

Interests

Brain-Computer Interfaces, NeuroAI, Embodied AI, AR/VR, Machine Perception

Education

Carnegie Mellon University

PhD in Neural Computation

2021-

Rotation advisors: Aaron Batista, Leila Wehbe, Robert Gaunt (Spring 22)

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 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.

Awards

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

Summer 2021

- Studied embodied agent navigation in dynamic settings

Microsoft, Visual Document Intelligence, Software Engineering Intern - Remote

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
- Wrote React Native UI for collecting user feedback, improving components for draggable content
- Wrote SfM post-processing to prototype feature extraction training pipeline
- Extended render engine testing suite through Puppeteer, wrapping Three.js API

HackGT, Director of Technology - Atlanta, GA

2019

- Led 10+ students to make hackathon tech. Worked on executive board to plan hackathon events
- Led curriculum committee to collaborate with campus CS organizations on workshops

Microsoft, Microsoft Teams, Explore Intern - Redmond, WA

Summer 2018

- Extended services and data channel to notify screensharers who can see their screen
- Updated toolbar with accessible UI and add feature telemetry

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
- BERT Representations During Fine-Tuning** | Report: github.com/joel99/bert-representations 2020
- Studied how transformers change during fine-tuning and forgetting using representational analysis
- Automatically Defined Functions** 2019
- Designed and built system to detect and extract useful functions in evolved computation trees
- 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