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Elliott T. T. Abe

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Academic Positions

University of Washington **04/2023 — present**
Postdoctoral Researcher, Computational/Theoretical Neuroscience *Seattle, WA USA*

- Swartz Theory Center Postdoctoral Fellow, UW Computational Neuroscience Center
- Data Science Postdoctoral Fellow, eScience Institute
- **Advisor:** Bing Brunton

Education

University of Oregon **2017 — 2023**
Ph.D. Biology, Computational/Theoretical Neuroscience *Eugene, OR USA*

- **Advisors:** Cristopher Niell, Yashar Ahmadian, James Murray

University of Washington **2011 — 2017**
BS Physics *Seattle, WA USA*

- Computational Neuroscience Training Program
- **Advisors:** Adrienne Fairhall, David Perkel

Publications

*These authors contributed equally.

*Parker, P. R. L., *Martins, D. M., *Leonard, E. S. P., Casey, N. M., Sharp, S. L., **Abe, E. T. T.**, Smear, M. C., Yates, J. L., Mitchel, J. F., Niell, C. M. (2023). A dynamic sequence of visual processing initiated by gaze shifts. Nature Neuroscience. https://doi.org/10.1101/2022.08.23.504847

*Parker, P. R. L., ***Abe, E. T. T.**, Leonard, E. S. P., Martins, D. M., Niell, C. M. (2022). Joint coding of visual input and eye/head position in V1 of freely moving mice. Neuron. https://doi.org/10.1016/j.neuron.2022.08.029

Parker, P. R. L., **Abe, E. T. T.**, Beatie, N. T., Leonard, E. S. P., Martins, D. M., Sharp, S. L., Wyrick, D. G., Mazzucato, L., Niell, C. M. (2021). Distance estimation from monocular cues in an ethological visuomotor task. eLife 11:e74708. https://doi.org/10.7554/eLife.74708

Michaiel, A. M., **Abe, E. T. T.**, Niell, C. M. (2020). Dynamics of gaze control during prey capture in freely moving mice. eLife, 9, 1–18. https://doi.org/10.7554/elife.57458

*Duffy, A., ***Abe, E.**, Perkel, D. J. Fairhall, A. L. Variation in sequence dynamics improves maintenance of stereotyped behavior in an example from bird song. Proc. Natl. Acad. Sci. 201815910 (2019). doi:10.1073/pnas.1815910116

Honors & Awards

2023 **Swartz Theory Center Postdoctoral Fellow**, University of Washington Computational Neuroscience Center

University of Washington Data Science Postdoctoral Fellow, University of Washington eScience Institute

2022 **Contributed talk at Computational and Systems Neuroscience Conference (COSYNE)**,
Top 3.4% of 881 submitted abstracts for COSYNE 2022

2020 **Donald Wimber Fund Award**, University of Oregon Department of Biology

2016 **WRF Innovation Fellowship in Neuroengineering**, Washington Research Foundation
Computational Neuroscience Research Stipend, Computational Neuroscience Training Program

2015 **Washington Research Foundation Undergraduate Fellowship**, Washington Research Foundation

Selected Presentations

Abe ETT, Modern methods in computational neuroscience seminar and workshop on Neural network implementations of GLMs. Rutgers University, 01/02/24

Parker PRL, Martins DM, Leonard ESP, Casey N, Sharp S, **Abe ETT**, Smear M, Yates J, Mitchell J, Niell CM. A dynamic sequence of visual processing initiated by gaze shifts. Poster Presentation: Computational and Systems Neuroscience (COSYNE) 2023 Conference, Montreal, Canada.

Hou Y, Xu A, Martins DM, **Abe ETT**, Niell CM, Beyeler M. Retinal scene statistics for freely moving mice. Poster Presentation: Computational and Systems Neuroscience (COSYNE) 2023 Conference, Montreal, Canada.

