Joel Ye

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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 and Presentations

Neural Data Transformer 2: Multi-context Pretraining for Neural Spiking Activity. *NeurIPS*, 2023.
J. Ye, J. Collinger, L. Wehbe*, R. Gaunt*.
Neural Latents Benchmark '21: Evaluating latent variable models of neural population activity. *Neural Information Processing Systems (NeuRIPS) Benchmarks and Datasets*, 2021.
F. Pei*, **J. Ye***, D. Zoltowski, A. Wu, R. Chowdhury, H. Sohn, J. O'Doherty, K. Shenoy, M. Kaufman, M. Churchland, M. Jazayeri, L. Miller, J. Pillow, M. Park, E. Dyer, C. Pandarinath.
Auxiliary Tasks and Exploration Enable ObjectNav. *International Conference on Computer Vision (ICCV)* 2021.
J. Ye, D. Batra, A. Das, and E. Wijmans.
Auxiliary Tasks Speed Up Learning PointGoal Navigation. *Conference on Robot Learning (CoRL)*, 2020.
J. Ye, D. Batra, E. Wijmans, and A. Das.
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.
J. Ye, C. Pandarinath.

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