

Amy L. Orsborn

Curriculum Vitae

Paul G. Allen Center, 185 Stevens Way
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Education and Training

- 2014–2018 Postdoctoral Researcher, New York University
Advisor: Bijan Pesaran
- 2007 – 2013 University of California Berkeley/University of California San Francisco
Ph.D., Graduate Program in Bioengineering
Dissertation: Closed-Loop Design of Brain-Machine Interface Systems
Committee: Jose M. Carmena, Philip Sabes, Claire Tomlin, Richard Ivry
- 2007 Case Western Reserve University
B.S., Engineering Physics, concentration in Biomedical Engineering
Summa cum laude

Positions and Employment

- 2018 – present Clare Boothe Luce assistant professor, University of Washington
Electrical & Computer Engineering, Bioengineering
- 2018 – present Core staff scientist, Washington National Primate Research Center
- 2014 – 2018 Postdoctoral Researcher, Pesaran Lab, New York University
- 2007 – 2017 Graduate Research Assistant, Carmena Lab, University of California, Berkeley
- 2007 Undergraduate senior thesis researcher, Kirsch Lab, Case Western Reserve University
- 2006 Summer Undergraduate Researcher, Collins Lab, Boston University
- 2005 Summer Undergraduate Researcher, Dept. of Energy REU program, Thomas Jefferson National Accelerator Facility

Awards and Honors

- 2021 National Academy of Sciences (NAS) selection for Israeli-American Kavli Frontiers of Science symposium (delayed due to COVID-19)
- 2020 Google Research Faculty Award
- 2020 Weill Neurohub Investigator
- 2019 Movement Sciences & Rehabilitation Career Development Award, NIH
- 2019 Broadening Representation of Academic Investigators in Neuroscience (BRAINS) fellow
- 2019 L'Oréal USA Changing the Face of STEM award
- 2018 Clare Boothe Luce Assistant Professorship
- 2017 National Academy of Engineering (NAE) selection for the EU-US Frontiers of Engineering Symposium
- 2016 L'Oréal USA for Women in Science postdoctoral fellowship
- 2016 1st runner up, Rosalind Franklin Appathon "Best New App" for promoting women in STEMM
- 2013 International Brain-Computer Interface Meeting student travel fellowship
- 2011 American Heart Association, Western States Affiliate, Pre-doctoral fellowship

2008 National Science Foundation Graduate Research Fellowship
 2007 Outstanding Senior in Engineering Physics, CWRU
 2006, 2007 Krumhansle Family Prize for Outstanding Achievement in Physics, CWRU
 2005 Tau Beta Pi engineering honor society
 2004, 2008 Fiat Awards Program Scholarship
 2003 - 2007 Case Western Reserve University Provost Scholarship

Research Grants (active and recently completed)

PI, Simons Foundation Collaboration on the Global Brain Pilot 10/01/2021 – 09/30/2023
 “Using Brain-machine interfaces to identify and manipulate computational principles of learning”

PI, Facebook 08/21/2021 – 05/15/2022
 “Coadaptation for myoelectric interfaces”

Co-I, National Science Foundation 10/01/2021 – 09/30/2026
 “HDR Institute: Accelerated AI Algorithms for Data-Driven Discovery (A3D3)”

PI, Washington National Primate Center Ignition Pilot Award 05/01/2021 – 04/30/2022
 “Developing and optimizing a behavioral assay to quantify feedforward and feedback control in non-human primates”

Co-PI, Weill NeuroHub Pillar Project 07/01/2020 – 06/30/2022
 “Optimizing Electrical Stimulation to Target Neural Population Dynamics”
 PI: Karunesh Ganguly, UCSF

Co-PI, Google Research Faculty Award 03/01/2020 –
 “Identifying and guiding learning dynamics in the brain using brain-machine interfaces”
 PI: Guillaume Lajoie

Fellow, Interdisciplinary Rehabilitation Engineering K12 01/01/2020 – 08/31/2021
 PI: Julius Dewald, Northwestern University
 “Exploring large-scale network learning mechanisms in brain-machine interfaces”

PI, University of Washington Center for Neurotechnology award 09/16/2019 – 07/31/2021
 “Exploring large-scale network learning mechanisms in brain-machine interfaces”

