

# Kenneth W. Latimer

The University of Chicago, Department of Neurobiology  
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## EDUCATION:

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**Ph.D.**, The Institute for Neuroscience 2010-2015  
The University of Texas at Austin  
Advisors: Jonathan W. Pillow, Alexander C. Huk  
Dissertation: *Statistical approaches for unraveling the neural code in the visual system*

**B.S.** in Computer Science, *magna cum laude* 2005-2010  
University of Colorado, Boulder  
minor in mathematics, certificate in cognitive science

## EXPERIENCE:

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**Staff Scientist** 2023-Present  
University of Chicago  
Grossman Center for Quantitative Biology and Human Behavior

**Postdoctoral Fellow** 2018-2023  
University of Chicago  
Advisor: David Freedman

**Postdoctoral Fellow** 2015-2018  
University of Washington, Seattle  
Advisor: Adrienne Fairhall

**Undergraduate Research Assistant** 2009-2010  
Computational Cognitive Neuroscience Lab  
University of Colorado, Boulder  
Advisor: Randall C. O'Reilly  
Undergraduate thesis: *A neural network model for object recognition in cluttered scenes using motion and binocular disparity*

## HONORS & AWARDS:

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Chicago Fellow (University of Chicago) 2018-2020  
Center for Perceptual Systems Training Grant recipient 2014-2015  
UT Austin Graduate Studies, Professional Development Travel Award 2012  
UT Austin Dean's Excellence Award 2010

## **TEACHING EXPERIENCE:**

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TA, The University of Texas at Austin

Quantitative Methods in Neuroscience (NEU 366M) Fall 2013

Instructor: Dr. Ila Fiete

Vertebrate Neurobiology (BIO 365R) Fall 2012

Instructor: Dr. George Pollak

### Summer Courses:

Summer Workshop on the Dynamic Brain September 2016

Guest Lecture: Fitting statistical models to neural data with maximum likelihood methods

## **SERVICE:**

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**Co-Organizer**, Theoretical Neuroscience Journal Club (UW, Seattle)

**Co-Organizer**, Computational and Theoretical Neuroscience Journal Club (UT Austin)

**Treasurer**, Neuroscience Graduate Student Association (UT Austin)

**Ad-hoc reviewer**: Current Biology, NBDT, Neural Computation, Neuron, Nature Communications, PLoS Computational Biology, PLoS One, Science, Neural Information Processing Systems 2016-2018,2020-2021, COSYNE 2016-2018,2020, International Conference on Machine Learning 2021-2022, International Conference on Learning Representations 2022

## **WORKSHOPS & SUMMER SCHOOLS:**

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Computation Vision Summer School 2019

Summer Workshop on the Dynamic Brain 2015

## **PUBLICATIONS:**

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\*,<sup>†</sup> indicate equal contribution

**Latimer KW** & Freedman DJ (2023). Low-dimensional encoding of decisions in parietal cortex reflects long-term training history. *Nature Communications*, 14(1), 1010.

Duffy A, **Latimer KW**, Goldberg KH, Fairhall AF, & Gadagkar V (2022). Dopamine neurons evaluate natural fluctuations in performance quality. *Cell Reports*, 38(13):110574.

- Latimer KW** & Huk AC (2021). Superior colliculus activates new perspectives on decision-making. *Nature Neuroscience*, 24(8):1048-1050. (News & Views on Jun et al. 2021)
- Latimer KW** & Fairhall AL (2020). Capturing adaptation to second-order statistics with generalized linear models: gain scaling and fractional differentiation. *Frontiers in Systems Neuroscience*, 14:60.
- Latimer KW**, Rieke F, & Pillow JW (2020). Inferring synaptic inputs from spikes with a conductance-based neural encoding model. *eLife*.
- Latimer KW** (2019). Nonlinear demixed component analysis for neural population data as a low-rank kernel regression problem. *Neurons, Behavior, Data Analysis & Theory*.
- Latimer KW\***, Barbera D\*, Sokoletsky M, Awwad B, Katz Y, Nelkin I<sup>†</sup>, Lampl L<sup>†</sup>, Fairhall AL<sup>†</sup>, & Priebe NJ<sup>†</sup> (2019). Multiple timescales account for adaptive responses across sensory cortices. *Journal of Neuroscience*, 39(50):10019-1003.
- Zoltowski D, **Latimer KW**, Yates JL, Huk AC, & Pillow JW (2019). Discrete stepping and nonlinear ramping dynamics underlie spiking responses of LIP neurons during decision-making. *Neuron*, 102(6):1249-1258.
- Latimer KW**, Yates JL, Meister MLR, Huk AC, & Pillow JW (2016). Response to Comment on “Single-trial dynamics of spike trains in parietal cortex reveal discrete steps during decision-making.” *Science*, 351(6280):1406.
- Latimer KW**, Yates JL, Meister MLR, Huk AC, & Pillow JW (2015). Single-trial dynamics of spike trains in parietal cortex reveal discrete steps during decision-making. *Science*, 349(6244):184-187.
- Latimer KW**, Huk AC, & Pillow JW (2015). Bayesian inference for latent stepping and ramping models of spike train data. Chapter in *Advanced State Space Methods for Neural and Clinical Data*, ed. Zhe Chen, Cambridge University Press.
- Latimer KW**, Chichilnisky EJ, Rieke F, & Pillow JW (2014). Inferring synaptic conductances from spike trains under a biophysically inspired point process model. *Advances in Neural Information Processing Systems*, 27:954-962.
- Park I, Archer E, **Latimer KW**, & Pillow JW (2013). Universal models for binary spike patterns using centered Dirichlet processes. *Advances in Neural Information Processing Systems*, 26: 2463-2471.
- Scholl B, **Latimer KW**, & Priebe NJ (2012). A retinal source of spatial contrast gain control. *Journal of Neuroscience*, 32(29):9824-30.

