Bayesian Integration Using Latent Dynamics

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Presentation Abstract Summary Behavioral experiments indicate that humans can perform Bayesian computations. However, we do not know how neural systems encode and integrate prior knowledge. We trained nonhuman primates and recurrent neural network models to perform a Bayesian time interval reproduction task and combined in-vivo and in-silico data to understand the principles of Bayesian integration in neural systems. We found that prior knowledge is encoded by the fixed points of the system and rotational dynamics in the vicinity of the fixed points allow the system to integrate prior into an online estimate of elapsed time. The results provide a general framework for understanding how neural systems could perform Bayesian computations by exploiting the latent dynamics of cortical networks.

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Keywords

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