PI, University of Washington Royalty Research Fund 08/01/2019 – 07/31/2021
 “Assessing how network connectivity shapes learning in brain-machine interfaces”

Trainee research support

2021 National Science Foundation Graduate Research Fellowship (GRFP), Augusto Millevolte
 2021 University of Washington TL1 Translational Research Training Program, Ryan Canfield
 2020 University of Washington Computational Neuroscience Training Grant, Michael Nolan
 2020 Washington Research Foundation (WRF) Innovation Undergraduate Research Fellowship in Neuroengineering, Pamel Kang
 2020 National Defense Science and Engineering Graduate Fellowship, Maneeshika Madduri
 2019 Washington Research Foundation (WRF) Innovation Postbaccalaureate Research Fellowship in Neuroengineering, Augusto Millevolte
 2019 Washington Research Foundation (WRF) Innovation Undergraduate Research Fellowship in Neuroengineering, Thomas McIlwain
 2019 University of Washington Center for Neurotechnology Post-baccalaureate fellowship, Augusto Millevolte
 2019 University of Washington Computational Neuroscience Training Grant, Si Jia Li
 2019 Washington Research Foundation (WRF) Innovation Undergraduate Research Fellowship in Neuroengineering, Nicholas Thomas

Publications

Research Journal Articles

- M. Trampus, C.-H. Chiang, **A.L. Orsborn**, B. Bent, J. Li, J. Rogers, B. Pesaran, G. Cogan, and J. Viventi. (2020) Sufficient sampling for kriging prediction of cortical potential in rat, monkey, and human μ ECoG. *Journal of Neural Engineering*, doi: 10.1088/1741-2552/abd460
- C.H. Chiang*, S.M. Won*, **A.L. Orsborn***, K.J. Yu*, M. Trampus, B. Bent, C. Wang, Y. Xue, S. Min, V. Woods, C. Yu, B.H. Kim, S.B. Kim, R. Huq, J. Li, K.J. Seo, F. Vitale, H. Fang, Y. Huang, K. Shepard, B. Pesaran, J.A. Rogers, and J. Viventi. (2020) Development of a neural interfaces for high definition, long-term recording in rodents and non-human primates, *Science Translational Medicine*, 12, eaay4682
- M. Shanechi*, **A. L. Orsborn***, H.G. Moorman*, S. Gowda*, and J.M. Carmena (2017). Rapid control and feedback rates enhance neuroprosthetic control. *Nature Communications*, 8:13825, doi:10.1038/ncomms13825
- M. Shanechi*, **A.L. Orsborn***, and J.M. Carmena (2016). Robust brain-machine interface design using optimal feedback control modeling and adaptive point process filtering. *PLoS Computational Biology* 12(4):e1004730. doi:10.1371/journal.pcbi.1004730 (**F1000 recommended**)
- A.L. Orsborn**, H.G. Moorman, S.A. Overduin, M. M. Shanechi, D. Dimitrov, and J.M. Carmena (2014) Closed-loop decoder adaptation shapes neural plasticity for skillful neuroprosthetic control, *Neuron* 82, pp. 1380-1393. (**journal cover article**)
- S. Dangi, S. Gowda, H.G. Moorman, **A.L. Orsborn**, K. So, M. M. Shanechi, and J.M. Carmena (2014) Continuous closed-loop decoder adaptation with a recursive maximum likelihood algorithm allows for rapid performance acquisition in brain-machine interfaces, *Neural Computation*, 26(9), pp. 1811-1839.
- S. Gowda, **A.L. Orsborn**, S.A. Overduin, H.G. Moorman, and J.M. Carmena (2014) Designing dynamical properties of brain-machine interfaces to optimize task-specific performance, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 22(5), pp. 911 – 920.
- K. So*, S. Dangi*, **A.L. Orsborn**, M.C. Gastpar, and J.M. Carmena (2014) Subject-specific modulation of local field potential spectral power during brain-machine interface control in primates, *Journal of Neural Engineering*, 11(2): 026002.
- S. Dangi*, **A.L. Orsborn***, H.G. Moorman, and J.M. Carmena (2013) Design and analysis of closed-loop decoder adaptation algorithms for brain-machine interfaces. *Neural Computation*, 25(7), pp. 1693-1731.
- A.L. Orsborn**, S. Dangi, H.G. Moorman, and J.M. Carmena (2012) Closed-loop decoder adaptation on intermediate time-scales facilitates rapid BMI performance improvements independent of decoder initialization conditions. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 20(4), pp. 468 - 477.
- R. Hélot, **A.L. Orsborn**, K. Ganguly, and J.M. Carmena (2010) System architecture for stiffness control in brain-machine interfaces. *IEEE Transactions on Systems, Man and Cybernetics, part A* 40(4), pp. 732-742.
- K. Ganguly, L. Secundo, G. Ranade, **A.L. Orsborn**, E. Chang, D. Dimitrov, J.D. Wallis, N.M. Barbaro, R.T. Knight, J.M. Carmena (2009) Cortical representation of ipsilateral arm movements in monkey and man. *Journal of Neuroscience*, 29(41), pp. 12948-12956.

