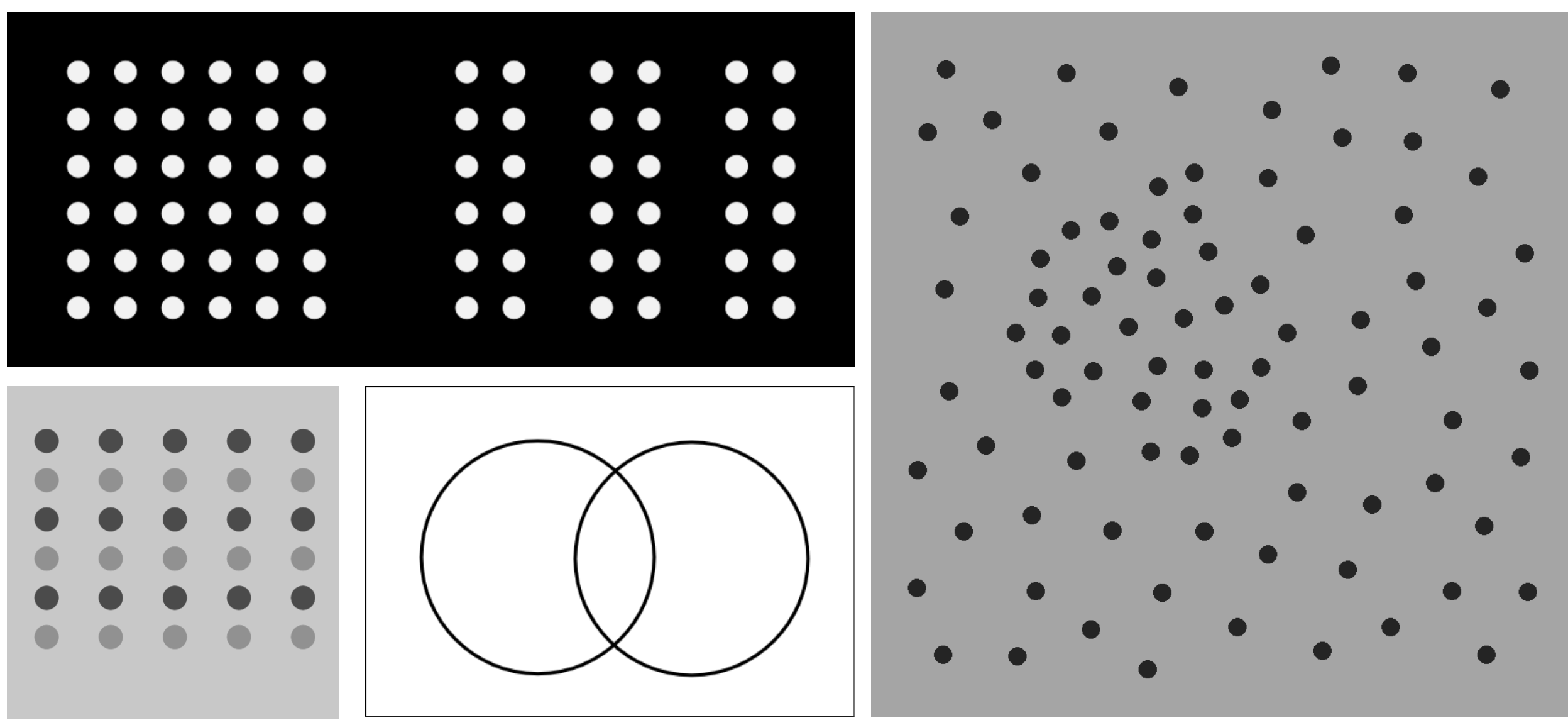
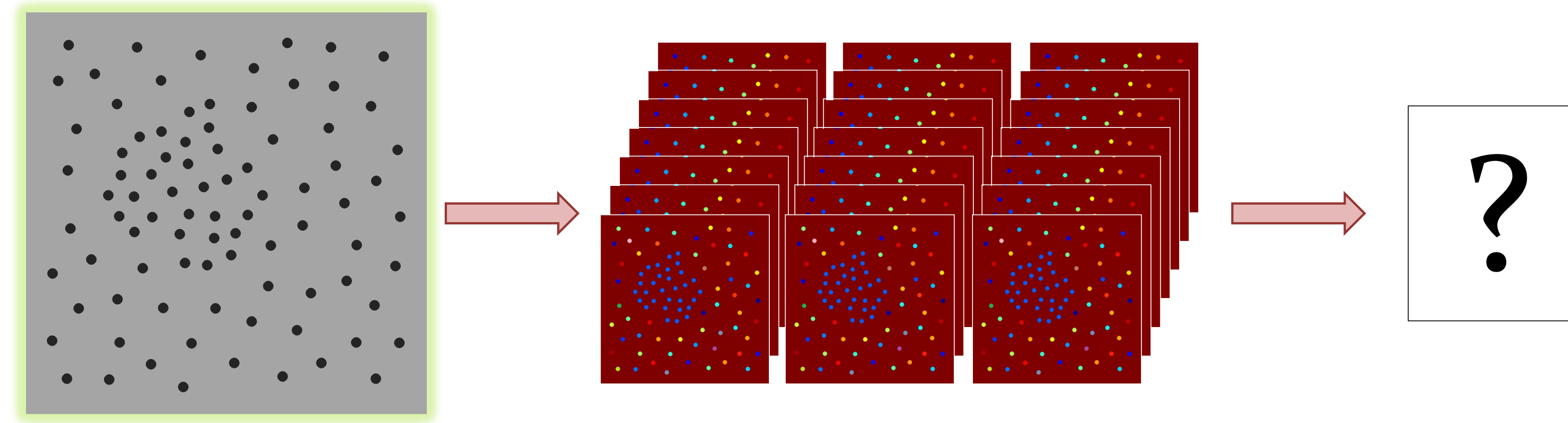


