# **Bayesian Integration Using Latent Dynamics**

Submission ID 3000292

**Submission Type** Poster

**Topic** Neuroscience

**Status** Submitted

**Submitter** Devika Narain

**Affiliation** Massachusetts Institute of Technology

#### **SUBMISSION DETAILS**

**Presentation Type** Oral Presentation

**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.

## Paper Upload (PDF) DN MJ CCN.pdf

#### **Co-author Information**

\* Presenting Author

First Name	Last Name	Affiliation	E-mail
Devika *	Narain *	Massachusetts Institute of Technology	dnarain@mit.edu
Hansem	Sohn	MIT	hansem@mit.edu
Mehrdad	Jazayeri	Massachusetts Institute of Technology	mjaz@mit.edu

## **Keywords**

Keywords
Bayesian inference
recurrent neural networks

electrophysiology	
Time estimation	
Neural computation	
dynamical systems	