Review Articles and Chapters

- H.-Y. lu, E. S. Lorenc, H. Zhu, J. Kilmarx, J. Sulzer, C. Xie, P.N. Tobler, A. J. Watrous, **A. L. Orsborn**, J. Lewis-Peacock, and S. R. Santacruz (2021) Multi-scale neural decoding and analysis, *Journal of Neural Engineering*, Aug 16;18(4). doi: 10.1088/1741-2552/ac160f.

* authors contributed equally
A. L. Orsborn, CV

- R. A. Canfield, **A. L. Orsborn**, G. D. Horwitz (2021) Windows and Periscopes into Primate Behavior. *Cell Reports*, Jul 20;36(3):109435. doi: 10.1016/j.celrep.2021.109435.
- P. Rajeswaran and **A. L. Orsborn**. (2021) Neural Interface Translates Thoughts into Type, *Nature*, 593 (7858), 197 – 198. doi: 10.1038/d41586-021-00776-8.
- A.L. Orsborn** and B. Pesaran (2017) Parsing learning in networks using brain-machine interfaces, *Current Opinions in Neurobiology*, 46:76-83, doi: 10.1016/j.conb.2017.08.002
- A.L. Orsborn** and J.M. Carmena (2013) Creating new functional circuits for action via brain-machine interfaces, *Frontiers in Computational Neuroscience*, 7:157, doi: 10.3389/fncom.2013.00157
- A.L. Orsborn** and J.M. Carmena, (2013) Cortical Control of Limb Prosthesis. In: D. Jaeger, R. Jung (Ed.) *Encyclopedia of Computational Neuroscience*: Springer Reference. Springer-Verlag Berlin Heidelberg.

Pre-prints (not yet published)

- A.K. You, B. Liu, A. Singhal, S. Gowda, H. Moorman, **A.L. Orsborn**, K. Ganguly, and J.M. Carmena. “Flexible Modulation of Neural Variance Facilitates Neuroprosthetic Skill Learning,” *BioRxiv* 2019 <https://doi.org/10.1101/817346>
- V. R. Athalye, P. Khanna, S. Gowda, A. L. Orsborn, R. M. Costa, and J. M. Carmena. “The brain uses invariant dynamics to generalize outputs across movements.” *BioRxiv* 2021 <https://doi.org/10.1101/2021.08.27.457931>

Manuscripts in submission / preparation

- A.L. Orsborn**, J. Choi, C. Wang, J. Kleinbart, K. Chiang, J. Viventi, and B. Pesaran, “Multi-scale, multi-modal chronic implants for studying large-scale neural circuits in primates”

