# BING WEN BRUNTON

Professor of Biology
University of Washington, Seattle

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## RESEARCH INTERESTS

- Sparse sensing and control in biological and engineered systems
- Quantifying natural behaviors
- Data-driven learning of dynamical systems
- Neural decoding and brain-computer interfaces

## EDUCATION

**Princeton University** — Princeton, NJ
Ph.D. in Molecular Biology & Neuroscience, 2012

**California Institute of Technology (Caltech)** — Pasadena, CA
B.S. in Biology, with Honors, 2006

## ACADEMIC POSITIONS

**University of Washington (UW)** — Seattle, WA

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| ▷ Professor, Richard and Joan Komen University Chair, Department of Biology | 2023–present |
| Data Science Fellow, eScience Institute | 2014–present |
| Adjunct Faculty, Paul G. Allen School of Computer Science & Eng. | 2016–present |
| Adjunct Faculty, Department of Applied Mathematics | 2017–present |
| Faculty of Graduate Program in Neuroscience | 2015–present |

**California Institute of Technology (Caltech)** — Pasadena, CA

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| ▷ Moore Distinguished Scholar in Biology and Biological Engineering | 2021–2022 |

**University of Washington (UW)** — Seattle, WA

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| ▷ Associate Professor, Department of Biology | 2019–2023 |
| H. Stewart Parker Endowed Faculty Fellow | 2020–2023 |
| ▷ Washington Research Foundation Innovation Assistant Professor, Dept. of Biology | 2014–2019 |
| ▷ Postdoctoral Researcher, Applied Math. and Neural Engineering | 2012–2014 |

## AWARDS AND HONORS

Richard and Joan Komen University Chair (2023)
Co-Chair of Program Committee for Comp & Sys Neuroscience Conference (Cosyne, 2023–24)
H. Stewart Parker Endowed Faculty Fellowship (2020–23)
Caltech, Moore Distinguished Scholar (2021–22)
Weill Neurohub Investigator (2020)
Air Force Office of Scientific Research Young Investigator Program (YIP) Award (2018–21)
University of Washington Innovation Award (2017–19)
Alfred P. Sloan Research Fellowship (2016–18)
Washington Research Foundation Innovation Professor of Neuroengineering (2014–19)
NSF Graduate Research Fellowship Honorable Mention (2007, 2008)
Caltech, Richter Research Fellowship (2005)
Caltech, McKinney Prize in Literature (2005)
Caltech Summer Undergraduate Research Fellowship (2003, 2004)
International Science and Engineering Fair (ISEF) Finalist (2002)
Intel Science Talent Search Semifinalist (2002)

## PUBLICATIONS

For a complete list of publications, including preprints, see also B. W. Brunton's Google Scholar profile at `https://scholar.google.com/citations?user=UftAYPkAAAAJ&hl=en`.

† co-first authors who contributed equally to the manuscript
‡ co-senior authors who jointly directed the work

### ▶ PEER-REVIEWED PUBLICATIONS:

**2023** Singh, S.H., van Breugel, F., Rao, R. P. N. & **Brunton, B. W.**
Emergent behavior and neural dynamics in artificial agents tracking turbulent plumes.
*Nature Machine Intelligence (2023), 5 (1), 58-70.*

Stanchak, K. E., Miller, K. E., Shikiar, D., **Brunton, B. W.**, & Perkel, D. J.
Mechanistic hypotheses for proprioceptive sensing within the avian lumbosacral spinal cord.
*Integrative and Comparative Biology (2023), icad052.*

Boyaclu, B., Schwarze, A.C., **Brunton, B.W.** & Morgansen, K.A.
Neural-inspired measurement observability.
*Journal of Guidance, Control, and Dynamics (2023): 1-12.*

Hickner, M., Fasel, U., Nair, A.G., **Brunton, B.W.** & Brunton, S.L.
Data-driven unsteady aeroelastic modeling for control.
*AIAAJ (2023), Vol. 61, No. 2, pp. 780-792.*

Sun, J.J.†, Karashchuk, P.†, Dravid, A.†, Ryou, S., Fereidooni, S., Tuthill, J., Katsaggelos, A., **Brunton, B.W.**, Gkioxari, G., Kennedy, A., Yue, Y., Perona, P.
BKinD-3D: Self-Supervised 3D Keypoint Discovery from Multi-View Videos.
*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition CVPR (pp. 9001-9010).*

Weber, A., Babaei, M., Mamo, A, **Brunton, B.W.**, Daniel, T.D. & Bergbreiter, S.
Nonuniform structural properties of wings confer sensing advantages.
*Journal of the Royal Society Interface 20 (200), 20220765.*

**2022** Peterson, S. M., Rao, R. P. N. & **Brunton, B. W.**
Learning neural decoders without labels using multiple data streams.
*Journal of Neural Engineering (2022), 19: 046032*.

Stanchak, K.E., Miller, K.E., Lumsden, E.W., Shikiar, D., Davis, C., **Brunton, B. W.** & Perkel, D. J.
Molecular markers of mechanosensation in glycinergic neurons in the avian lumbosacral spinal cord.
*eNeuro (2022), 9 (5) ENEURO.0100-22.2022.*

Pandey, B., Pachitariu, M., **Brunton, B. W.** & Harris, K.D.
Structured random receptive fields enable informative sensory encodings.
*PLoS Computational Biology (2022), 18 (10), e1010484*.

Tabuena, D. R., Huynh, R., Metcalf, J., Richner, T., Stroh, A., **Brunton, B. W.**, Moody, W.J. & Easton, C.R.
Large-scale waves of activity in the neonatal mouse brain in vivo occur almost exclusively during sleep cycles.
*Developmental Neurobiology (2022), 82 (7-8), 596-612.*

Peterson, S. M., Singh, S. H., Dichter, B., Scheid, M., Rao, R. P. N. & **Brunton, B. W.**

AJILE12: Long-term naturalistic human intracranial neural recordings and pose.
*Scientific Data (2022), 9 (1), 1–10*.

't Hart, B.M., et al., including **Brunton, B.W.** among 160 co-authors.
Neuromatch Academy: a 3-week, online summer school in computational neuroscience.
*Journal of Open Source Education (2022), 5 (49)*.

Fasel, U., Kutz, J. N., **Brunton, B. W.** & Brunton, S. L.
Ensemble-SINDy: Robust sparse model discovery in the low-data, high-noise limit, with active learning and control.
*Proc. R. Soc. A. (2022) 478: 20210904*.

Van Breugel, F., Liu, Y., **Brunton, B.W.**, & Kutz, J.N.
PyNumDiff: A Python package for numerical differentiation of noisy time-series data
*Journal of Open Source Software (2022), 7(69), 4078. https://doi.org/10.21105/joss.04078*.

**2021** Linden, N. J., Tabuena, D. R., Steinmetz, N. A., Moody, W. J., Brunton, S. L. & **Brunton, B. W.**
Go with the FLOW: Visualizing spatiotemporal dynamics in optical widefield calcium imaging.
*Journal of the Royal Society Interface (2021), 18: 20210523*.

