

Week 3: Bayesian Models of Perception

Discussion Questions

Questions 1-5 are included in the Lab assignment. Also answer these additional questions:

6. The Mamassian et al. article states that researchers in various fields focus on different things when studying perceptual decision making, for example "the information available in stimuli" versus "the decision mechanisms themselves." In the lecture on perception, we saw that perception researchers have looked at the information available in visual stimuli and come to two very different conclusions about how adequate that information is. What is the "problem of perception" - why might visual stimuli be inadequate for determining our visual perceptions? Who took the position that visual stimuli are entirely adequate for explaining visual perception? What, on his account, keeps there from being any "problem of perception" after all?
7. In the lecture, we talked about how ambiguous sensory stimuli can be disambiguated through the use of top-down processing. What is top-down processing? What is bottom-up processing?
8. In the Bayesian model of perception we used in the lab, what part of the model serves the same function as top-down processing? What part of the model corresponds to bottom-up processing? Explain.
9. What is the Bayes decision rule, in general? What decision rule to organisms seem to often use instead? How does each rule relate to the posterior probabilities and the gain function?