

Research Interests

NeuroAI, Embodied AI, Brain-Computer Interfaces, Machine Perception

Education

Georgia Institute Of Technology

B.S. Computer Science | Minor in Mathematics | GPA: 4.0 / 4.0

May 2020

M.S. Computer Science | Machine Learning Specialization | GPA: 4.0 / 4.0

May 2021

- Coursework: Comp. Neuroscience, Network Science, Info Theory, Computer Vision, Deep Learning for Text
- In progress: Computation and the Brain, Mobile Manipulation, Information Processing in Neural Systems

Stuyvesant High School

Advanced NYS Regents Diploma | GPA: 4.0 / 4.0

Jun 2017

Publications and Presentations

J. Ye, D. Batra, E. Wijmans, and A. Das. Auxiliary Tasks Speed Up Learning PointGoal Navigation.

In *Conference on Robot Learning (CoRL)*, 2020.

J. Ye, C. Pandarinath. Representation learning for neural population activity with Neural Data Transformers.

In submission. Poster presentation at Neuromatch 3.0, 2020.

Projects

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

Fall 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

Fall 2020

- Studied how transformers change during fine-tuning and forgetting using representational analysis

Automatically Defined Functions

Fall 2019

- Designed and built system to detect and extract useful functions in evolved computation trees

Photobooth | github.com/HackGT/photo-style

Fall 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

Experience

Microsoft, Visual Document Intelligence, Software Engineering Intern - Remote

Summer 2020

- Prototyped empty region annotation and data augmentation for document recognition frontend
- Integrated, benchmarked and analyzed data augmentation performance in C# backend

Ubiquity6, Software Engineering Intern - San Francisco, CA

Summer 2019

- Prototyped wayfinding experience for navigating AR scenes, using a custom navigation mesh
- Wrote React Native UI for collecting user feedback, improving components for draggable content
- Wrote SfM post-processing to prototype feature extraction training pipeline
- Analyzed ARKit (Obj-C) and ARCore (Java) anchor drift, assessing viability for better pose priors
- 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