Hirsh, S. M., Ichinaga, S. M., Brunton, S. L., Kutz, J. N. & **Brunton, B. W.**
Structured time-delay models for dynamical systems with connections to Frenet-Serret frame.
*Proceedings Royal Society A. (2021)*.

Karashchuk, P., Rupp, K. L., Dickinson, E. S., Sanders, E., Azim, E., **Brunton, B. W.**[‡] & Tuthill, J. C.[‡]
Anipose: a toolkit for robust markerless 3D pose estimation.
*Cell Reports (2021), 36 (13), 109730*.

Deora, T., Ahmed, M. A., **Brunton, B. W.** & Daniel, T. L.
Learning to feed in the dark: how light level influences feeding in the hawkmoth *Manduca sexta*.
*Biology Letters (2021), 17 (9), 20210320.*

Nair, A. G., Taira, K. **Brunton, B. W.,** & Brunton, S. L.
Phase-based control of periodic flows.
*Journal of Fluid Mechanics (2021), 927, A30. doi:10.1017/jfm.2021.735*.

Harris, K. D., Aravkin, A., Rao, R. P. N. & **Brunton, B. W.**
Time-varying autoregression with low rank tensors.
*SIAM Journal on Dynamical Systems (2021), 20 (4), 2335-2358*

Weber, A. I., Daniel, T. L. & **Brunton, B. W.**
Wing structure and neural encoding jointly determine sensing strategies in insect flight.
*PLoS Computational Biology (2021), 17 (8), e1009195.*

Aiello, B. R.[†], Stanchak, K. E.[†], Weber, A. I.[†], Deora, T., Sponberg, S. & **Brunton, B. W.**
Spatial distribution of wing mechanosensors: Form, function, and phylogeny.
*Current Opinion in Insect Science (2021), https://doi.org/10.1016/j.cois.2021.06.002.*

Peterson, S. M.[†], Singh, S. H.[†], Wang, N. X. R., Rao, R. P. N. & **Brunton, B. W.**
Behavioral and neural variability of naturalistic arm movements.
*eNeuro (2021), 0007-21.2021; DOI: https://doi.org/10.1523/ENEURO.0007-21.2021*.

Singh, S. H., Peterson, S. M., Rao, R. P. N. & **Brunton, B. W.**

Mining naturalistic human behaviors in long-term video and neural recordings.
*Journal of Neuroscience Methods (2021), https://doi.org/10.1016/j.jneumeth.2021.109199.*

Dallmann, C. J.[†], Karashchuk, P.,[†] **Brunton, B. W.**[‡] & Tuthill, J. C.[‡]
A leg to stand on: computational models of proprioception.
*Current Opinion in Physiology (2021), https://doi.org/10.1016/j.cophys.2021.03.001.*

Deora, T., Ahmed, M. A., Daniel, T. L., & **Brunton, B. W.**
Tactile active sensing in insect-plant pollination.
*Journal of Experimental Biology (2021), 224 no. 4, jeb239442.*

de Silva, B. M., Manohar, K., Clark, E., **Brunton, B. W.,** Brunton, S. L. & Kutz, J. N.
PySensors: A Python package for sparse sensor placement.
*Journal of Open Source Software (2021), 6(58), 2828.*

Callaham, J. L., Kutz, J. N., **Brunton, B. W.,** & Brunton, S. L.
Learning dominant physical processes with data-driven balance models.
*Nature Communications (2021), 12 (1), 1-10*

Fasel, U., Kaiser, E., Kutz, J. N., **Brunton, B. W.** & Brunton, S. L.
SINDy with Control: A Tutorial.
*60th IEEE Conference on Decision and Control (CDC 2021)*

Azadian, E., Velchuru, G., Wang, N. X. R., Peterson, S. M., Staneva, V. & **Brunton, B. W.**
Decoding happiness from neural and video recordings for better insight into emotional processing in the brain.
*IEEE Engineering in Medicine and Biology Conference (EMBC 2021).*

Peterson, S. M., Steine-Hanson, Z., Davis, N., Rao, R. P. N. & **Brunton, B. W.**
Generalized neural decoders for transfer learning across participants and recording modalities.
*Journal of Neural Engineering (2021), 18, 026014.*

**2020** Stanchak, K. E., French, C., Perkel D. J.[‡], & **Brunton, B. W.**[‡]
The balance hypothesis for the avian lumbosacral organ and an exploration of its morphological variation.
*Integrative Organismal Biology (2020), obaa024.*

van Breugel, F., Kutz, J. N., & **Brunton, B. W.**
Numerical differentiation of noisy data: A unifying multi-objective optimization framework.
*IEEE Access (2020), 8, 196865 - 196877.*

Stepaniants, G., **Brunton, B. W.** & Kutz, J. N.
Inferring causal networks of dynamical systems through transient dynamics and perturbation.
*Physical Review E (2020), 102 (4), 042309.*

Hirsh, S. M., Harris, K. D., Kutz, J. N. & **Brunton, B. W.**
Centering data improves the Dynamic Mode Decomposition.
*SIAM Journal on Dynamical Systems (2020) 19 (3), 1920-1955.*

Hirsh, S.M., **Brunton, B. W.**, & Kutz, J. N.
Data-driven spatiotemporal modal decomposition for time frequency analysis.
*Applied and Computational Harmonic Analysis (2020), 49 (3), 771-790.*

Nair, A. G., Strom, B., **Brunton, B. W.,** & Brunton, S. L.
Phase-consistent dynamic mode decomposition from multiple overlapping spatial domains.
*Physical Review Fluids (2020), 5 (7), 074702.*

Caldwell, D. J., Cronin, J. A., Rao, R. P. N., Collins, K. L., Weaver, K. E., Ko, A. K., Ojemann, J. G., Kutz, J. N. & **Brunton, B. W.**
Signal recovery from stimulation artifacts in intracranial recordings with dictionary learning.
*Journal of Neural Engineering (2020), 17 (2), 026023.*

Azadian, E., Velchuru, G., Wang, N. X. R., Peterson, S. M., Staneva, V. & **Brunton, B. W.**
Decoding happiness from neural and video recordings.
*NeurIPS 2020, workshop on Learning Meaningful Representations of Life*.

**2019** **Brunton, B. W.** & Beyeler, M.
Data-driven models for human neuroscience and neuroengineering.
*Current Opin Neurobiol (2019), 58, 21-29.*

Kunert-Graf, J. M., Eschenburg, K. M., Galas, D. J., Kutz, J. N., Rane, W. D., & **Brunton, B. W.**
Extracting reproducible time-resolved resting state networks using dynamic mode decomposition.
*Frontiers in Comp. Neurosci. (2019).*

Curtu, R., Wang, X., **Brunton, B. W.** & Nourski, K.
Neural signatures of auditory perceptual bistability revealed by large-scale human intracranial recordings.
*J. Neurosci (2019).*

**2018** Mohren, T. L., Daniel, T. L., Brunton, S. L., **Brunton, B. W.**
Neural-inspired sensors enable sparse, efficient classification of spatiotemporal data.
*Proc Natl Acad Sci U.S.A (2018) 115 (42) 10564-10569*.
* Featured in a Commentary by Hale, M, *PNAS (2018) 115 (42) 10545-10547.*

Manohar, K., **Brunton, B. W.**, Kutz, J. N. & Brunton, S. L.
Data-Driven Sparse Sensor Placement for Reconstruction: Demonstrating the Benefits of Exploiting Known Patterns.
*IEEE Control Systems Magazine (2018) 38 (3), 63–86.*

Wang, N. X. R., Farhadi, A., Rao, R. P. N. & **Brunton, B. W.**
AJILE movement prediction: Multimodal deep learning for natural human neural recordings and video.
*Proceedings of AAAI Conference (2018).*

Kaiser, E., Morzynski, M., Daviller, G., Kutz, J. N., **Brunton, B. W.** & Brunton, S. L.
Sparsity enabled cluster reduced-order models for control.
*Journal of Computational Physics (2018) 352, 388–409*.