Abe ETT*, Parker PRL*, Leonard ESP, Martins DM, Niell CM. Joint coding of visual input and eye/head position in V1 of freely moving mice. Poster Presentation: Society for Neuroscience Meeting 2022, San Diego, California USA.

Abe ETT*, Parker PRL*, Leonard ESP, Martins DM, Niell CM. Joint coding of visual input and eye/head position in V1 of freely moving mice. Contributed Talk: NeuroAI Meeting 2022, Seattle, Washington USA.

Abe ETT*, Parker PRL*, Leonard ESP, Martins DM, Niell CM. Joint coding of visual input and eye/head position in V1 of freely moving mice. Poster: Federation of European Neuroscience Societies (FENS) Summer School 2022, Bertinoro, Italy.

Abe ETT*, Parker PRL*, Leonard ESP, Martins DM, Niell CM. Joint coding of visual input and eye/head position in V1 of freely moving mice. Contributed talk: Computational and Systems Neuroscience (COSYNE) 2022 Conference, Lisbon, Portugal.

Parker PRL, Martins DM, Leonard ESP, Sharp SL, Casey NM, Sidikpramana M, **Abe ETT**, Niell CM. Diverse coding of visual and movement signals in V1 of freely moving mice. Neuroscience 2021 Abstracts. Virtual, Society for Neuroscience 2021.

Parker PRL, **Abe ETT**, Beatie NT, Leonard ESP, Martins DM, Sharp SL, Wyrick DG, Mazzucato L, Niell CM. An ethological model of distance estimation in the mouse. Neuroscience 2021 Abstracts. Virtual, Society for Neuroscience Global Connectome 2021.

Abe ETT, Parker PRL, Niell CM, Ahmadian Y. Unsupervised depth estimation via visual-motor integration in recurrent neural networks. Poster: Computational and Systems Neuroscience (COSYNE) 2020, Denver, CO.

Abe ETT, Perkel DJ, Fairhall AL, Quantifying the Timing Characteristics of Adult Zebra Finch Songs. Presented talk: Neural Computation and Engineering Connection 2017, Seattle, WA.

Abe ETT, den Nijs M, Fairhall AL, 2015. Timing Analysis of Zebra Finch Song System . Poster: Mary Gates Undergraduate Research Symposium 2016, Seattle, WA.

Abe ETT, den Nijs M, Fairhall AL,. Quantifying Zebra Finch Song Variation. Poster: Neural Computation and Engineering Connection 2016, Seattle, WA.

Teaching Experience

MATLAB for Biologists BI 410/510	Winter 2022, Winter 2021, Winter 2020, Spring 2018
Introduction to Python Programming	Summer 2019, Spring 2019
Computational Genomics BI 399	Spring 2020
Biology of Cancer: BI 123	Winter 2019
Introduction to Human Physiology BI 121	Fall 2018
Cell Biology BI 211	Winter 2018
Neurobiology BI 360	Fall 2017

Skills

Programming Languages:	Python (Pytorch, Tensorflow, scipy, numpy, networkx, scikit-learn, pandas), MATLAB, R, C/C++, C#
Computer Systems:	High Performance Computing clusters and schedulers (e.g., SLURM), Bash, Linux, Windows, LATEX, git
Development Platforms:	Mujoco, Deepmind Lab, and Unity for creating custom reinforcement learning environments
Experimental Experience:	Data Collection & formatting, experimental design, freely moving behavior

Mentoring

Dylan Martins	Research Technician, 2020-2022 -> Ph.D. Student at University of Santa Barbara
Emmalyn Leonard	Research Technician, 2021-2022 -> Ph.D. Student at Stanford University

Services

Peer Review:	Nature Methods

References

Bing Brunton Professor, Department of Biology, University of Washington
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Cristopher Niell Professor, Department of Biology, University of Oregon
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James Murray Assistant Professor, Department of Biology and Mathematics, University of Oregon
jmurray9@uoregon.edu