Joel Ye

joelye9@gmail.com
joel99.github.io

Interests

Brain-Computer Interfaces, NeuroAI, Embodied AI

Education

Carnegie Mellon University
PhD Program in Neural Computation | *GPA: 4.0 / 4.0* 2021-
Advisors: Robert Gaunt, Leila Wehbe. Expected graduation: 2026
Georgia Institute Of Technology
M.S. Computer Science | Machine Learning Specialization | *GPA: 4.0 / 4.0* 2021
B.S. Computer Science | Minor in Mathematics | *GPA: 4.0 / 4.0* 2017-2020

Publications

A Generalist Intracortical Motor Decoder. *In submission*.
Ye, J., Rizzoglio, F., Smoulder, A., Mao, H., Ma, X., Marino, P., Chowdhury, R., Moore, D., Blumenthal, G., Hockeimer, W., Kunigk, N.G., Mayo, J.P., Rouse, A., Batista, A., Chase, S., Greenspon, C., Miller, L., Hatsopoulos, N., Schwartz, A., Collinger, J.L., Wehbe, L., Gaunt, R.

FALCON: Few-shot Algorithms for Consistent Neural Decoding. *NeurIPS*, 2024.
Karpowicz, B.*, **Ye, J.***, Fan, C., Tostado-Marcos, P., Rizzoglio, F., Washington, C., Scodeler, T., de Lucena, D., Nason-Tomaszewski, S. R., Mender, M. J., Ma, X., Arneodo, E. M., Hochberg, L. R., Chestek, C. A., Henderson, J. M., Gentner, T. Q., Gilja, V., Miller, L. E., Rouse, A. G., Gaunt, R. A., Collinger, J. L., Pandarinath, C.

Neural Data Transformer 2: Multi-context Pretraining for Neural Spiking Activity. *NeurIPS*, 2023.
Ye, J., Collinger, J., Wehbe, L.*, Gaunt, R.*.

Neural Latents Benchmark '21: Evaluating latent variable models of neural population activity. *Neural Information Processing Systems (NeuRIPS) Benchmarks and Datasets*, 2021.
Pei, F.*,**Ye, J.***, Zoltowski, D., Wu, A., Chowdhury, R., Sohn, H., O'Doherty, J., Shenoy, K., Kaufman, M., Churchland, M., Jazayeri, M., Miller, L., Pillow, J., Park, M., Dyer, E., Pandarinath, C.

Auxiliary Tasks and Exploration Enable ObjectNav. *International Conference on Computer Vision (ICCV)* 2021.
Ye, J., Batra D., Das A., and Wijmans E.

Auxiliary Tasks Speed Up Learning PointGoal Navigation. *Conference on Robot Learning (CoRL)*, 2020.
Ye, J., Batra D., Wijmans E., and Das A.

Representation learning for neural population activity with Neural Data Transformers. *Neurons, Behavior, Data analysis, and Theory (NBDT)*, 2021. Poster at SfN 2021, Neuromatch 3.0, 2020.
Ye, J., Pandarinath, C.

Honors and Awards

DOE Computational Science Graduate Fellowship. National fellowship for scientific research using high performance computing (2022-26).
Donald V. Jackson Fellowship. Award for academic excellence and leadership. 1 of 3 awards for 250 eligible MS students in the Georgia Tech College of Computing.

Experience

Amazon, *Research Intern* Summer 2021
- Studied embodied agent navigation in dynamic settings

Microsoft, *Visual Document Intelligence, Software Engineering Intern* Summer 2020
- Prototyped region annotation and data augmentation for doc. understanding frontend + C# backend

Ubiquity6, *Software Engineering Intern - San Francisco, CA* Summer 2019

- Prototyped wayfinding experience for navigating AR scenes, using a custom navigation mesh
- Analyzed ARKit (Obj-C) and ARCore (Java) anchor drift, assessing viability for better pose priors

Projects

A Saccading Model for Temporal Illusions | Report: github.com/joel99/illusions 2021

- We apply a self-supervised recurrent vision model to reproduce the uniformity illusion.

Learning from Different Expert Agents | Report: joel99.github.io/lfd_7648_final.pdf 2021

- How can one robot learn from demonstrations given by another robot?
- We propose Seq2Seq domain translation to overcome the action space mismatch between robots.

Perturbome of Graphs of RNNs | Report: github.com/joel99/noised-rnn-networks 2020

- How do deep neural networks compute in the presence of internal noise, or targeted perturbation?
- Evaluated this dynamical robustness by noising recurrent networks built with pytorch-geometric

Photobooth | github.com/HackGT/photo-style 2018

- Interfaced with style-transfer server to collect styled photos, built masking app with HTML canvas
- Set up server polling endpoint to interface with DSLR camera trigger, provide fallback laptop camera