**2017** Brunton, S. L., **Brunton, B. W.**, Proctor, J. L., Kaiser, E. & Kutz, J. N.
Chaos as an intermittently forced linear system.
*Nature Communications (2017) 8*.

**2016** **Brunton, B. W.**, Brunton, S. L., Proctor, J. L. & Kutz, J. N.
Sparse sensor placement optimization for classification.
*SIAM Journal on Applied Mathematics (2016) 76 (5), 2099-2122*.

Wang, N. X. R., Olson, J. D., Ojemann, J. G., Rao, R. P. N. & **Brunton, B. W.**
Unsupervised decoding of long-term, naturalistic human neural recordings with automated video and audio annotations.
*Frontiers in Human Neuroscience (2016) 10, 165*.

Wu, J., Shuman, B. R., **Brunton, B. W.**, Steele, K. M., Olson, J. D., Rao, R. P. N. & Ojemann, J. G.
Multistep model for predicting upper-Limb 3D isometric force application from pre-movement electrocorticographic features.
*IEEE Engineering in Medicine and Biology Society Conference (EMBC 2016)*.

Brunton, S. L., **Brunton, B. W.**, Proctor, J. L. & Kutz, J. N.
Koopman observable subspaces and finite linear representations of nonlinear dynamical systems for control.
*PLoS ONE (2016) 11(2): e0150171*.

**Brunton, B. W.**, Johnson, L. A., Ojemann, J. G. & Kutz, J. N.
Extracting spatial-temporal coherent patterns in large-scale neural recordings using dynamic mode decomposition.
*J Neuroscience Methods (2016) 258, 1–15*.

**2015** Kopec, C. D., Erlich, J. C., **Brunton, B. W.**, Deisseroth, K. & Brody, C. D.
Cortical and subcortical contributions to short-term memory for orienting movements.
*Neuron (2015) 88 (2), 367–377*.

Erlich, J. C., **Brunton, B. W.**, Duan, C. A., Hanks, T. D., & Brody, C. D.
Distinct behavioral effects of prefrontal and parietal cortex inactivations on an accumulation of evidence task in the rat.
*eLife (2015) 4:e05457*.

Hanks, T., Kopec, C. D., **Brunton, B. W.**, Duan, C. A., Erlich, J. C. & Brody, C. D.
Distinct relationships of parietal and prefrontal cortices to evidence accumulation.
*Nature (2015) 520, 220–223*.

**2014** Proctor, J. L., Brunton, S. L., **Brunton, B. W.** & Kutz, J. N.
Exploiting sparsity and equation-free architecture in complex systems.
*European Physical Journal Special Topics (2014) 223, 1–20*.

**2013** **Brunton, B. W.**, Botvinick, M. M. & Brody, C. D.
Rats and humans can optimally accumulate evidence for decision-making.
*Science (2013) 340:95–98*.
* Featured in News & Views by Kauffman, M. T. & Churchland, A. K, *Nature (2013) 496:172–173.*

Granstedt, A. E., **Brunton, B. W**. & Enquist, L. W.
Imaging the transport dynamics of single alphaherpesvirus particles in intact peripheral nervous system explants from infected mice.
*mBio (2013) 4:e00358*.

Kubanek, J., Snyder, L. H., **Brunton, B. W.**, Brody, C. D. & Schalk, G.
A low-frequency oscillatory neural signal in humans encodes a developing decision variable.
*NeuroImage (2013) 83:795–808*.

**2008** Huang, K. C., Mukhopadhyay, R., **Wen, B.**, Gitai, Z. & Wingreen, N. S.
Cell shape and cell-wall organization in Gram-negative bacteria.

*Proc Natl Acad Sci U.S.A. (2008) 105:19282–19287.*

## ▶ Additional Publications:

van Breugel, F. & **Brunton, B. W.**
Flies catch wind of where smells come from.
*Nature (2022). https://doi.org/10.1038/d41586-022-03561-3*

Karashchuk, P., Tuthill, J. C. & **Brunton, B. W.**
The DANNCE of the rats: a new toolkit for 3D tracking of animal behavior.
*Nat Methods (2021). https://doi.org/10.1038/s41592-021-01110-w*

Kutz, J. N, Brunton, S. L., **Brunton, B. W.**, & Proctor, J. L.
Dynamic Mode Decomposition: Data-Driven Modeling of Complex Systems.
*Society for Industrial and Applied Mathematics (2016) ISBN: 9781611974492.*

## ▶ Preprints and Submitted Manuscripts:

**2023** Stanchak, K. E., Deora, T., Weber, A. I., Hickner, M. K., Moalin, A., Abdalla, L., Daniel, T. L. & **Brunton, B. W.**
Intraspecific variation in the placement of campaniform sensilla on the wings of the hawkmoth Manduca sexta.
*preprint https://doi.org/10.1101/2023.06.26.546554*

Bashford, L., Rosenthal, I.A., Kellis, S., Bjanes, D., Pejsa, K., **Brunton, B. W.**, Andersen, R.
Neural subspaces of imagined movements in parietal cortex remain stable over several years in humans.
*preprint bioRxiv, 2023.07.05.547767*

Jacobs, M., **Brunton, B. W.**, Brunton, S.L., Kutz, J.N. & Raut, R.V.
HyperSINDy: Deep Generative Modeling of Nonlinear Stochastic Governing Equations.
*arXiv preprint arXiv:2310.04832.*

**2022** Talukder, S., Sun, J.J., Leonard, M., **Brunton, B.W.** & Yue, Y.
Deep Neural Imputation: A framework for recovering incomplete brain recordings.
*arXiv preprint arXiv:2206.08094.*

Schwarze, A. C., Ichinaga, S. M., & **Brunton, B. W.**
Network inference via process motifs for lagged correlation in linear stochastic processes.
*arXiv preprint arXiv:2208.08871.*

Kahan, A., Coughlin, G., Borsos, M., **Brunton, B. W.** & Gradinaru, V.
Estrous cycle and egg release resets with light entrainment inspired by neurodynamics in the circadian pacemaker.
*preprint https://doi.org/10.21203/rs.3.rs-2069847/v1*