The Problem



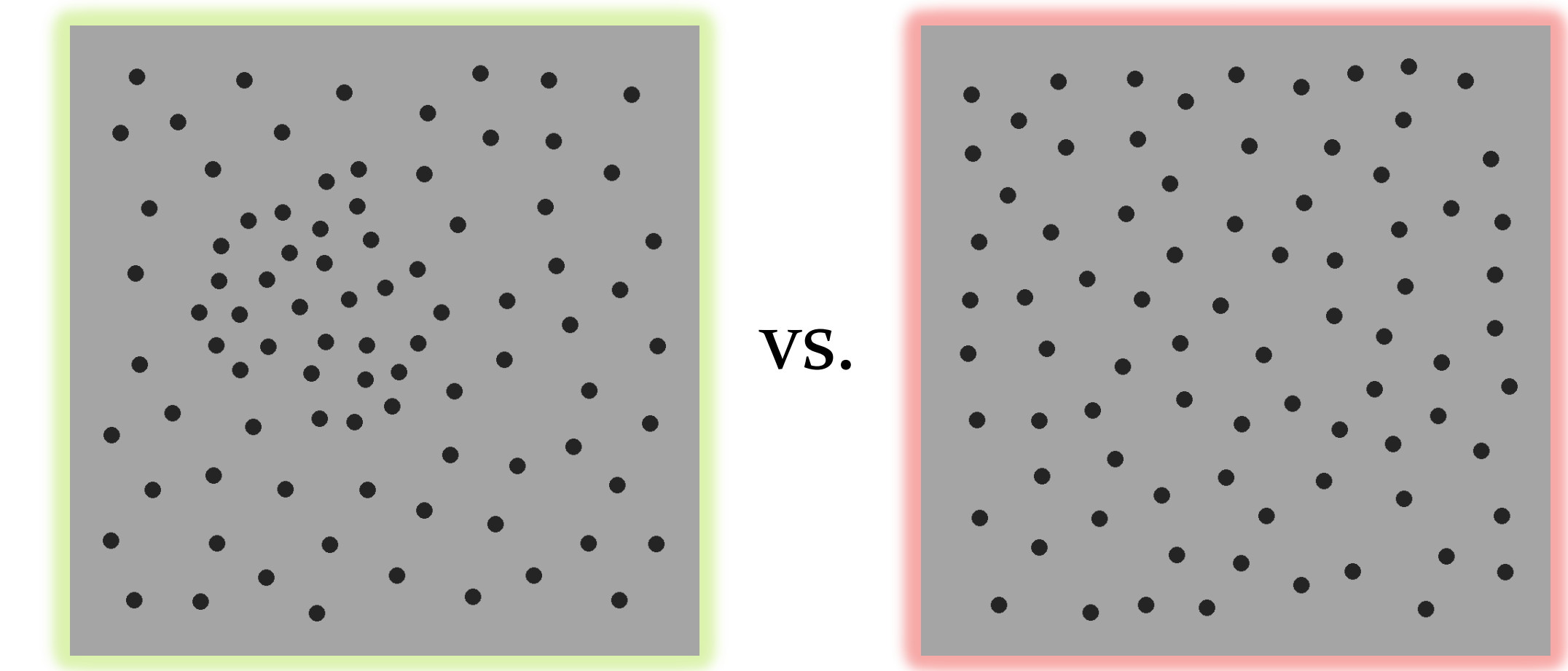
From Model to Decision



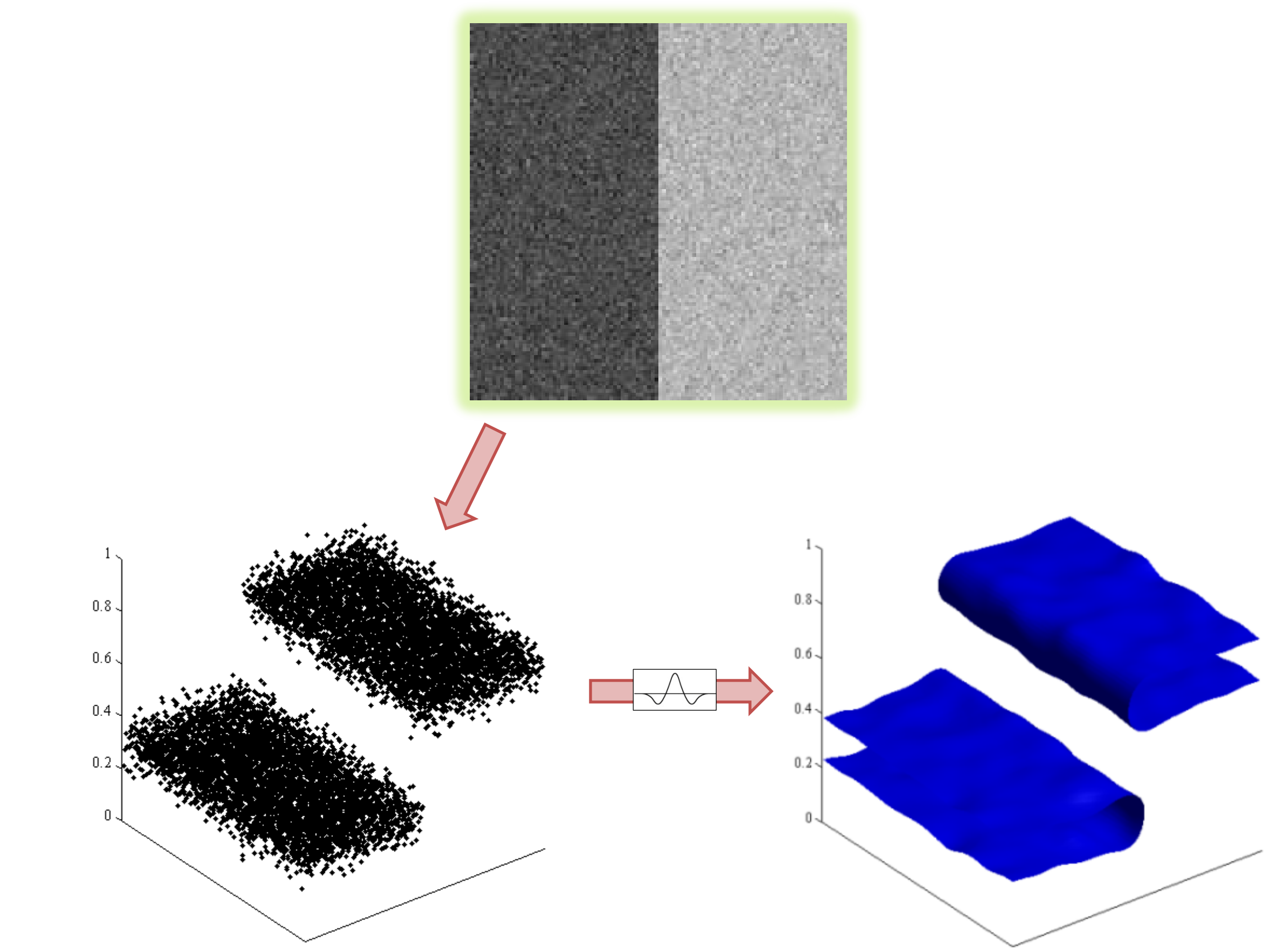
Solution: compare output segmentations with a “hypothesis,” represented by a canonical segmentation

