

Probabilities Predicting Perception

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Bayes' theorem predicts perceptual inferences.

The brain integrates prior and current sensory experiences to determine the probability of an event outcome. Bayes' theorem is a three-part equation that models this neural pathway. The theorem first considers prior probabilities, which are equivalent to the brain's prior expectations. Likelihood probabilities, which are analogous to current sensory experiences, are then computed. The product of these two probabilities determines the posterior probability, which represents the combination of past and present experiences to infer the outcome of an event. Bayes' theorem is a mathematical model for describing perceptual processes.

Goldreich, D. (2015). The tau of tactile spatial perception. Lecture in PNB 2XD3, McMaster University, Hamilton, Ontario.