## Research Support

**DOD/AFOSR**, 09/01/2019–08/31/2024, $7.5M
**PI: B. W. Brunton**
Co-PIs: S. E. Bergbreiter, S. L. Brunton, T. L. Daniel, J. N. Kutz, J. P. How
*MURI: Neural inspired sparse sensing and control for agile flight*

**DARPA**, 04/01/2023–03/31/2025, $10M
PI: A. Widge (U Minnesota),
Role: Co-PI B. W. Brunton ($800K to UW)
*Fast, Reliable, Electrical Unconscious Detection (FREUD)*

**NIH/NINDS**, 08/01/2023–07/31/2026, $270K
PI: C. Bergstrom
Role: Co-I B. W. Brunton
*Developing user-centric training in rigorous research: post-selection inference, publication bias, and critical evaluation of statistical claims*

**NSF**, 09/01/2023–08/31/2027, $2M
PI: F. van Breugel (U Nevada)
Role: Co-I B. W. Brunton
*EFRI BRAID: Resilient autonomous navigation inspired by the insect central complex and sensorimotor control motifs*

### ▶ Completed Research Support, Selected

**DOD/AFOSR**, 1/29/2018–1/28/2021, $445K
**PI: B. W. Brunton**
*Sparse sensing with wing mechanosensory neurons for estimation of body rotation in flying insects*

**Burroughs-Wellcome Fund**, 10/15/2018–10/14/2020, $150K
**PI: B. W. Brunton**, Co-PI: B. Kerr
*Transforming biology graduate training through quantitative experimental dialectics (QED)*

**NSF**, 9/1/2016–8/31/2021, $899K
**PI: B. W. Brunton**, Co-PI: R. P. N. Rao
*NCS-FO: Understanding neural processing in long-term, naturalistic human brain recordings using data-intensive approaches*

**DOD/DARPA**, 11/16/2017–11/15/2020, $527K
**PI: B. W. Brunton**, Co-PI: R. P. N. Rao
*Multimodal neural decoding: Data-intensive approaches to understanding long-term, unlabeled human brain data*

**DOD/AFRL**, 1/4/2016–1/3/2020, $395K
**PI: B. W. Brunton**, Co-PI: S. L. Brunton
*Integrating compressive sensing and classification for dynamic target tracking*

**NSF, CRCNS**, 9/1/2015–8/31/2019, $519K total with $145K to UW
PI: R. Curtu, Co-PIs: B. W. Brunton and K Nourski
*Collaborative Research: Dynamic models of human auditory perceptual switching informed by large-scale ECoG recordings*

## Invited Talks and Presentations † **denotes keynote and plenary talks**

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| 2023 Oct. | † Antenna Measurements Techniques Association Symposium (Renton WA) |
| 2023 Oct. | Massachusetts Institute of Technology, Open Data in Neurophysiology Symposium (Cambridge MA) |
| 2023 Oct. | Columbia University, Theoretical Neuroscience Center (New York NY) |
| 2023 Sept. | Janelia Research Campus, Workshop on Simulated Bodies (Ashburn VA) |
| 2023 Sept. | Physics Review journal editors, Biophysics seminar (virtual) |
| 2023 Aug. | Gordon Research Conference on Neuroethology: Behavior, Evolution and Neurobiology (Mt Snow VT) |
| 2023 Aug. | NeuroHackademy 2023, Lecturer (Seattle, WA) |

2023 July Centre International des Sciences Mecaniques (CISM), Advanced School on Machine Learning for Fluid Mechanics (Udine, Italy)
2023 July Cold Spring Harbor Laboratory, NeuroAI seminar (Cold Spring Harbor NY, remote)
2023 July Telluride Neuromorphic Cognition Engineering Workshop (Telluride CO, remote)
2023 July Imperial College London, Bioengineering (London, UK)
2023 May University of Sydney, Systems Neuroscience and Complexity (SNAC) Seminar (Sydney, Australia, remote)
2023 Mar. Computational and Systems Neuroscience (COSYNE), Workshop on A wrinkle in time: Neuroscience at multiple timescales (Mt. Tremblant, Canada)
2023 Mar. COSYNE Workshop on Taming Complexity: Discovering Interpretable Latent Spaces in Human Brains and Behaviors (Mt. Tremblant, Canada)
2023 Feb. Stanford University, Center for Mind, Brain, Computation and Technology (MBCT) seminar (Palo Alto CA)
2023 Feb. Harvard University, Center for Brain Science seminar (Cambridge MA)
2023 Jan. Salk Institute for Biological Sciences (La Jolla CA)
2022 Nov. Society for Neuroscience (SFN) minisymposium, Advances in behavioral quantification to understand the brain (San Diego CA)
2022 Nov. Society for Neuroscience (SFN) minisymposium, Dynamic communication between regions (San Diego CA)
2022 Nov. † Janelia Research Campus, Junior Scientist Workshop on Mechanistic Cognitive Neuroscience (Ashburn VA)
2022 Nov. University of California, Berkeley, Helen Wills Neuroscience Institute, Neuroscience Student Invited Speaker Series (Berkeley CA)
2022 Oct. University of Washington, Graduate Program in Neuroscience (Seattle WA)
2022 Oct. University of Washington, Department of Biology (Seattle WA)
2022 Oct. Short Course on the Application of Machine Learning for Automated Quantification of Behavior, Lecturer (Bar Harbor ME, remote)
2022 Sept. NeuroAI in Seattle Conference (Seattle WA)
2022 Sept. † Bernstein Conference for Computational Neuroscience (Berlin, Germany)
2022 Aug. Banff International Research Station, Casa Matematica Oaxaca, workshop on $M^5$ - Mathematics of Multiphase, Multiscale, Mutiphysics Models (Oaxaca, Mexico, remote)
2022 July NeuroHackademy 2022, Lecturer (Seattle, WA)
2022 June BRAIN Initiative PI Meeting, Symposium on Behavioral quantification: from tracking to understanding (Bethesda MD, remote)
2022 June Cajal Summer Course, Quantitative Approaches to Behaviour (Lisbon, Portugal)
2022 Apr. University of Zurich, Institute of Neuroinformatics Seminar (Zurich, Switzerland, remote)
2022 Apr. Caltech, Chen Institute Women in Neuroscience (Pasadena CA)
2022 Apr. Ernst Strangmann Inst (ESI) for Neuroscience and Max Planck Society (Frankfurt am Main, Germany, remote)
2022 Apr. Flatiron Institute, Center for Computational Neuroscience (New York NY)
2022 Mar. Weill Neurohub annual leadership meeting (Seattle WA)
2022 Mar. Computational and Systems Neuroscience (COSYNE), Workshop on Why is everything everywhere? (Lisbon, Portugal)
2022 Mar. Computational and Systems Neuroscience (COSYNE), Workshop on Understanding Variability (Lisbon, Portugal)
2022 Feb. Charit Universittsmedizin Berlin, Movement Disorder and Neuromodulation Unit (Berlin, Germany, remote)
2022 Feb. University of California, Santa Barbara (UCSB), Dept of Biomedical Engineering Seminar (Santa Barbara CA)
2022 Feb. † University of California, Santa Barbara (UCSB), Summit on Mind and Machine Intelligence (Santa Barbara, CA)
2022 Jan. Cincinnati Children's Hospital, Biomedical Informatics Seminar (Cincinnati OH, remote)
2022 Jan. University of California, San Diego (UCSD), Neuroscience Seminar (San Diego CA, remote)