Putting It to the Test

- 2-Alternative Forced Choice
- Images presented serially for 200 ms each (400 ms ISI)
- Clusters were characterized by proximity alone, luminance alone or both
- 19 subjects (13 male, 6 female)



The Model



Hierarchical Grouping

natural images, and grouping in more complex diagrams.
PREVIOUS WORK
 A great body of computer vision work exists on the topic of perceptual grouping. However, for user interface (UI)

natural images, and grouping in more complex diagrams.
PREVIOUS WORK
 A great body of computer vision work exists on the topic of perceptual grouping. However, for user interface (UI)

natural images, and grouping in more complex diagrams.
PREVIOUS WORK
 A great body of computer vision work exists on the topic of perceptual grouping. However, for user interface (UI)

natural images, and grouping in more complex diagrams.
PREVIOUS WORK
 A great body of computer vision work exists on the topic of perceptual grouping. However, for user interface (UI)

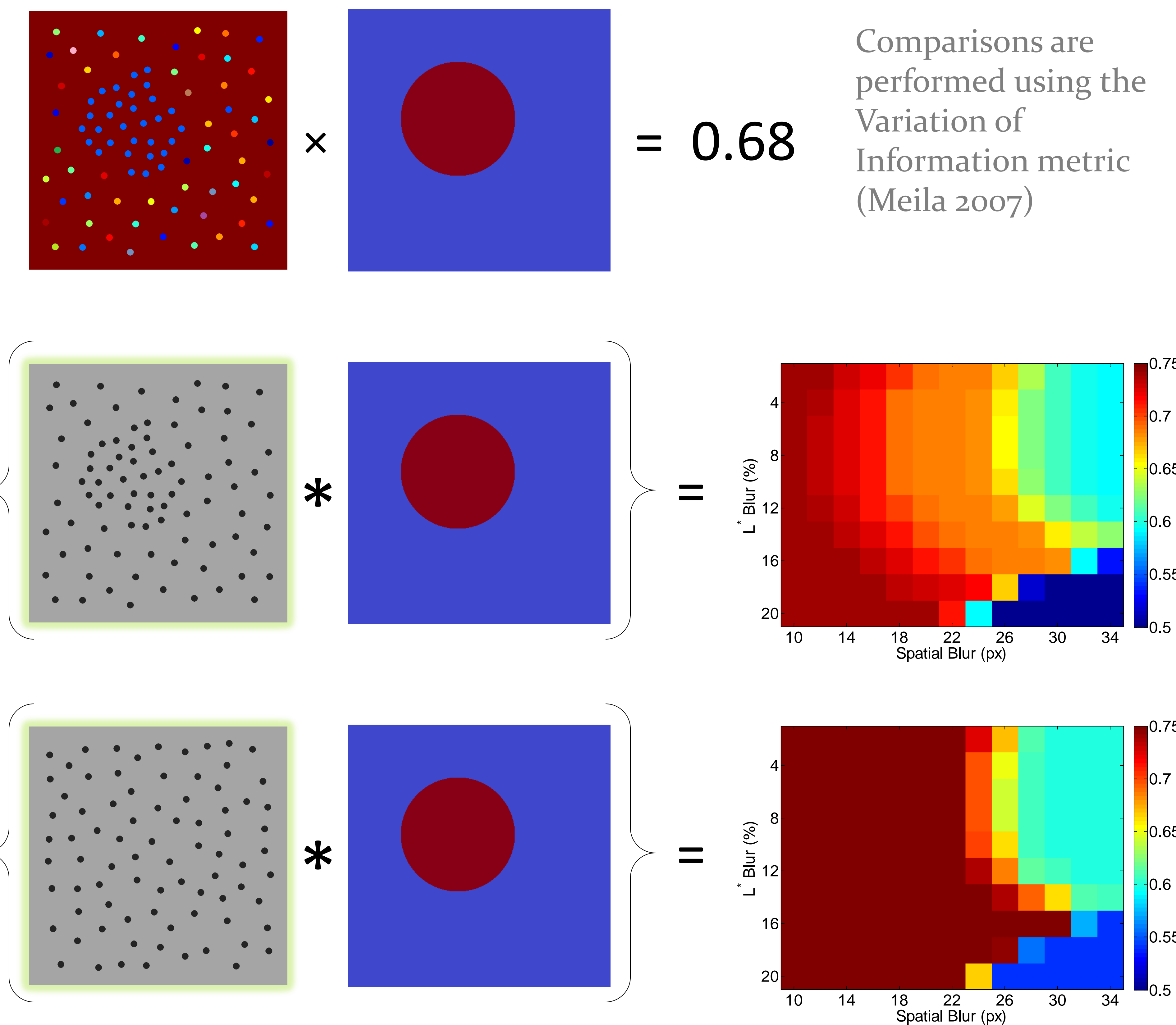
natural images, and grouping in more complex diagrams.
PREVIOUS WORK
 A great body of computer vision work exists on the topic of perceptual grouping. However, for user interface (UI)

