xaq pitkow

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POSITIONS

Baylor College of Medicine 2013–
Assistant Professor, Department of Neuroscience
Rice University 2013–
Assistant Professor, Department of Electrical and Computer Engineering

Princeton University 2015
C. V. Starr visiting faculty fellow, Princeton Neuroscience Institute

University of Rochester 2010–2013
Postdoctoral Research Scientist (advisors: Alexandre Pouget, Greg DeAngelis)
Columbia University 2007–2010
Postdoctoral Research Fellow, Center for Theoretical Neuroscience

EDUCATION

Harvard University 1999–2006
Ph.D. in Biophysics
thesis: *Optimality Principles for the Visual Code* (advisor: Markus Meister)

Princeton University 1993–1997
A.B. in Physics, magna cum laude
thesis: *how to simulate Quantum physics on a Quantum computer using a Quantum lattice gas on a nonuniformly Quantized space* (advisor: Washington Taylor IV)

PUBLICATIONS

Pitkow X, Liu S, Angelaki DE, DeAngelis GC, Pouget A (2015). How can single sensory neurons predict behavior? *Neuron* 87(2): 411–423.

Pitkow X, Meister M (2015). Neural computation in sensory systems. In *The Cognitive Neurosciences V*. Gazzaniga MS, Mangun GR, eds., MIT Press.

Moreno-Bote R, Beck J, Kanitscheider I, **Pitkow X**, Latham P, Pouget A. Information-limiting correlations (2014). *Nat Neuroscience* 17(10):1410–17.

Pitkow X (2012). Compressive neural representation of sparse, high-dimensional probabilities. *Advances in Neural Information Processing Systems*.

Beck J, Ma WJ, **Pitkow X**, Latham P, Pouget A (2012). Not noisy, just wrong: the role of suboptimal inference in behavioral variability. *Neuron* 74(1): 30–9.

Pitkow X, Meister M (2012). Decorrelation and efficient coding in retinal ganglion cells. *Nature Neuroscience.* 15(4): 628–35.

Pitkow X (2011). What is an image? In Elkins J, Naef M (Eds.) *What Is an Image?* Penn State University Press.

Pitkow X, Ahmadian Y, Miller KD (2011). Learning unbelievable probabilities. *Advances in Neural Information Processing Systems.*

Pitkow X (2010). Exact feature probabilities in images with occlusion. *Journal of Vision* 10(14): 42.

Pitkow X, Sompolinsky H, Meister M (2007). Visual acuity in the presence of fixational eye movements. *PLoS Biology*, 5(12): e331.

Funding

IARPA MICrONS, Reverse engineering the neocortex. Co-PI (with Tolias). Key personnel include Baraniuk, Bethge, Patel, Paninsky, Allen Institute, Seung, Siapas, Urtasun, Xu, Zemel. 2016–2021

NIH BRAIN U01, Dynamic network computations for foraging in an uncertain environment. Co-PI (with Angelaki, Dragoi, Schrater). 2016–2019.

NIH R01 DC014589, Brain networks of noun generation. Co-I (PI: Tandon). 2016–2021

NIH R01 DC004260, Neural mechanism of vestibular function. Co-I (PI: Angelaki). 2015–2020

NIH R21 DC014518-01, Cortical feedback to the vestibular brainstem. Co-PI (with Angelaki). 2015–2017

Simons Collaboration on the Global Brain Research Award. Dynamic neural computations for foraging. Co-PI (with Angelaki). 2014–2017

NSF BRAIN EAGER. Flashes of insight: Revealing dynamic mental models during rodent virtual reality foraging. Co-PI (with Angelaki). 2014–2016

McNair Foundation grant. 2013–2017

Honors

McNair Scholar 2013–present
Sloan-Swartz Fellowship in Theoretical Neurobiology 2007–2009
National Science Foundation Fellowship in Biophysics 1998–2001
Allen G. Shenstone Prize (Princeton Physics Thesis Prize) 1997

Refereeing

Journals: Neuron, Nature Neuroscience, PLoS Computational Biology, Frontiers in Computational Neuroscience, Neurocomputing, Journal of Neurophysiology, Cerebral Cortex, Journal of Computational Neuroscience, Vision Research; *Conferences*: Computational and Systems Neuroscience, Neural Information Processing Systems

Teaching

co-Instructor, Rice University	
Theoretical Neuroscience: Networks and Learning	2014–2015
Guest lecturer, Rice University	
Introduction to Neuroscience	2014–2015
Guest lecturer, Baylor College of Medicine	
Systems Neuroscience	2014
Guest lecturer, University of Rochester	
Learning and Plasticity	2012
Intro to Computational Neuroscience	2011
Organizer, University of Rochester	
Computational Neuroscience reading group	2011–2012
Guest lecturer, Columbia University	
Computational Methods in Neuroscience	2008–2010
Teaching Fellow, Harvard University	
Computational Neuroscience	2003
Function of Neural Circuits	2002
Introduction to Molecular Biology	2001
Complex Analysis	2000

Outreach

Roberts Elementary School, Houston	2014–2015
University of Texas at Austin, Art Department	2007–2014
Mott Hall 7th grade mentor, Harlem, New York City	2007–2009
Art Institute of Austin	2009–2010
School of the Museum of Fine Arts, Boston	2006