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| 2021 Nov. | Montreal Artificial Intelligence and Neuroscience (Montreal, Canada, remote) |
| 2021 Aug. | New York University Langone Health, symposium on FAIR Thee Well: The language and tools for sharing neurophysiological data (New York NY, remote) |
| 2021 May | Air Force Headquarters, Biotechnology Lunch (Arlington VA, remote) |
| 2021 May | Janelia Research Campus, Computation & Theory Seminar (Ashburn VA, remote) |
| 2021 Mar. | † Interdisciplinary College (IK), Evening Lecture (Mahnesee-Günne, Germany, remote) |
| 2021 Mar. | Allen Institute for Brain Science, online symposium on Open for (neuro)science |
| 2020 Nov. | Johns Hopkins University, Zanvyl Krieger Mind/Brain Institute, David Bodian Seminar (Baltimore MD, remote) |
| 2020 Oct. | University of Chicago, Neuroscience Seminar (Chicago IL, remote) |
| 2020 Oct. | Columbia University, Center for Theoretical Neuroscience Seminar (New York NY, remote) |
| 2020 Oct. | University of Virginia, Quantitative Psychology Colloquium (Charlottesvilla VA, remote) |
| 2020 Sept. | University of Pennsylvania, Mahoney Institute for Neurosciences Colloquium (Philadelphia PA, remote) |
| 2019 Nov. | Georgia Institute of Technology, Department of Biomedical Eng. (Atlanta GA) |
| 2019 Nov. | University of Washington, Machine Learning Colloquium (Seattle WA) |
| 2019 Nov. | Institute for Pure and Applied Mathematics (IPAM) at UCLA, Workshop on Machine Learning for Physics and the Physic of Machine Learning (Los Angeles CA) |
| 2019 Oct. | University of Southern California, Department Aerospace and Mechanical Engineering (Los Angeles CA) |
| 2019 Sept. | University of Washington, Graduate Program in Neuroscience Retreat (Seattle WA) |
| 2019 Sept. | Harvard University, QBio Workshop on Making Sense of Turbulence (Cambridge MA) |
| 2019 July | Sainsbury Wellcome Centre (London, UK) |
| 2019 July | Telluride Neuromorphic Cognition Engineering Workshop (Telluride CO) |
| 2019 June | Workshop on Multisensory Integration in Insect Flight Dynamics (Bangalore, India) |
| 2019 May. | The Copenhagen Initiative Workshop: Developing a theory on how brains work (Copenhagen, Denmark) |
| 2019 Feb. | Georgia Institute of Technology, School of Life Sciences (Atlanta GA) |
| 2019 Jan. | † Dynamics Days, International Conference on Nonlinear Dynamics (Evanston IL) |
| 2018 Oct. | Eglin Air Force Base (Destin FL) |
| 2018 May | University of Washington Center for Integrative Neuroscience Spring Symposium (Seattle WA) |
| 2018 May | Boeing Data Science Executive Workshop (Washington DC) |
| 2018 May | American Psychiatric Association Annual Meeting, session on Big Data in Mental Health (New York NY) |
| 2018 Mar. | University of Oregon, Institute of Neuroscience (Eugene OR) |
| 2018 Mar. | American Physical Society (APS) March Meeting, focus session on Neural Control of Behavior (Los Angeles CA) |
| 2018 Mar. | Computational and Systems Neuroscience (COSYNE), Workshop on Recent Computational Advances in Neuroengineering: From Theory to Applications (Breckenridge CO) |
| 2018 Jan. | Boeing Data Science Executive Workshop (Seattle WA) |
| 2017 Dec. | Neural Information Processing Systems (NIPS) Conference Workshop: Big Neuro (Long Beach CA) |
| 2017 Nov. | École Normale Superieure, Center for Neural Theory (Paris, France) |
| 2017 Oct. | University of California Los Angeles (UCLA), Dept. of Mathematics, Applied Math Colloquium (Los Angles CA) |
| 2017 Aug. | Workshop on Data-Driven Methods for Multi-Scale Physics and Complex Systems (Rome, Italy) |
| 2017 July | Johns Hopkins University, Dept. of Psychology (Baltimore MD) |
| 2017 July | Naval Surface Warfare Center, Carderock Division (Bethesda MD) |
| 2017 July | 8th Bio-inspired Unmanned Autonomous Systems (BioUAS) State Of the Art Review (Oxford, UK) |
| 2017 June | University of Washington Database (UWDB) Affiliates Workshop (Seattle WA) |

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| 2017 May | Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems (Snow Bird UT) |
| 2017 Jan. | Workshop on Data-Driven Methods for Reduced-Order Modeling and Stochastic Partial Differential Equations, Banff International Research Station (Banff Alberta, Canada) |
| 2017 Jan. | Frontiers of Science and Engineering (Seattle WA) |
| 2016 Nov. | University of Washington, Graduate Program in Neuroscience Seminar (Seattle WA) |
| 2016 Nov. | Society for Mathematical Psychology and Psychonomics, Workshop on Rethinking Biological Plausibility (Boston MA) |
| 2016 Nov. | Harvard University, Center for Brain Science (Cambridge MA) |
| 2016 Oct. | University of Washington Institute for Neuroengineering Seminar (Seattle WA) |
| 2016 Oct. | † BrainKDD: The 3nd International Workshop on Data Mining and Visualization for Brain Science (Seattle WA) |
| 2016 July | University of Maryland, Brain and Behavior Initiative Seminar (College Park MD) |
| 2016 June | NeuroFutures Conference (Seattle WA) |
| 2016 April | Institute for Disease Modeling Annual Symposium (Bellevue WA) |
| 2016 April | Society for Industrial and Applied Mathematics (SIAM) Conference on Uncertainty Quantification (Lausanne, Switzerland) |
| 2016 Mar. | DARPA/ISAT Workshop on Bio-Integrated Processing, Sensing, and Storage (Seattle WA) |
| 2016 Feb. | Computational and Systems Neuroscience (COSYNE), Workshop on Dimensionality Reduction in High-Dimensional Neural Datasets (Snowbird UT) |
| 2016 Feb. | University of Washington, Neuroengineering and Computational Neuroscience Connection (Seattle WA) |
| 2016 Feb. | University of Washington, Behavioral Neuroscience Research Seminar (Seattle WA) |
| 2016 Jan. | Workshop on Neuromechanics & Dynamics of Locomotion (New Orleans LA) |
| 2015 Dec. | DARPA/ISAT Workshop on Making-Sense (Washington DC) |
| 2015 Oct. | Columbia University, Center for Theoretical Neuroscience (NYC NY) |
| 2015 Oct. | New York University, Center for Data Science (NYC NY) |
| 2015 Oct. | University of Washington, Dept. of Electrical Engineering Colloquium (Seattle WA) |
| 2015 Oct. | † Moore-Sloan Data Science Environment Annual Summit (Suncadia WA) |
| 2015 May | Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems (Snow Bird UT) |
| 2014 Dec. | University of Washington, Department of Statistics Seminar (Seattle WA) |
| 2014 Nov. | New Perspectives on Neuroengineering and Neurotechnologies, DFG-NSF Research Conference (Washington DC) |
| 2014 Aug. | University of Iowa, Department of Neurosurgery Research Seminar (Iowa City IA) |
| 2014 June | Sloan-Swartz Center for Theoretical Neurobiology Annual Meeting (Seattle WA) |
| 2014 June | NeuroFutures Conference (Seattle WA) |
| 2014 May | University of Washington Institute for Neuroengineering (UWIN) and Department of Biology (Seattle WA) |
| 2014 May | Allen Institute for Brain Science (Seattle WA) |
| 2014 Apr. | Harvard University, Center for Brain Science (Cambridge MA) |
| 2013 Dec. | University of Washington, Center for Sensorimotor Neural Engineering (CSNE), Kavli Seminar (Seattle WA) |
| 2013 Oct. | Allen Institute for Brain Science (Seattle WA) |
| 2011 Dec. | Brandeis University, Decision-making Seminar (Waltham MA) |
| 2011 Oct. | University of Washington, Computational Neuroscience Seminar (Seattle WA) |
| 2011 July | Sloan-Swartz Centers for Theoretical Neurobiology Annual Meeting (Ashburn VA) |