Increasing spatial blur transitions from letters to words to sentences to paragraphs

Grouping by Orientation



from Geisler et al., 2001



References

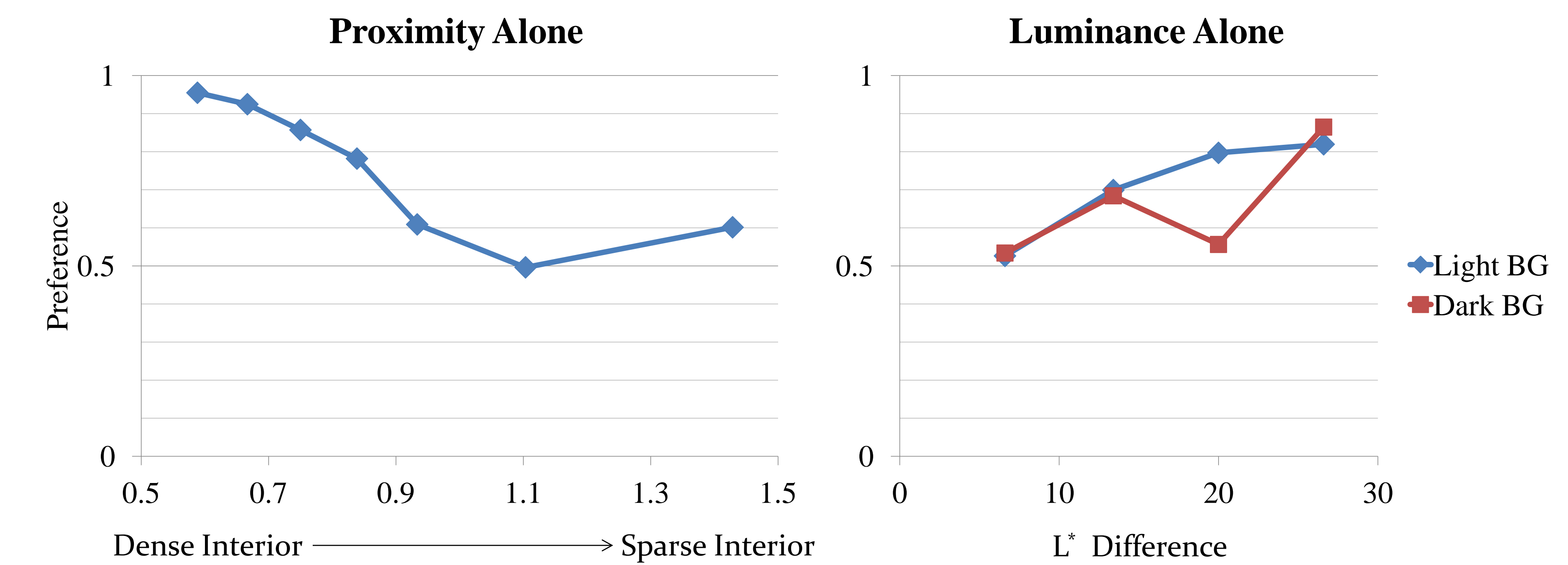
Rosenholtz, R., Twarog, N.R., Schinkel-Bielefeld, N., and Wattenberg, M. (2009) “An intuitive model of perceptual grouping for HCI design.” *Proc. Human Factors in Computing Systems*, pp. 1331-1340.