## **PREPRINTS:**

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Awh MP, **Latimer KW**, Zhou N, Leveroni ZM, & Jai Y (2023). Experience shapes initial exploration for non-generalizable spatial learning. *bioRxiv*.

**Latimer KW**, Huk AC, & Pillow JW (2017). No cause for pause: new analyses of ramping and stepping dynamics in LIP (Rebuttal to Response to Reply to Comment on Latimer et al. 2015). *bioRxiv*.

## **CONFERENCE PRESENTATIONS:**

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**Latimer KW** (2023). Analyzing experience-dependent behavior during learning in rats performing a maze task. Talk, 20 Years of Collaboration in Computational Neuroscience Workshop.

**Latimer KW** (2022). Tensor models for decomposing neural population activity during visual categorization. Talk, Inaugural Chicago Symposium on Computational Neuroscience.

**Latimer KW** & Freedman, DJ (2022). Encoding models for quantifying multi-area interactions on single trials during flexible categorical decisions. Poster, Society for Neuroscience annual meeting.

**Latimer KW** & Freedman, DJ (2020). Stimulus encoding in the lateral intraparietal parietal cortex during categorization depends on training history. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.

**Latimer KW** & Freedman, DJ (2019). Learning dependency of motion direction tuning in the lateral intraparietal area during a categorization task. Poster, Society for Neuroscience annual meeting.

**Latimer KW**, Sokoletsky M, Barbera D, Priebe NJ, Lampl I, & Fairhall A (2018). Multiple timescales of adaptation in mouse primary somatosensory and visual cortices. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.

Zoltowski DM, **Latimer KW**, Huk AC, & Pillow JW (2018). Extending models of latent dynamics in area LIP during perceptual decision-making. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.

**Latimer KW**, Priebe NJ, Katz Y, Li B, Lampl I, & Fairhall A (2017). Revealing shared features of adaptation in visual and somatosensory cortex within a common framework. Poster, Max Planck Florida Institute for Neuroscience, Sunposium.

**Latimer KW**, Yates JL, Huk AC, & Pillow JW (2015). Deciphering the neural representation of perceptual decisions with latent variable models. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.

- Latimer KW**, Chichilnisky EJ, Rieke F, & Pillow JW (2014). Inferring synaptic conductances from spike trains with a point process encoding model. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.
- Park I, Archer E, **Latimer KW**, & Pillow JW (2014). Scalable nonparametric models for binary spike patterns. Poster, Computational and Systems Neuroscience (COSYNE) annual meeting.
- Latimer KW**, Yates JL, Meister MLR, Huk AC, & Pillow JW (2013). Understanding perceptual decision-making in area LIP with latent variable models. Poster, University of Texas, Conference on Learning and Memory.
- Latimer KW**, Yates JL, Meister, MLR, Huk AC, & Pillow JW (2012). Analyzing perceptual decision-making in area LIP with hidden Markov models. Poster, Society for Neuroscience annual meeting.
- Latimer KW**, Yates JL, & Pillow, JW (2011). Modeling perceptual decisions in the parietal lobe with hidden Markov Models. Poster, University of Texas annual Neuroscience Symposium.
- Mingus B, Kriete T, Herd S, Wyatte D, **Latimer K**, & O'Reilly R (2011). Generalization of Figure-Ground Segmentation from Monocular to Binocular Vision in an Embodied Biological Brain Model. In Schmidhuber, J., Thorisson, K.R., Looks, M. (Eds.). *Artificial General Intelligence*. 351-356.