## MENTORING † **current group members in bold**

### POST GRADUATE

2020– **Katie Stanchak, Ph.D. in Biology**, co-advised with David Perkel, *Data Science Postdoctoral Research Associate in Biology*

2023– **Harsha Gurnani, Ph.D. in Neuroscience**, *Schmidt Science Fellow*

2023– **Elliott Abe, Ph.D. in Computational Neuroscience**, *Swartz Postdoctoral Fellow in Theoretical Neurosience*

2019–2023 Alison Weber, Ph.D. in Neuroscience, co-advised with Tom Daniel, *Postdoctoral Research Associate in Biology, Washington Research Foundation (WRF) Postdoctoral Fellow*

2022 George Plummer, M.D., *Resident at UW Medicine, Neurology*

2018–2023 Chris Dallmann, Ph.D. in Neuroscience, co-advised with John Tuthill, *Postdoctoral Research Associate in Physiology & Biophysics, Sackler Postdoctoral Scholar*

2021–2022 Urban Fasel, Dr.Sc. in Mechanical Engineering, co-advised with Steve Brunton, *Postdoctoral Research Associate in Mechanical Engineering*

2017–2022 Tanvi Deora, Ph.D. in Biology, co-advised with Tom Daniel, *Postdoctoral Research Associate in Biology, Human Frontiers Science Program (HFSP) Postdoctoral Fellow*

2019–2021 Alice Schwarze, D.Phil. in Mathematics, *Data Science Postdoctoral Research Associate in Biology*

2018–2021 Steven Peterson, Ph.D. in Biomedical Engineering, co-advised with Raj Rao, *Data Science Postdoctoral Research Associate in Biology*

2018–2020 Kameron Decker Harris, Ph.D. in Applied Mathematics, co-advised with Raj Rao, *Postdoctoral Research Associate in Computer Science & Engineering, Washington Research Foundation (WRF) Postdoctoral Fellow*

2018–2020 Aditya Nair, Ph.D. in Mechanical Engineering, co-advised with Steve Brunton, *Postdoctoral Research Associate in Mechanical Engineering*

2016–2018 C. Liz Gass, M.D., M.P.H., *Resident at UW Medicine, Psychiatry*

2016–2018 Bethany Lusch, Ph.D., co-advised with Steve Brunton and Nathan Kutz, *Postdoctoral Research Associate in Applied Mathematics*

2016 Eurika Kaiser, Ph.D., co-advised with Steve Brunton and Nathan Kutz, *Moore-Sloan-WRF Data Science Postdoctoral Fellow*

GRADUATE

2019– **Zoe Steine-Hanson**, co-advised with Rajesh Rao, *Ph.D. student in UW Computer Sci. & Eng.*, National Science Foundation (NSF) Graduate Research Fellow

2022– **Raveena Chhibber**, co-advised with John Tuthill, *Ph.D. student in UW Neuroscience*, National Science Foundation (NSF) Graduate Research Fellow

2023– **Sarah Pugliese**, co-advised with John Tuthill, *Ph.D. student in UW Neuroscience*,

2023– **Jianqiao (Lawrence) Hu**, co-advised with Edgar Walker, *Ph.D. student in UW Neuroscience*,

2019–2023 Michelle Hickner, Ph.D. in Mechanical Engineering, co-advised with Steve Brunton

2017–2023 Lili Karashchuk, PhD. in Neuroscience, co-advised with John Tuthill, National Science Foundation (NSF) Graduate Research Fellow

2017–2023 Aaron D. Garcia, Ph.D. in Neuroscience, co-advised with Beth Buffalo, *Ph.D. student in UW Neuroscience*, National Science Foundation (NSF) Graduate Research Fellow, Washington Research Foundation (WRF) Innovation in Neuroengineering Graduate Fellow

2019–2022 Maxwell Gray, M.S., co-advised with Steve Brunton, UW Computer Sci. & Eng.

2019–2021 Biraj Pandey, *Ph.D. student in UW Applied Math.*, National Science Foundation (NSF) Graduate Research Fellow

2018–2021 Satpreet Singh, Ph.D. in Electrical and Computer Engineering, co-advised with Rajesh Rao

2017–2020 Seth Hirsh, Ph.D. in Physics, co-advised with Nathan Kutz

2015–2018 Nancy X. R. Wang, Ph.D. in Computer Science & Engineering, co-advised with Rajesh Rao, Washington Research Foundation Innovation in Neuroengineering and Data Science Graduate Fellow, National Science and Engineering Research Council (NSERC) of Canada Graduate Fellow