Refereed Conference Proceedings

- M.M. Madduri, S.A. Burden, and **A.L. Orsborn**. (2021) A game-theoretic model for co-adaptive brain-machine interfaces. 10th International IEEE EMBS Conference on Neural Engineering (NER), pp. 327-330, doi: 10.1109/NER49283.2021.9441081
- J. Choi, E.A. Voinas, **A.L. Orsborn**, B. Ferrentino, B. Pesaran (2019) A projector-scope for spatiotemporal control of macaque cortex. 9th International IEEE EMBS Conference on Neural Engineering (NER), San Francisco, CA
- M. Trumpis, K.C-H. Chiang, B. Bent, **A.L. Orsborn**, B. Pesaran, G. Cogan, J. Viventi (2019) Sufficient Sampling for Kriging Prediction of Cortical Potential in Rat and Human μ ECoG. 9th International IEEE EMBS Conference on Neural Engineering (NER), San Francisco, CA
- J. Kleinbart, **A. L. Orsborn**, John S. Choi, C. Wang, S. Qiao, J. Viventi, B. Pesaran (2018) A modular implant system for multimodal recording and manipulation of the primate brain, 39th International conference IEEE EMBS, Honolulu, HI.
- J.S. Choi, V. Goncharov, J. Kleinbart, **A. L. Orsborn**, B. Pesaran (2018) Monkey-MIMMS: Towards automated cellular resolution large-scale two-photon microscopy in the awake macaque monkey, 39th International conference IEEE EMBS, Honolulu, HI.
- S. Qiao, K. Brown, **A. L. Orsborn**, B. Ferrentino, B. Pesaran (2016) Development of semi-chronic microdrive system for large-scale circuit mapping in macaque mesolimbic and basal ganglia systems, 38th International conference IEEE EMBS, Orlando, FL.
- A. L. Orsborn**, C. Wang, K. Chiang, M. M. Maharbiz, J. Viventi, and B. Pesaran (2015) Semi-chronic chamber system for simultaneous subdural electrocorticography, local field potential, and spike recordings, *Proceedings of the 7th International Conference IEEE EMBS Neural Engineering*, Montpellier, France.

- M. Shanechi, **A.L. Orsborn**, H.G. Moorman, S. Gowda, and J.M. Carmena (2014) High-performance brain-machine interface enabled by an adaptive optimal feedback-controlled point process decoder. *Proceedings of the 36th Annual International Conference IEEE EMBS*, Chicago, IL.
- A.L. Orsborn**, K. So, S. Dangi, and J.M. Carmena (2013) Comparison of neural activity during closed-loop control of spike- or LFP-based brain-machine interfaces. *Proceedings of the 6th International Conference IEEE EMBS Neural Engineering*, San Diego, CA.
- S. Dangi, K. So, **A.L. Orsborn**, M. Gastpar, and J.M. Carmena (2013) Brain-machine interface control using broadband spectral power from local field potentials. *Proceedings of the 35th Annual International Conference IEEE EMBS*, Osaka, Japan.
- S. Gowda, **A.L. Orsborn**, and J.M. Carmena (2012) Parameter estimation for maximizing controllability of linear brain-machine interfaces. *Proceedings of the 34th Annual International Conference IEEE EMBS*, San Diego, CA.
- A.L. Orsborn**^{*}, S. Dangi^{*}, H.G. Moorman, and J.M. Carmena (2011) Exploring time-scales of closed-loop decoder adaptation in brain-machine interfaces. *Proceedings of the 33rd Annual International Conference IEEE EMBS*, Boston, MA.
- R. Hélot, **A.L. Orsborn**, and J.M. Carmena, (2008) Stiffness control of 2-DOF exoskeleton for brain-machine interfaces. *Proceedings of the 2nd IEEE RAS / EMBS International Conference on Biomedical Robotics and Biomechatronics*, Scottsdale, AZ.

Patents

Provisional

- Systems and Methods Related to Electric Corticography (ECoG) Electrode Arrays*, W. Doyle, P. Dugan, O. Devinsky, D. Friedman, A. Orsborn, B. Pesaran, S. Devore, C. Wang, C.H. Chiang, G. Cogan, and J. Viventi
- Optimal Data-Driven Decision-Making in Multi-Agent Systems*, B. Chasnov, L.J. Ratliff, S.A. Burden, A.L. Orsborn, M.M. Madduri, M. Yamagami, T. Fiez, and J.G. Sullivan.