Geisler, W.S., Perry, J.S., Super, B.J., and Gallogly, D.P. (2001) “Edge co-occurrence in natural images predicts contour grouping performance.” *Vision Research*, 41(6), pp. 711-724.

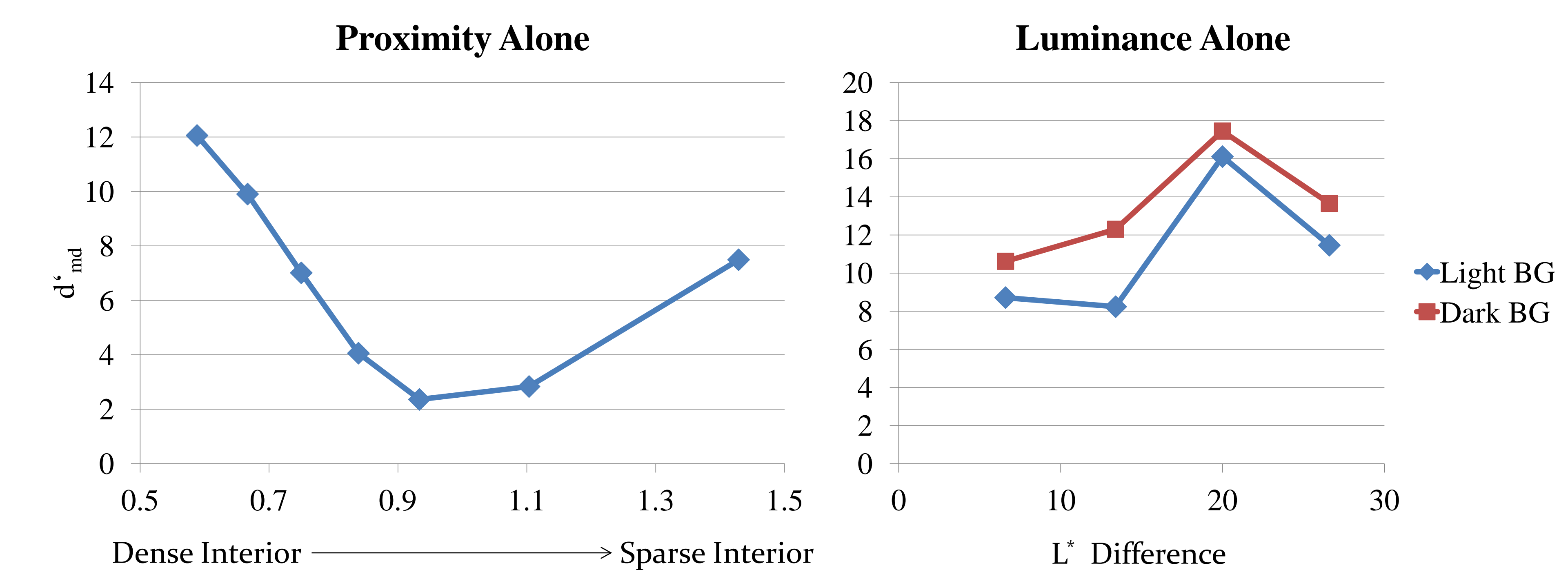
Meilă, M. (2007) “Comparing clusterings – an information based distance.” *The Journal of Multivariate Analysis*, 98(5), pp. 873-895.

Averbeck, B.B. and Lee, D. (2006) “Effects of noise correlations on information encoding and decoding.” *Journal of Neurophysiology*, 95(6), pp. 3633-3644.

Human Results



Model Results



The d'_{md} measure is derived from the d^2 measure described in Averbeck and Lee, 2006

Conclusion

The method described here effectively converts the rich output of our model framework to hypothesis-dependent vectors which can be analyzed in comparison with human data. Applying this method to the above experiment replicated much of the grouping behavior of human subjects.