Taiga Abe

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Education

Columbia University (PhD Student)   New York, NY
Advisor: John P. Cunningham   2017 - Present

Harvard University (Undergraduate)   Cambridge, MA
A.B. in Neurobiology, Secondary in Mathematical Sciences   2013 - 2017
Magna cum laude with highest honors
Senior Thesis: A Computational Study of Adaptive Behaviors in a Mouse Model of Motor Control

Awards and Honors

- Herschel Smith Graduate Fellowship, 2017 (Declined)
- Phi Beta Kappa, 2017-Present
- William and Mary Lee Bossert Prize for Science, 2016
- Harvard College Research Program (HCRP) Research Award, 2016
- Mary Gordon Roberts Fellow, 2016-2017

Preprints In Review

- **Abe, T.**, Buchanan, E.K., Pleiss, G., and Cunningham, J.P., 2023. Pathologies of Predictive Diversity in Deep Ensembles. *In Review*

Peer Reviewed Publications
(* denotes equal contribution)

- **Abe, T.***, Buchanan, E.K.*, Pleiss, G., Zemel, R. and Cunningham, J.P., 2022. Deep Ensembles Work, But Are They Necessary? *NeurIPS 2022*
- **Abe, T.**, Kinsella, I., Saxena, S., Buchanan, E.K., Couto, J., Briggs, J., Kitt, S.L., Glassman, R., Zhou, J., Paninski, L. and Cunningham, J.P., 2022. Neuroscience Cloud Analysis as a Service: An Open Source Platform for Scalable, Reproducible Data Analysis. *Neuron*
- Couto, J., Musall, S., Sun, X.R., Khanal, A., Gluf, S., Saxena, S., Kinsella, I., **Abe, T.**, Cunningham, J.P., Paninski, L. and Churchland, A.K., 2021. Chronic, cortex-wide imaging of specific cell populations during behavior. *Nature Protocols*
- Batty, E., Whiteway, M., Saxena, S., Biderman, D., **Abe, T.**, Musall, S., Gillis, W., Markowitz, J., Churchland, A., Cunningham, J.P. and Datta, S.R., 2019. BehaveNet: nonlinear embedding and Bayesian neural decoding of behavioral videos. *NeurIPS*
- Mathis, A., Mamidanna, P., Cury, K.M., **Abe, T.**, Murthy, V.N., Mathis, M.W. and Bethge, M., 2018. DeepLabCut: markerless pose estimation of user-defined body parts with deep learning. *Nature Neuroscience*

Selected Talks and Posters

- "Accelerating the development and adoption of neural data analysis tools with an open-source

cloud platform" Invited Talk, Datajoint Sciops Workshop, Sep. 6 2022.
- "Deep Ensembles Work, But Are They Necessary?" Invited Talk, G-Research, Aug. 3 2022.
- "Deep Ensembles Work, But Are They Necessary?" Poster, Columbia Data Science Day 2022.
- "Computational methods for social behavior: From hand labeling to automated, scalable analysis pipelines." Invited talk, NYU Oxytocin Working Group, Jun. 18, 2020.
- "Automated analysis of spontaneous interactions in a persistent social environment." Invited talk, Cosyne 2019 Workshop: Quantifying Social Behaviors: Computational challenges and experimental pitfalls.

Workshop Proceedings

- **Abe, T.***, Buchanan, E.K.*, Pleiss, G. and Cunningham, J.P., 2022. The Best Deep Ensembles Sacrifice Predictive Diversity. *NeurIPS "I Can't Believe It's Not Better!" Workshop,* 2022. [Contributed Talk][Entropic Award]
- Biderman, D., Naesseth, C. A., Wu, L., **Abe, T.**, Mosberger, A. C., Sibener, L. J., Costa, R., Murray, J. & Cunningham, J. P., Inverse articulated-body dynamics from video via variational sequential Monte Carlo. *NeurIPS Workshop on Differentiable Vision, Graphics, and Physics,* 2020.

Professional Service

- Journal Reviewer, Nature Methods
- Journal Reviewer, JMLR
- Reviewer, NeurIPS
- Reviewer, ICML
- Reviewer, JOSS

Advising

- 2019-2022: John Briggs, Undergraduate, Mechanical Engineering (project supervisor)
- 2021: Nicholas Greenspan, Undergraduate, Computer Science (project supervisor)
- 2020: Sian Lee Kitt, Undergraduate, Computer Science (project supervisor)
- 2020: John Luoyu Zhou, Undergraduate, Computer Science (project supervisor)
- 2020: Ryan Glassman, Undergraduate, Computer Science (project supervisor)
- 2019: Luhuan Wu, M.S., Statistics (project supervisor)

Previous Research Experience

Laboratory in Computational Neuroscience (Matthias Bethge, University of Tübingen)
Research Assistant   June - August 2017

Laboratory in Neurobiology (Gabriel Kreiman, Harvard Medical School)
Independent Study   February 2017 - May 2017

Laboratory in Neurobiology (Naoshige Uchida, Harvard University)
Research Assistant   February 2016 - May 2017

Laboratory in Neurobiology (Florian Engert, Harvard University)

Research Assistant   September 2015 - February 2016

Laboratory in Memory Research (Daniel Schacter, Harvard University)
Research Assistant   September 2014 - December 2014

Laboratory in Music Cognition (Martin Rohrmeier, Massachusetts Institute of Technology)
Research Assistant   July 2014 - August 2014