Kenneth W. Latimer

The University of Chicago, Department of Neurobiology latimerk@uchicago.edu
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EDUCATION:

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

RESEARCH EXPERIENCE:

Postdoctoral Fellow
University of Chicago
Advisor: David Freedman

Postdoctoral Fellow
University of Washington, Seattle
Advisor: Adrienne Fairhall

Undergraduate Research Assistant
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*

Skills:

Bayesian Statistics, Machine Learning, Time Series Analysis, Dimensionality Reduction
MATLAB, Python (PyTorch, scikit-learn, JAX), C++, CUDA

HONORS & AWARDS:

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:

TA, The University of Texas at Austin

Quantitative Methods in Neuroscience (NEU 366M) Instructor: Dr. Ila Fiete	Fall 2013
Vertebrate Neurobiology (BIO 365R) Instructor: Dr. George Pollak	Fall 2012

Summer Courses:

Summer Workshop on the Dynamic Brain Guest Lecture: Fitting statistical models to neural data with maximum likelihood methods	September 2016

SERVICE:

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:

Computation Vision Summer School	2019
Summer Workshop on the Dynamic Brain	2015

PUBLICATIONS:

$*,^{\dagger}$ 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†, Lampl L†, Fairhall AL†, & Priebe NJ† (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:

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:

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.