Select Presentations

Conferences

- P. Rajeswaran, J.M. Carmena, **A. L. Orsborn** “Adaptive brain-computer interfaces allow credit assignment learning and formation of sparse control strategies” Society for Neuroscience annual meeting, Chicago, IL, November 2021 (poster—accepted)
- S. Li and **A. L. Orsborn**. “Closed-loop simulation of neural feature selection to accelerate initial brain computer interface decoder training” Society for Neuroscience annual meeting, Chicago, IL, November 2021 (poster—accepted)
- M. Nolan, B. Pesaran, E. Shlizerman, **A. L. Orsborn**. “Electrocorticograph signal reconstruction with recurrent neural network autoencoders” Society for Neuroscience Connectome Virtual Meeting, Virtual, January 2021 (poster)
- V. Athalye, P. Khanna, **A. L. Orsborn**, S. Gowda, R. Costa, J. M. Carmena. “Motor cortex produces an output for behavior by using general activity transitions, not one pattern” Computational Systems Neuroscience (CoSYNE), Virtual, February 2021 (poster)
- A.L. Orsborn**, J. Choi, C. Wang, C. Chiang, J. Viventi, B. Pesaran. “Multi-scale neural resampling to map and monitor neural circuits in non-human primates.” Society for Neuroscience annual meeting, Chicago, IL, October 2019 (poster)
- C. Chiang, S.M. Won, **A.L. Orsborn**, K. Yu, M. Trumpis, B. Bent, C. Wang, B. Pesaran, J.A. Rogers, J. Viventi. “Kiloscale neural interfaces for long-term learning.” Society for Neuroscience annual meeting, Chicago, IL, October 2019 (poster)

^{*} authors contributed equally
A. L. Orsborn, CV

- V.R. Athalye, P. Khanna, S. Gowda, **A.L. Orsborn**, R.M. Costa, and J.M. Carmena. “Neural dynamics underlying generalization in motor cortex.” Society for Neuroscience annual meeting, Chicago, IL, October 2019 (poster)
- A. You, B. Liu, A. Singhal, S. Gowda, H.G. Moorman, **A.L. Orsborn**, and J.M. Carmena. “Simultaneous exploration and exploitation of neural strategies during neuroprosthetic learning.” Society for Neuroscience annual meeting, Chicago, IL, October 2019 (poster)
- A.L. Orsborn** and B. Pesaran. “A center-out sequence task for studying multiple forms of motor learning in non-human primates.” Society for Neuroscience annual meeting, San Diego, CA, November 2018 (poster)
- B. Pesaran, **A.L. Orsborn**, V. Sanchez, M.F. Khazali. “Semi-chronic subdural electrocorticography, local field potentials, and spike recordings over posterior parietal cortex during coordinated visual behavior” Society for Neuroscience annual meeting, San Diego, CA, November 2018 (poster)
- J. Kleinbart, **A.L. Orsborn**, J. Choi, C. Wang, S. Qiao, M.F. Khazali, B. Ferrentino, J. Viventi, B. Pesaran. “Enabling multimodal interrogation of the primate brain via a modular neural interface.” Society for Neuroscience annual meeting, San Diego, CA, November 2018 (poster)
- J. Choi, V. Goncharov, J. Kleinbart, **A.L. Orsborn**, B. Pesaran. “Stable, flexible positioning for in vivo imaging of neural activity in the awake macaque monkey.” Society for Neuroscience annual meeting, San Diego, CA, November 2018 (poster)
- S. Qiao, **A. L. Orsborn**, A. P. Dora, J. Kleinbart, B. Pesaran, “An instrumented volume for continuous neurobehavioral tracking system in unrestrained non-human primates,” Society for Neuroscience annual meeting, Washington, D.C., November 2017 (poster)
- A. L. Orsborn**, C. Wang, K. Chiang, N. C. Boles, J. Viventi, B. Pesaran, “Multi-scale electrophysiology in macaque motor cortex during reaching,” Society for Neuroscience annual meeting, San Diego, Ca, November 2016 (poster)
- A. L. Orsborn**, C. Wang, K. Chiang, N. C. Boles, J. Viventi, B. Pesaran, “Multi-scale, multi-modal neural interface for studying large-scale circuits in primates,” 6th annual Conference on Research in Encoding and Decoding Neural Ensembles (AREADNE), Santorini, Greece, June 2016 (poster)
- A. L. Orsborn**, C. Wang, K. Chiang, M. M. Maharbiz, J. Viventi, and B. Pesaran, “Semi-chronic chamber system for multi-scale electrophysiology in non-human primates,” Cell Symposia on Engineering the Brain: Technologies for Neurobiological Application, Chicago, IL, 2015 (talk and poster)
- A. L. Orsborn**, C. Wang, K. Chiang, M. M. Maharbiz, J. Viventi, and B. Pesaran, “Semi-chronic chamber system for simultaneous subdural electrocorticography, local field potential, and spike recordings,” International Conference IEEE EMBS Neural Engineering, Montpellier, France (talk)
- M. M. Shanechi, **A. L. Orsborn**, H. Moorman, S. Gowda, and J. M. Carmena, “Spike-by-spike control using an adaptive optimal feedback controlled point process decoder improves BMI performance,” Society for Neuroscience annual meeting, Washington D. C., November 2014 (poster)
- A.L. Orsborn** and Jose M. Carmena, “Neural and decoder adaptation in BMI reduces interference from native motor networks,” *Translational and Computational Motor Control meeting*, San Diego, CA, November 2013 (talk)
- M. Shanechi*, **A.L. Orsborn***, S. Gowda, and Jose M. Carmena, “Proficient BMI Control Enabled by Closed-Loop Adaptation of an Optimal Feedback-Controlled Point Process Decoder,” *Translational and Computational Motor Control meeting*, San Diego, CA, November 2013 (poster)
- A.L. Orsborn** and J.M. Carmena, “Characterization of neural tuning properties during BMI control with closed-loop decoder adaptation,” Society for Neuroscience annual meeting, San Diego, CA, November 2013 (poster)