UNDERGRADUATE AND POST-BACCALAUREATE

| | |
|---|---|
| 2022– | **Maryam Bahadori-Nejad**, post-baccalaureate researcher |
| 2022–2023 | Laila Abdalla, undergraduate ENDURE scholar, *Biology major at Highline College* |
| 2020–2022 | Zeynep Toprakbasti, undergraduate researcher, *Computer Science major at UW*, Mary Gates Scholar |
| 2021–2022 | Sonia Fereidooni, undergraduate researcher, *Computer Science, Sociology double major at UW* |
| 2021–2022 | Abna Moalin, undergraduate ENDURE scholar, *Biology major at Highline College* |
| 2019–2021 | Sara Ichinaga, undergraduate researcher, *Applied Computational and Mathematical Sciences (ACMS) major at UW* |
| 2019–2021 | Nathan Davis, undergraduate researcher, *Computer Science graduate at UW* |
| 2019–2020 | Nathaniel Linden, undergraduate researcher, *Bioengineering graduate at UW* |
| 2018–2019 | Yuchen Wang, undergraduate researcher, *Computer Sci and Psychology graduate at UW* |
| 2017–2019 | George Stepaniants, undergraduate researcher, co-advised with Nathan Kutz, *Mathematics and Computer Science garduate at UW*, Mary Gates Scholar |
| 2018 | Frances Ingram-Bate, undergraduate researcher, *Bioengineering major at UW* |
| 2018 | AJ Krouse, undergraduate researcher, *Neurobiology major at UW* |
| 2017–2018 | Gautham Velchuru, undergraduate researcher, UWIN fellow, *Computer Sci major at UW* |
| 2017–2018 | Joe Christianson, undergraduate researcher, *Mathematics major at UW* |
| 2017–2018 | Jeffery Ni, undergraduate researcher, *Bioengineering major at UW* |
| 2017 | Nhi Ngo, undergraduate researcher, *Applied Comp & Mathematical Sci major at UW* |
| 2016–2017 | Ryan Shean, undergraduate researcher and UWIN fellow, *Microbiology major at UW* |
| 2016 | Wilven Smoody, undergraduate researcher, *Physics gradate at UW* |
| 2016 | Mathi Manavalan, undergraduate researcher, *Psychology major at UW* |
| 2016 | Sam Kinn, undergraduate researcher and UWIN fellow, *Eletrical Engineering graduate at UW* |
| 2016 | Mycole Brown, undergraduate researcher, *Biology graduate at UW* |
| 2015–2016 | Karl Marrett, post-baccalaureate researcher and UWIN Fellow, *Neurobiology/Computational Neuroscience graduate at UW* |
| 2015 | Christine McCreary, undergraduate researcher sponsored by UWIN and the Center for Sensorimotor Neural Engineering (CSNE), *Computer Science and Neurobiology major at UW* |
| 2015 | Monica Lamirand, undergrad researcher, CSNE UR, *Math/Psych major at Hanover College* |
| 2013–2014 | Justin Thompson, *post-baccalaureate researcher* at UW, Center for Sensorimotor Neural Engineering (CSNE) Research Experience for Veterans–University Projects (REV-UP) |

HIGH SCHOOL STUDENTS

| | |
|---|---|
| 2021 | Vanshika Balaji, Issaquah High School |
| 2017–2018 | Saijel Verma, Interlake High School |

## PH.D. GRADUATE COMMITTEES

| | |
|---|---|
| **Jesse Miles** | Neuroscience (Advisors: David Gire & Sheri Mizumori), thesis committee member |
| **Brandon Pratt** | Physiology & Biophysics (Advisor: John Tuthill), thesis committee member |
| **Samantha Sun** | Bioengineering (Co-advisors: Raj Rao & Jeff Ojemann), thesis committee member |
| **Si Jia Li** | Bioengineering (Advisor: Amy Orsborn), thesis committee member |
| **Leila Elabbady** | Neuroscience (Advisors: John Tuthill, Forrest Collman), thesis committee member |
| **Anna Li** | Neuroscience (Advisor: Nick Steinmetz), thesis committee member |
| **Grace Van Susteren** | Biology (Advisor: Jeff Riffell), thesis committee member |
| **Ian Jan** | Bioengineering (Advisor: Nancy Allbritton), graduate school representative |

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|---|---|
| **Regan Kubicek** | Carnegie Mellon University, Mechanical Engineering (Advisor: Sarah Bergbreiter), thesis committee member |
| **Felix Taschbach** | UCSD, Biological Science (Advisors: Kay Tye and Marcus Benna), thesis committee member |
| **Ye (Mary) Hong** | Neuroscience (Advisor: Michele Basso), thesis committee member |
| **Daksh Dhingra** | Mechanical Eng. (Advisor: Sawyer Fuller), graduate school representative |
| Suzanne Lewis, Ph.D. | Psychology (Advisor: David Gire), graduate school representative |
| Akira Kawano | Okinawa Institute of Science and Technology (OIST), External Examiner in oral exam |
| Yoni Browning, Ph.D. | Neuroscience 2021 (Co-advisors: Beth Buffalo & Adrienne Fairhall), thesis committee member |
| Dennis Tabuena, Ph.D. | Neuroscience 2021 (Advisor: Bill Moody), thesis committee member |
| John Huddleston, Ph.D. | Molecular and Cell Biology 2021 (Advisor: Trevor Bedford), graduate school representative |
| Callie Bee, Ph.D. | Computer Science & Engineering 2021 (Advisor: Luis Ceze), graduate school representative |
| Claire Rusch, Ph.D. | Biology 2020 (Advisor: Jeff Riffell), thesis committee member |
| Eleanor Lutz, Ph.D | Biology 2020 (Advisor: Jeff Riffell), thesis committee member |
| Gideon Dunster, Ph.D. | Biology 2019 (Advisor: Horacio de la Iglesia), thesis committee member |
| Nile Wilson, Ph.D. | Bioengineering 2019 (Co-advisors: Raj Rao, Jeff Ojemann & Eric Chudler), thesis committee member |
| David Caldwell, Ph.D. | Bioengineering MD/PhD program 2019 (Co-advisors: Raj Rao, Jeff Ojemann & Eric Chudler), thesis committee member |
| Jing James Wu, Ph.D. | Bioengineering 2019 (Co-advisors: Raj Rao, Jeff Ojemann & Eric Chudler), thesis committee member |
| David Bjanes, Ph.D. | Electrical Engineering 2019 (Advisor: Chet Moritz), graduate school representative |
| Vaishnavi Ranganathan, Ph.D. | Electrical Engineering 2018 (Advisor: Josh Smith), graduate school representative |
| Alex Tank, Ph.D. | Statistics 2018 (Advisor: Emily Fox), graduate school representative |
| Maggie Thompson, Ph.D. | Electrical Engineering 2018 (Advisor: Howard Chiczek), graduate school representative |
| Jingjing Wang, Ph.D. | Computer Science & Engineering 2018 (Advisor: Magda Balazinska), graduate school representative |
| Andrew Haddock, Ph.D. | Electrical Engineering 2017 (Advisor: Howard Chiczek), thesis committee member |
| James Kunert, Ph.D. | Physics 2016, (Advisor: Nathan Kutz), graduate school representative |
| Vamsi Talla, Ph.D. | Electrical Engineering 2016, (Advisor: Josh Smith), graduate school representative |
| Brad Dickerson, Ph.D. | Biology 2015, (Advisor: Tom Daniel), thesis committee member |

## TEACHING

| | |
|---|---|
| 2023 Winter | UW, BIOL 461, **Neurobiology** |
| 2021 Spring | UW, BIOL 511C, **High-dimensional Data Analysis** |
| 2021 Winter | UW, BIOL 461, **Neurobiology** |
| 2020 Spring | UW, BIOL 511B, **Mathematical Biology**, with B. Kerr |
| 2020 Winter | UW, BIOL 419/519, **Data Science for Biologists** |
| 2019 Spring | UW, BIOL 511B, **Mathematical Biology**, with B. Kerr |
| 2019 Winter | UW, BIOL 419/519, **Data Science for Biologists**, with K. D. Harris |
| 2018 Spring | UW, BIOL 511B, **Mathematical Biology**, with B. Kerr |
| 2018 Spring | UW, BIOL 130, **Introduction to Neuroscience**, with T. Daniel & W. Moody |

