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Configurative Weighting as a Two-Plane Approximation of Bayesian Estimates

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Abstract

Configurative weighting and adding can be a surprisingly effective approximation of multiplicative functions. In the context of joint probability judgment, Nilsson et al. (2009) has shown that, when marginal probabilities are only approximately known, the configurative weighted average (CWA) of two probabilities not only predicts a high level of conjunction fallacies, as observed in data, but also correlates higher with the true joint probability than if the two probabilities are multiplied. Here we show that [1] the surface representing the optimal Bayesian estimate of a joint probability can be closely approximated by two planes, [2] configurative weighting and adding, such as the CWA model, constitutes such a two-plane approximation, and [3] a bias-variance tradeoff is not sufficient to explain the accuracy of the CWA. More generally, this suggests that the efficiency of heuristics might be due to suitable weighting operations rather than less-is-more effects.