* authors contributed equally
A. L. Orsborn, CV

- A.L. Orsborn** and J.M. Carmena, "Harnessing plasticity and closed-loop decoder adaptation to achieve robust BMI performance," International Brain-Computer Interface meeting, Pacific Grove, CA, June 2013 (talk)
- A.L. Orsborn**, S. Dangi, and J.M. Carmena, "Combining neural and decoder adaptation to improve brain-machine interface performance," Society for Neuroscience annual meeting, New Orleans, LA, October 2012 (poster)
- K. So, **A.L. Orsborn**, S. Dangi, M.C. Gastpar, and J.M. Carmena, "Implementing closed-loop decoder adaptation algorithms for ECoG-based brain-machine interfaces," Society for Neuroscience annual meeting, New Orleans, LA, October 2012 (poster)
- S.A. Overduin, Y.-H. Chang, M. Chen, S. Gowda, **A.L. Orsborn**, K. So, E. Bizzi, C. Tomlin, J.M. Carmena, "Detection of submovement primitives for neuroprosthetic motor control," Society for Neuroscience annual meeting, New Orleans, LA, October 2012 (poster)
- A.L. Orsborn**, S. Dangi, and J.M. Carmena, "Co-adaptive BMIs: Combining Neural and Decoder Plasticity," 4th annual Conference on Research in Encoding and Decoding Neural Ensembles (AREADNE), Santorini, Greece, June 2012 (poster)
- A.L. Orsborn**, S. Dangi, H.G. Moorman, and J.M. Carmena, "Closed-loop decoder adaptation on intermediate time-scales facilitates rapid BMI performance improvements independent of decoder initialization," Society for Neuroscience annual meeting, Washington, D.C., November 2011 (poster)
- A.L. Orsborn**, S. Dangi, H.G. Moorman, and J.M. Carmena, "Exploring time-scales of closed-loop decoder adaptation in brain-machine interfaces," 33rd Annual International Conference IEEE EMBS, Boston, MA, August 2011 (talk)
- A.L. Orsborn** and J.M. Carmena, "Neural correlates of dynamic limb stiffness modulation in an accuracy constraint task," Society for Neuroscience annual meeting, Chicago, IL, October 2009 (poster)