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| 2018 Winter | UW, BIOL 419/519, **Data Science for Biologists** |
| 2017 Winter | UW, BIOL 419/519, **Data Science for Biologists** |
| 2016 Spring | UW, BIOL 300, **Introduction to Neuroscience**, with W. Moody |
| 2016 Winter | UW, BIOL 419/519, **Data Science for Biologists** |
| 2015 Spring | UW, BIOL 419/519, **Data Science for Biologists** |

### Virtual and Online Teaching

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|---|---|
| 2023 | YouTube video series on **Introduction to Neuroscience**, all lectures freely available on channel `@bingsbrain` |
| 2020–23 | **Neuromatch Academy**, an online school for computational neuroscience, lecturer, tutorial creator, and day chief on *Linear Systems*, materials freely available online |
| 2016 | **Data Science for Biologists**, lectures available on YouTube |

### Guest Lectures

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| 2014–17, 20, 23 | UW, NBIO 490 **Seminars in Computational Neuroscience** |
| 2023 | UW, CSSS 490, **Data Science Minor Seminar** |
| 2022 | Caltech CS 159, **Advanced Topics in ML: Representation Learning for Science** |
| 2022 | Caltech Bi 1, **Principles of Biology** |
| 2021 | UCSD, **Cognitive Neuroscience Colloquium** |
| 2019, 20 | UW, MATH 498 **Undergraduate Mathematical Sciences Seminar** |
| 2017 | UW, CSE 491 **Data Science and Society** |
| 2017 | UW, CSE/Neuro 528 **Computational Neuroscience** |
| 2016 | UW, PSYCH 502 **Core Concepts in Behavioral Neuroscience** |
| 2014 | UW, GEN ST 391B **Different Ways of Knowing** |

## Professional Activities

### Advisory and Editorial Roles

*Executive Board,* Neurodata Without Borders (NWB), 2020–present

*Editorial Board,* Neurons, Behavior, Data analysis, and Theory (NBDT), 2018–present

*Board of Directors*, Neuromatch Conference (NMC), 2021–2022

### University of Washington

| | |
|---|---|
| 2019– | eScience Institute, Member of Executive Committee |
| 2022– | Undergraduate Neuroscience Program, Advisory Committee |
| 2022– | Dept of Biology, Member of Faculty Search Committee |
| 2018– | Dept of Biology, Member of Undergraduate Program Committee |
| 2020– | Data Science Minor, Member of Curriculum Committee |
| 2020– | Dept of Biology & eScience Institute, Data Science Minor advisor |
| 2019– | Dept of Biology & eScience Institute, Data Science Ph.D. Option advisor |
| 2019 | Search Committee for the Director of the eScience Institute |
| 2017–2019 | eScience Institute & UW Institute of Neuroenginering, Neuroinformatics Working Group |
| 2015–2018 | Neuroscience Graduate Program, Member of Admissions Committee |
| 2017–2018 | eScience Institute, Co-Chair of Education Working Group |
| 2017–2018 | eScience Institute, Program Chair of UW Data Science Summit |
| 2017–2018 | Dept of Biology, Member of Faculty Search Committee |
| 2014–2017 | eScience Institute, Member of Education Working Group |
| 2016–2017 | Dept of Biology, Member of Graduate & Postdoc Committee |

2016–2017 Dept of Biology, Member of Seminar Committee
2015–2016 Dept of Biology, Co-Chair of Seminar Committee

*Ad Hoc Reviewer for:* Mary Gates Merit Scholarship, Royal Research Fund, Innovation in Neuroengineering Postdoctoral Fellowship, Washington Research Foundation Data Science Postdoctoral Fellowship, Institute for Translational and Health Sciences Pilot Awards, Weill Neurohub.

### External Committees

2021– Shanahan Foundation Fellowship at the Interface of Data and Neuroscience, Allen Institute, Member of selection committee
2021– Washington Research Foundation (WRF) Postdoctoral Fellowship, Member of selection committee

### Conference and Workshop Organizing

2023–2024 Computational and Systems Neuroscience Conference (COSYNE 2024), Co-Program Chair
2022 NSF-IOS Workshop on cross-disciplinary innovations in organismal biology (IOMM), co-organizer of Workshop on the Ins and Outs of Behavior
2021– Neuromatch Conference, board of directors and member of executive committee
2021–2022 Computational and Systems Neuroscience Conference (COSYNE 2021), Member of Program Committee
2017–2018 Computational and Systems Neuroscience Conference (COSYNE 2018), co-organizer for Workshop on Recent Computational Advances in Neuroengineering: From Theory to Applications
2015–2018 Computational and Systems Neuroscience Conference (COSYNE 2016, 2017, 2018), Member of Program Committee
2016–2017 Organization for Human Brain Mapping (OHBM) Annual Meeting, Vancouver BC, Symposium Organizer for *Uncovering complexity with long-term naturalistic recordings*
2016–2017 Society for Industrial and Applied Mathematics (SIAM) Conference on Dynamical Systems, Snowbird UT, Mini-Symposium Organizer for *Equation-free modeling of biological systems*
2015–2016 International Conference on Brain Informatics & Health (BIH 2016), Co-Chair of Workshops and Tutorials

### Other Professional Activities

*Proposal review for:* NSF CRCNS, NSF CNS, HFSP.

*Manuscript reviewer for:* Proceedings of the National Academy of Science, Nature, Nature Neuroscience, Neuron, Science Advances, Nature Communications, eLife, Nature Methods, Current Biology, Trans Biomedical Engineering, IEEE Trans Image Processing, IEEE Trans Signal Processing, Cell Reports, PLoS Computational Biology, PLoS One, NeurIPS, ICLR, SIAM Journal on Applied Dynamical Systems (SIADS), Journal of the American Statistical Association, Entropy, Neuroscience, Pattern Recognition Letters, Bioinformatics, J Neurosci Methods, J Experimental Biology, NeuroImage.

## Community and Outreach Activities

2023 Stories of Women in Neuroscience (WiN), interviewed for podcast
2022 Montgomery Blair High School (Silver Spring, MD), alum guest speaker
2021 *The Synapse* organized by students of Teachers College at Columbia University, featured guest to discuss *AI and the Brain*
2021 *Neuromatch for Kids* presenter, Neuromatch Conference 4

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| 2015–18 | *Girls in Science* volunteer instructor, Burke Museum of Natural History and Culture |
| 2017 | Neurobiology Club and SynapTech presenting *Neuroscience for Everyone*, Panelist leading discussion on consciousness, artificial intelligence, and ethics |
| 2017 | Grey Matters Journal presenting *Evening with Neuroscience*, Panelist |
| 2017 | UW Neurobiology Club, Guest Speaker |
| 2012 | Women in Science and Engineering (WISC) panel discussion on grad school, panelist |
| 2009 | Science Expo at Princeton University, volunteer |
| 2009 | Trenton Area Science Fair, volunteer |
| 2007, 08, 09 | New Jersey Science Olympiad, event coordinator and judge |

*Art and Insect Behavior*: Watercolor on paper, select pieces on display at community galleries