Invited Talks and Lectures

- Whitaker International Neuroengineering Workshop, Cambridge, UK, planned August 2022
(*rescheduled due to COVID-19*)
- NeuroTech seminar, Stanford University, planned December 2021
- Mind-Brain Institute seminar, Johns Hopkins University, planned December 2021
- Neuro@Noon seminar, Center for Neuroscience Imaging Research, Sungkyunkwan University, Korea, Planned October 2021
- Neuroscience and Cognitive Science Colloquium, University of Maryland, September 2021
- Waterloo International Workshop on Neural Engineering and Rehabilitation, July 2021
- Brain Computer Interface Society Annual Meeting, workshop presentation, June 2021
- Brain Computer Interface Society "Next Generation" workshop lecture, virtual, April 2021
- Center for the Neural Basis of Cognition, University of Pittsburgh/Carnegie Mellon, March 2021
- Institute of Neuroscience seminar, University of Oregon, January 2021
- Center for Neuroengineering, University of Minnesota, November 2020
- Symposium on Neural Interfaces for Neurobiological Insights, Sainsbury Wellcome Center for Neural Circuits and Behavior and Gatsby Computational Neuroscience, University College London, October 2020
- Simons – Emory Symposium on Motor Control, June 2020 (approximately 700 live attendees, [over 3,000 views](#))
- IEEE Brain Webinar Series, June 2020
- Neuroscience seminar, Oregon National Primate Research Center, Division of Neuroscience, *cancelled due to COVID-19*
- Keynote, Montreal Artificial Intelligence and Neuroscience (MAIN) meeting, November 2019
- Workshop on Mathematical Physiology, Centre de Recherche Mathématiques, University de Montreal, November 2019

Lecturer, Society for Neuroscience Short Course “Neural Prosthetics and Brain Machine Interfaces,”
 October 2019
 Keynote, Andrew S. Rachlin Neuroscience Symposium, University of North Carolina Chapel Hill,
 October 2019
 Machine Learning in Science and Engineering Conference, Georgia Institute of Technology, June 2019
 Microsoft Research, April 2019
 Computational Neuroscience Center seminar, University of Washington, February 2019
 Electrical & Computer Engineering seminar, University of Washington, February 2019
 Graduate Program in Neuroscience Retreat, University of Washington, September 2018
 Rich and Rudebeck group meeting, Icahn School of Medicine at Mount Sinai. September 2018
 University of Washington Neural Computation and Engineering Connection, January 2018
 Schiff and Victor group meeting, Weill Cornell Medical College, December 2016
 Bioengineering seminar, University of Washington, March 2016
 Sensory Motor Performance Program Seminar, Rehabilitation Institute of Chicago and Northwestern
 University, February 2015
 Kavli seminar, Center for Sensorimotor Neural Engineering, University of Washington, January 2015
 Biomedical Engineering Department Seminar, Arizona State University, March 2014
 Computational Statistics and Neuroscience weekly meeting, Columbia University, March 2014
 Motor Control guest lecture, University of California Berkeley, December 2013
 Pesaran group meeting, New York University, September 2013
 Schnitzer group meeting, Stanford University, July 2013
 Chang group meeting, University of California San Francisco, January 2013
 Center for Neural Engineering and Prostheses annual retreat, University of California Berkeley,
 December 2012
 Sastry group meeting, University of California Berkeley, March 2012
 Center for Neural Engineering and Prostheses annual retreat, University of California San Francisco,
 December 2011
 California Cognitive Science Conference, University of California Berkeley, May 2010

Teaching Experience

Winter 2021	Instructor, University of Washington Neural Computation and Engineering Laboratory (undergraduate elective, first-year graduate course)
Fall 2020	Instructor, University of Washington Discrete-Time Linear Systems (undergraduate advanced signal processing course)
Spring 2020	Instructor, University of Washington Introduction to Professional Issues (upper-division ethics and professional development for engineering course)
Winter 2020	Instructor and course creator, University of Washington Neural Computation and Engineering Laboratory (undergraduate elective, first-year graduate course)
Fall 2012	Graduate Student Instructor, University of California, Berkeley Senior Design Projects (senior-level capstone design project course)
Fall 2011	Graduate Student Instructor, University of California, Berkeley Motor Control Laboratory (upper-division Integrative Biology course)
Winter 2007	Teaching Assistant, Case Western Reserve University Chemistry of Materials (introductory engineering course)

Trainees and Mentoring

Postdoctoral scholars

- Leo Scholl, Ph.D., 2020 –

Graduate students

- Doctoral
 - Si Jia Li, Bioengineering, 2019 –
 - Michael Nolan, Electrical & Computer Engineering, 2019 –
co-advised with Prof. Eli Shlizerman, UW ECE
 - Maneeshika Madduri, Electrical & Computer Engineering, 2020 –
co-advised with Prof. Sam Burden, UW ECE
 - Pavithra Rajeswaran, Bioengineering 2020 –
 - Augusto Millevolte, Electrical & Computer Engineering, 2020 –
 - Tomohiro Ouchi, Electrical & Computer Engineering, 2020 –
 - Ryan Mizumori Canfield, Bioengineering, 2020 –
co-advised with Prof. Gregory Horwitz, UW Physiology & Biophysics
- Masters
 - Nicholas Thomas, Bioengineering BS/MS, September 2020 – 2021

Undergraduate students

- Caroline Jane Johnson, Electrical & Computer Engineering, January 2021 –
- Pamel Kang, Electrical & Computer Engineering, May 2020 –
- Nicholas Thomas, Bioengineering (senior capstone research), September 2018 – September 2020
- Thomas McIlwain, Bioengineering (senior capstone research), April 2019 – June 2020
- Rachel Phuong, Computer Science & Engineering, April 2019 – September 2020
- Seth Richards, Electrical & Computer Engineering, April 2019 – May 2020
- Dallas Warren, Electrical Engineering, September 2018 – December 2019

Graduate thesis committee member

- Jonathan Mishler, Bioengineering (Chair: Eberhard Fetz)
- Richy Yun, Bioengineering (Chair: Eberhard Fetz)
- Su-Yee Lee, Neuroscience (Chair: Jon Tuthill)
- Kristen Drummey, Neuroscience (Chair: Steve Perlmutter)
- Veronica Porubsky, Bioengineering (Chair: Herbert Sauro)
- Momona Yamagami, Electrical & Computer Engineering (Chairs: Samuel Burden, Katherine Steele)
- Doris Voina, Applied Mathematics (Chair: Eric Shea-Brown)
- Christian Pedersen, Bioengineering (Chair: Michael Bruchas)
- Zhaojie Yao, Bioengineering (Chair: Wyeth Bair)
- Courtnie Paschall, Bioengineering (Chair: Rajesh Rao)
- Julien Bloch, Bioengineering (Chair: Azadeh Yazdan-Shahmorad)
- Samantha Sun, Bioengineering (Chair: Rajesh Rao)
- Daniel Zdeblick, Electrical & Computer Engineering (Chair: Eric Shea-Brown)
- Jasmine Zhou, Bioengineering (Chair: Azadeh Yazdan-Shahmorad)

Ad hoc peer-review

Journals: Nature, Neuron, eLife, Nature Communications, PLoS Computational Biology, Journal of Neuroscience, Trends in Neuroscience, Journal of Neural Engineering, Journal of Computational Neuroscience, Lancet Neurology, IEEE Transactions on Neural Systems and Rehabilitation Engineering (TNSRE), IEEE Transactions on Biomedical Engineering (TBME), Reviews in Biomedical Engineering, Cerebral Cortex, PLoS ONE, Scientific Reports, Neuropsychologia, NeuroImage, Frontiers in Neuroscience

Conferences: Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Brain-Computer Interface Society annual meeting, Computational and Systems Neuroscience (Cosyne) meeting.

Grants: NIH BRAIN Initiative, NIH NINDS (D-SPAN fellowship panel), National Science Foundation, Swiss National Science Foundation

Service

University of Washington

2021 Electrical & Computer Engineering Faculty Search Committee
2021 Bioengineering Faculty Retreat Planning Committee
2021 Women in Science and Engineering Bridge program faculty mentor
2021 Center for Neurotechnology Research Experience for Undergraduates faculty mentor
2020 Animal Research Transparency Task Force member, Office of the Provost
2020 College of Engineering Strategic Planning sub-committee member
2020 - Electrical & Computer Engineering Graduate Fellowship Committee
2018 - Bioengineering curriculum committee
2018 - 2019 STARS mentor

National / international

2020 Mentor for Neuromatch course on computational neuroscience
2019 - Women in Neural Engineering (WINE) Executive committee member and founding member
2018, 2020 L'Oréal For Women in Science Fellowship Selection Panel
2020 DoD National Defense Science and Engineering Graduate fellowship reviewer
2015 National Science Foundation Graduate Research Fellowship reviewer

Student leadership (UC Berkeley, UCSF)

2010 – 2013 Bioengineering Advising Representatives mentoring program, secretary and co-founder
2010 – 2012 Bioengineering Association of Students qualifying exam advisor
2007 – 2009 Bioengineering Association of Students peer advising committee
2007 – 2009 Bioengineering Joint Graduate Group admissions committee student member